

Information Pack

General Information about Unitsky String Transport
technology and its development **in 2022**



Unitsky
String
Technologies



uDiscovery
DMCC

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1. Introduction

Solving the transport problem is a critical task for the management of almost every urban formation on our planet.

Increasing number of traffic jams, traffic accidents, critical levels of air pollution, and other consequences resulting from the exponential growth of city automobiles lead to a significant decrease in the urban environment comfort level, threatening peoples' health, escalate employment problems, and cause general delays in urban development. In addition, there are related significant budgetary losses.

All the methods and means used worldwide to solve this problem are half-measures designed only to show some activity in this direction. It leads to time loss, aggravation of issues, and even causes more significant financial losses.

Neither special traffic lanes allocation for public transport in Jakarta or Almaty, nor the accelerated, almost forcible implementation of electric buses and cars in Berlin and Paris, nor the active construction of new roads as in Moscow (that means asphaltting of immense urban areas), lead to an easing of the situation and do not solve the main problem, that is a radical increase in the population mobility without adding a burden to the existing road network and increasing the number of traffic accidents while damaging the environment.

In light of the impending crisis, new transport solutions should be affordably priced. They should be available not only in the countries of the "golden billion" but also in the developing countries of Africa, Asia, and South America.



Visualization of the UST passenger station (closed type)

The Unitsky String Transport (UST) Technology which is developed and tested by the Unitskiy Group of Companies offers a non-standard solution providing transfer of the vehicles movement trajectory to the “second level” by raising the string rail transport overpass above the ground that ensures unhindered and safe movement of electric vehicles on steel wheels along the steel “suspended” rails based on prestressed steel cables.

In the case of Unitsky String Transport, the mobility problem will be solved not at the expense of the existing roads and not through the construction of new “asphalt and concrete roads”, and environmental friendliness is ensured not by the type of energy consumed, but by its low consumption and the transport efficiency. And, finally, the cost of the UST is several times lower than any transport solution available in the market due to its low material consumption and unique technological approaches.

Construction of the UST Transport Infrastructure Complex in Dubai will solve the specific task of creating a transport corridor necessary for the city. Moreover, it will reconfirm that Dubai is a place where breakthrough technologies is being used to show how to solve significant problems.

This paper’s primary purpose is to provide the RTA management with the information on the development of the UST technology and achievements of Unitsky Group of Companies in this area over the past year.

The developments and achievements that happened in 2021–2022 are stated below.



Visualization of the UST passenger station (open type)

2. About the Unitsky Group of Companies

The Unitsky Group of Companies (UGC) is an ecosystem of research, design, engineering, manufacturing, construction, agrobiological, agricultural and marketing organizations.

The UGC Companies are united by the common idea. Dr. Anatoli Unitsky who is an outstanding engineer, philosopher, and visionary, proposed the concepts and breakthrough eco-technologies for transport, energy, industry, agriculture, residential, and industrial infrastructure.

The group of companies aims to design and implement eco-friendly technologies that can significantly increase the efficiency of using our planet's spatial and raw materials and energy resources, as well as minimize the negative impact of human activities on the environment and the Earth's biosphere.

The Unitsky Group of Companies incorporates:

Unitsky String Technologies Inc. (Minsk, Belarus), SW Plant (Minsk, Belarus), Unitsky String Transport LLC (Moscow, Russia), uSky Transport FZE (Sharjah, UAE), uDiscovery DMCC (Dubai, UAE), UVR LLC (Minsk, Belarus), Unitsky Agricultural Enterprise (Maryina Gorka, Belarus), Astroengineering Technologies LLC (Minsk, Belarus).

Dr. Anatoli Unitsky is the founder of the following Companies: uSky Transport FZE, uDiscovery DMCC, Unitsky Agricultural Enterprise, and Astroengineering Technologies LLC. He directly and indirectly (through the investment companies) owns the following Companies: Unitsky String Technologies Inc., SW Plant, Unitsky String Transport LLC, and UVR LLC.

Practical Implementation Centers :

Maryina Gorka / Belarus / EcoTechnoPark Demonstration & Certification Center.

The efficiency of the innovative technology has been proven in Belarus in 2017, where six string rail overpasses have already been built over a 36-hectare area, and five more are under construction in order to perform research, certification, and demonstration. Twelve fundamentally different types of rolling stock (unmanned electric vehicles on steel wheels) are featured in the park.

Sharjah / UAE / uSky Demonstration & Certification Center.

The first stage of the commercial introduction of the uST Transport solutions in the Middle East unfolded in 2018 with the construction of the uSky Center in Sharjah Research Technology and Innovation Park (SRTIP) on the territory of 28 hectares.

At the end of 2021, the first stage of construction of cargo and passenger complexes by uST was completed. This first project in the Middle East and North Africa region demonstrates the potential of the uST passenger and cargo transport. The rolling stock is represented by unmanned rail electric vehicles designed to move over the aboveground string rail overpass (the second level structure) with speeds up to 150 km/h.

2.1. Unitsky String Transport (uST) / Suspended String Light Rail Transport (SS-LRT)

The uST Transport (SS-LRT) and Infrastructure Complex is an infrastructure facility designed on the basis of the patented string-rail technologies and comprising a prestressed string rail transport overpass; it is intended to perform transport and logistics activities.

The uST (SS-LRT) Transport and Infrastructure complex consists of the following subsystems:

- string rail transport overpass;
- infrastructure;
- electric rail vehicle on steel wheels – uPod;
- automated control system, power supply and communication systems.

The uST transport and infrastructure solutions, based on patented string rail technologies, require minimal land acquisition for the construction. They can be easily adapted to perform any logistical tasks in the field of urban and intercity passenger and cargo-passenger transportation at speeds up to 150 km/h.

The uST Complexes located in the urban area can service from 1 to 50 thousand passengers per hour. Cargo ones transport from 1 to 100 million tons per year.

The uST solutions are distinguished by high efficiency, safety, reliability, and durability. The design features of the prestressed steel cables make it possible to reduce the material consumption and cost of transport overpasses tenfold in comparison with other types of overpass transport (monorail, urban railway, air and magnetic cushion trains, ground metro, high-speed tram, cable car) and underground subway. Operating expenses (OPEX) and the period of return on investment (ROI) are also significantly reduced compared to the above traditional transport and infrastructure solutions.

2.2. Elements of Transport and Infrastructure Complexes

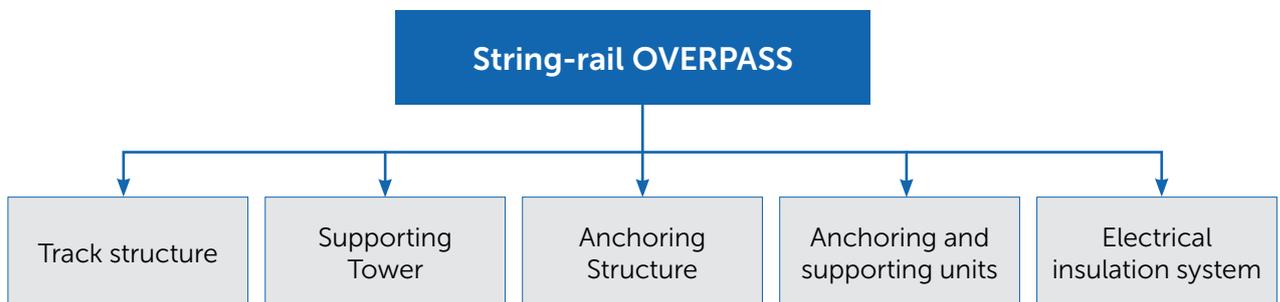
A string rail transport overpass consists of a prestressed rail track, anchoring and supporting structures (towers) with anchor-support nodes electrically isolated from each other, supports, and string-rails while performing the function of a contact network.

The infrastructure means a complex of interconnected facilities located above the ground, including terminals (passenger and/or cargo), a maintenance area, a power supply complex, an automatic control system (including a control room), other buildings and structures, as well as engineering networks and equipment, including turn-out switches that ensure the functioning of the string rail transport and infrastructure complex.

The rolling stock means unmanned electric rail vehicles on steel wheels (uPods) designed to transport passengers (including their luggage) and cargo along the rail tracks electrified from a contact rail.

The automated control system (ACS) means a set of hardware and software; it is designed to control transport activity and ensure traffic safety.

The composition of the string rail overpass is shown in the following figure:



The string rail overpass includes supporting towers, anchoring structures, support and anchor nodes, a prestressed string rail track structure, a system of electrical insulators to isolate rails from each other, supports and supporting nodes, as well as from the uPods' frame and body.

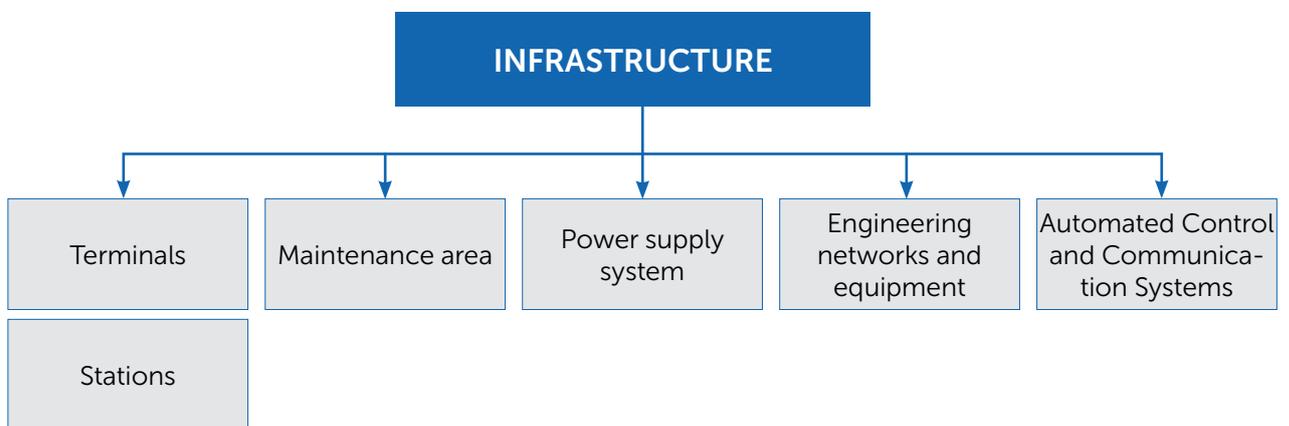
The Anchoring Structure is equipped with anchoring nodes that are elements of the track structure where the tension of the rail strings is fixed, and transmitted to the anchoring structures (a force of about 1,000 tons per a track structure).

The fastening of the track structure to the supporting tower and the transfer of loads thereto are provided by the supporting nodes being a set of elements of the track structure (angling rods, saddles, etc.).

All supporting units operates as power elements (transmit pre-tension forces and hold the weight of the rolling stock) and electrical insulators designed for voltage up to 1,000 V.

The track structure consists of stressed and non-stressed sections. The stressed sections (both of power and electrical voltage) are located between the anchoring structures; the unstressed sections are located on the turning (U-turn) sections located behind the anchoring structures. The stressed sections are electrified; the unstressed sections of the track structure are a non-electrified, along them the uPods move being powered from on-board energy storage units (batteries).

The composition of the transport and infrastructure complex is shown in the following figure:



The infrastructure of the transport complex includes a string-rail transport overpass, terminals, a maintenance area, a power supply system (including a contact network), the automated control and communication systems, engineering networks and equipment (including turn-out switches), in order to ensure the regular functioning of the complex, as well as safe traffic of unmanned uPods (equipped with an onboard control system).

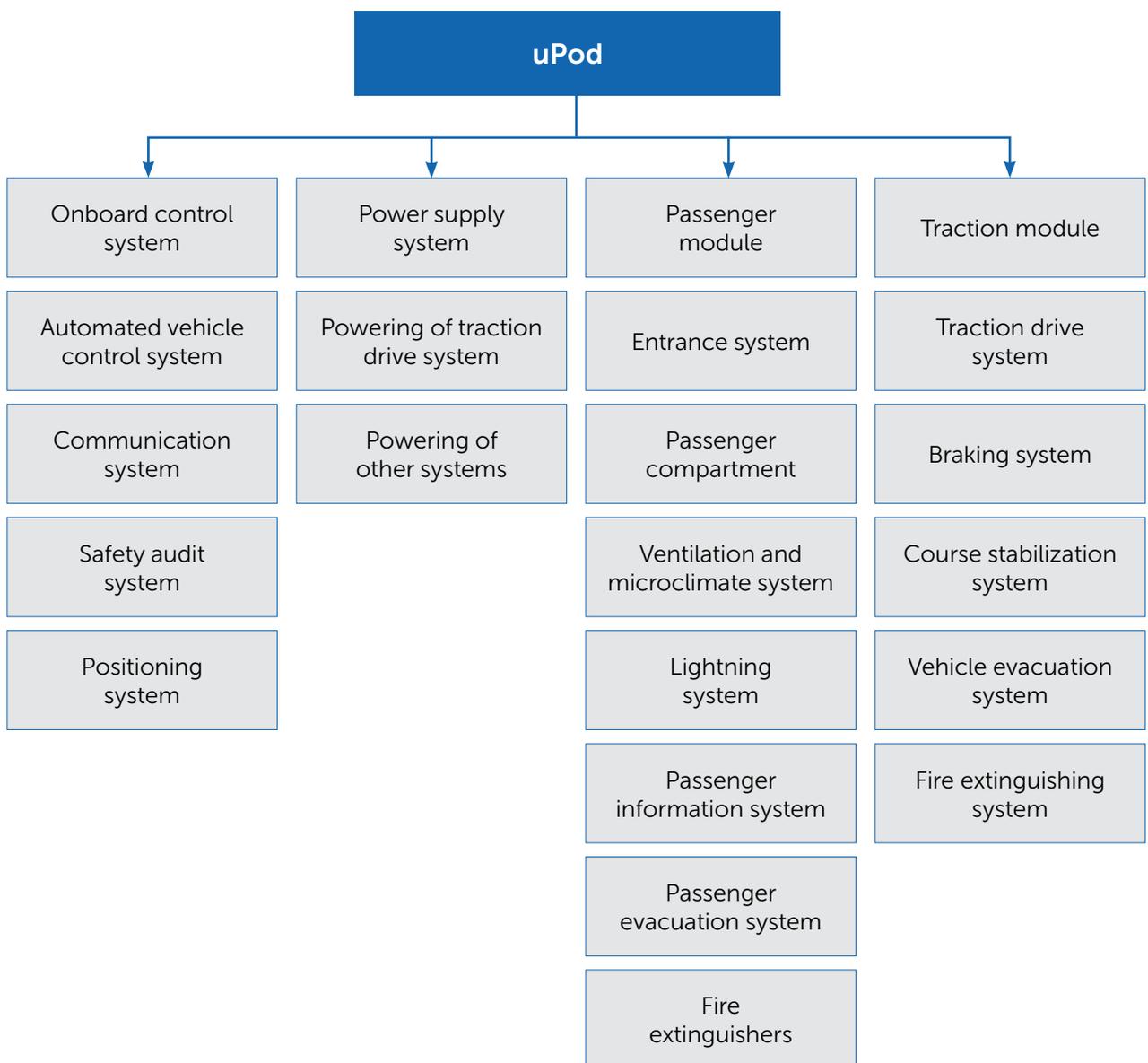
Passenger stations means facilities and technical devices for passenger service. If necessary, the stations may can contain terminals for goods and luggage processing, a control room, and a maintenance area.

The maintenance area is used to implement a set of measures that ensure the technical readiness of uPods throughout their entire life cycle.

The power supply system includes technical structures and devices (electrical substations, contact network, electrical insulator system, electrical networks, etc.) to provide the infrastructure facilities with electricity, as well as to power rolling stock through the electrified track structures.

The engineering networks include pipelines and cables (water supply, sewerage, heating, air conditioning, electric power cables, communications, etc.) laid on the territory of the transport and infrastructure complex, and if necessary nearby settlements to ensure the complex operation.

The main components of a string rail **electric uPod on steel wheels** is shown in the following figure:



uPods can be provisionally divided into three main modules:

- Traction module;
- Passenger module;
- Power supply system and onboard control system.

The traction module provides all kinds of the uPod movement along the string rail overpass of the transport complex.

The traction module includes:

- Traction drive system;
- Brake system;
- Course stabilization system;
- Emergency vehicle evacuation system;
- Fire extinguishing system.

The passenger module is designed to accommodate passengers and their luggage, protect, and create safe and comfortable conditions for their stay inside when driving and at stops, including emergency situations.

The passenger module includes:

- Entrance system (door system);
- Passenger compartment, including seats (if necessary), handrails;
- Places for people with disabilities;
- Ventilation and microclimate system;
- Lighting system (operational and emergency);
- Passenger information system (video, duplex communication with the dispatcher, information signs, light indication, other);
- The system of evacuation of passengers;
- Fire extinguishing equipment (fire extinguishers).

Onboard control system (OCS) is a complex of hardware and software designed to perform a control over the uPod and ensure traffic safety conditions.

The OCS consists of three functional systems performing all the necessary control and safety functions:

- uPod automatic protection system;
- uPod auto driving system (ADS);
- Automated control system of the uPod subsystems.

The control system (hereinafter – CS) of the transport and infrastructure complex (TIC) includes the following key systems:

- Central control system (CCS). It is designed to manage the complex’s vehicles movement and operation of the automated infrastructure facilities, to form a vehicle schedule based on the status of all vehicle’s systems in order to ensure safe and comfortable transportation of passengers;
- The vehicle’s onboard control system (OCS). It is designed to control vehicle subsystems for the purpose of safe and comfortable operation according to the traffic schedule;
- Automated infrastructure facilities and additional systems ensuring the stable operation of the TIC, as well as comfortable and safe transportation of passengers.



uCar in UST passenger station, Sharjah, UAE, 2022



UST Passenger line with flexible track structure, Sharjah, UAE, 2022

2.3. Cargo-Passenger Transport Solutions on the Base of a Flexible String Rail Track Structure

To date, this type of the uST solutions is presented in the UAE and ready for commercial implementation.

The estimated mobile load (weight of the uPod) for the overpass of this type is up to 25 tons.

The length of the unsupported spans in the certified samples is 100, 200, and 400 m.

There are several types the designed and manufactured rolling stock (uPods): 14, 24, 25, and 48-passenger uBuses, 6 and 18-passenger uCars, 4-seater uCar in tropical design, 2-seater uBike, 6-seater uLite, 6-ton cargo uTruck, 10- and 35-ton cargo uConts to transport containers, including maritime ones.

The implemented infrastructure facilities include 2 passenger stations, 1 service station (in particular control room and a repair shop).



UST passenger station located in Sharjah Research Technology & Innovation Park, Sharjah, UAE, 2022

2.4. Cargo-Passenger Transport Solutions on the Base of a Semi-Rigid String Rail Track Structure

Currently, this type of the uST solutions is only partially implemented.

The presented version of the complex with this type of track structure is a line in EcoTechnoPark (Maryina Gorka, Belarus) with an estimated payload of up to 10 tons.

The rolling stock types are similar to the transport solutions for the flexible type of the track structure.

A transport complex with an estimated payload of up to 50 tons is at the final stage of construction.

The current stage of construction in Sharjah (UAE):

- External finishing works on 2 anchoring structures have been completed;
- Installation of the fasteners is in progress;
- Supporting towers with spans of 144 and 288 meters are installed;
- The track structure with a total length of 2.4 km has been prepared to the installation.

A new type of suspended automatic vehicle uBus U4-212-01 is at the final stage of the commissioning.

Specifications:

Design speed – 150 km/h;

Operational speed – up to 120 km/h;

Power consumption (fuel) at a speed of 100 km/h,

kWh/100 km (l/100 km) – 19.4 (4.85);

Load capacity – 2,610 kg;

Weight – 11,500 kg;

Passenger capacity – 25 people.



Installation works on the passenger and cargo line, Sharjah, UAE, 2022

2.5. Development of the Cargo Direction

uCont U4-192-21 is a new mounted automatic vehicle designed for transporting 20- and 40-foot cargo containers in tropical climatic conditions along the bi-rail track of the string rail overpass.

Specifications:

Design speed — 100 km/h;

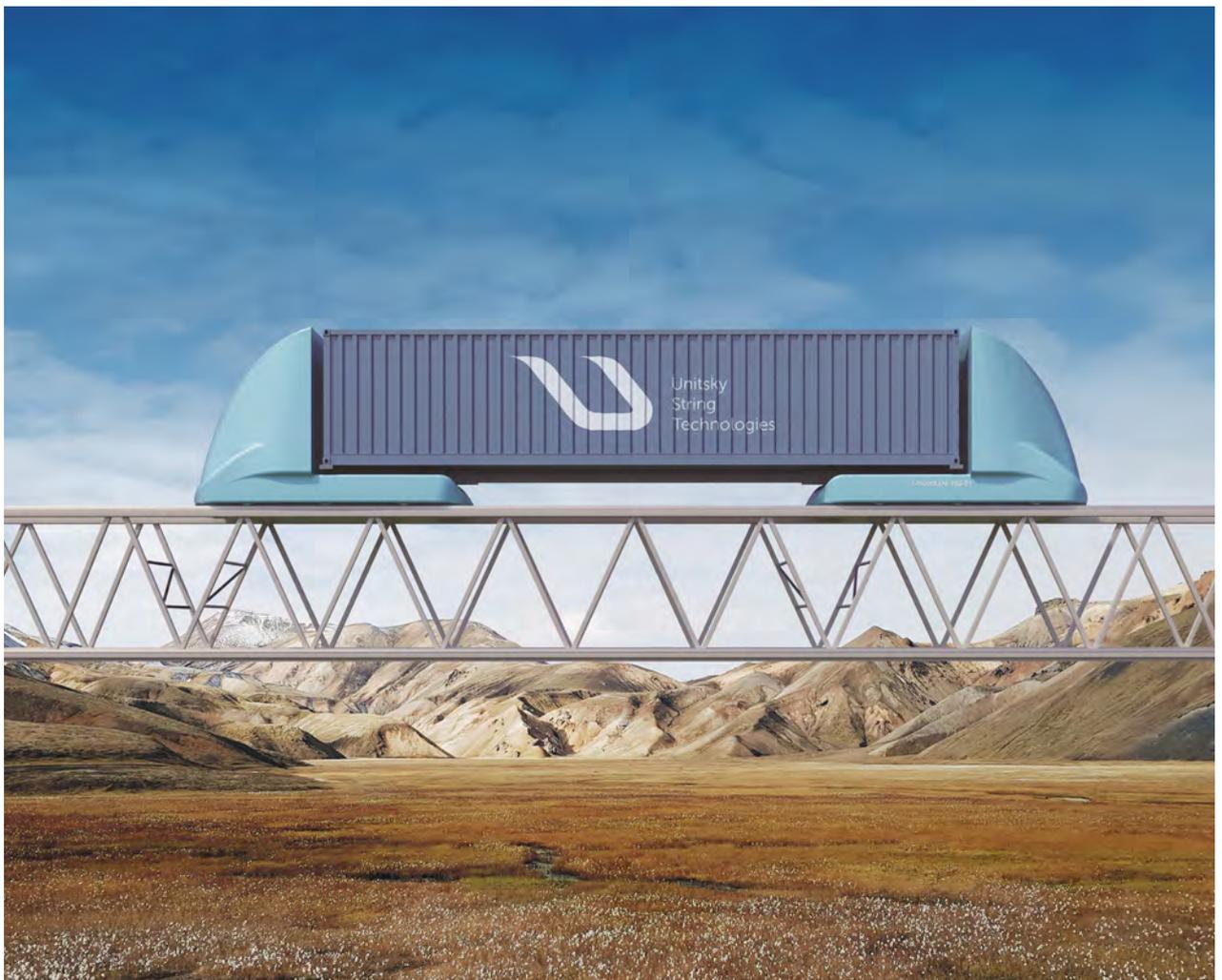
Operational speed — 90 km/h;

Power consumption (fuel) at a speed of 90 km/h,

kWh/100 km (l/100 km) — 68.5 (14.7);

Load capacity — 30,500 kg;

Weight — 52,655 kg.



Visualisation of uCont (cargo uPod)

2.6. Personnel and Production Potential

The Unitsky Group of Companies (companies located in the Republic of Belarus, the Russian Federation, the United Arab Emirates, the United States, and other countries) employs more than a thousand highly qualified employees, including more than 700 technical specialists (engineers) in design, production, certification, and scaling of transport and infrastructure products.

Dynamics of employee number growth from 2020 to 2022 in the Companies placed in the Republic of Belarus:

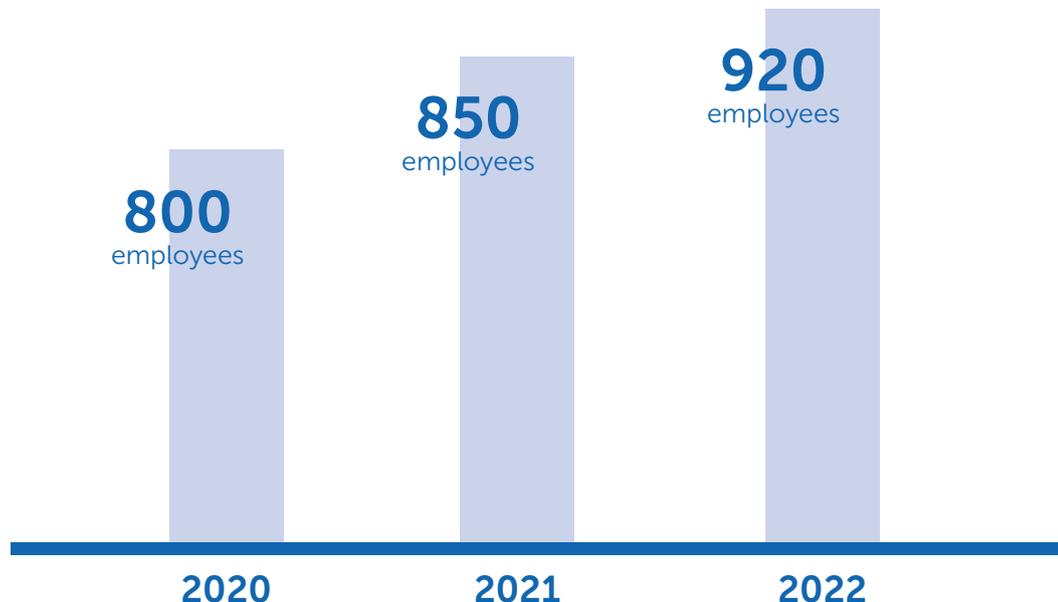
January 2020 – **800 employees;**

January 2021 – **850 employees;**

January 2022 – **920 employees.**

The developer of the uST complexes have at its disposal 2 demonstration and certification centers on the territory of the Republic of Belarus (Maryina Gorka) and the UAE (Sharjah). The total area of land plots is more than 60 hectares.

The UST production specialists has experience in various works from 3D prototypes creation to the manufacture of industrial batches of products and assemblies according to the Customer's order. The premises include a fleet of machine tools, diagnostic, testing, control, and measuring equipment, in particular "Okuma" five-axis processing centers. The production workshops area is more than 4,000 m².



2.7. Intellectual Property Protection

In the total, Unitsky Group of Companies owns more than 200 international patents and 15 registered trademarks (as of the end of 2021).

During the period from 2021 to 2022, UST Inc. received 39 documents: patents and certificates for objects of industrial property rights. Among them, 13 documents are international, including Eurasian, European, and Chinese patents for inventions.

2.8. Scientific Research and Experimental Designing Work

One of the priorities of the Unitsky Group of Companies was the development of science, as well as use of the results of the scientific activity. We believe that any technology is a derivative of science and investment of the resources in multiplying achievements in the field. A specialized division, the research department, is in charge of these tasks in the Company.

All our scientific activities are connected with such important areas of the world economy as:

- Mechanical engineering and machine science;
- Electric and unmanned vehicles;
- New building materials and structures;
- Agro-biotechnologies.

In November 2020, on the basis of the Company (in EcoTechnoPark), our own testing center has been accredited, it plays an important role in the R&D implementation and affects the qualitative and quantitative indicators of the scientific research and experimental designing work.

In November 2021, a microclonal reproduction laboratory and a mycolaboratory were opened, and significantly increased the efficiency of all conducted scientific research, experiments, and tests in the field of agro-biotechnologies, the results of which are used in the infrastructure and landscaping of the uST transport and complexes.

In 2021, the company approved a Concept for the development of scientific and innovative activities setting a general direction in the short and medium term (2021-2025) to activate scientific efforts and introduce R&D results into the Company's practice.

As of November 2022, the register of the Belarusian Institute for System Analysis and Information Support of the Scientific and Technical Sphere contains 7 research and development works of the company.

The academic composition of the UGC comprises:

- 11 employees with academic degrees — candidates of sciences or PhD;
- 7 employees have scientific degrees in engineering sciences;
- 2 employees have completed their master courses with a Master of Science degree;
- 1 employee has completed his postgraduate studies with the qualification of a Researcher.

For 2 years, our employees have published 6 scientific monographs (in Russian and English) and more than 50 scientific articles, including those in scientific journals and media outlets, in particular publications in scientometric databases.

2.9. Marketing Activity

The Unitsky Group of Companies presented its transport and infrastructure product at the largest and most prestigious technology exhibition in the world — EXPO 2020 in Dubai (UAE). During the EXPO, uSky Test & Certification Center in the Emirate of Sharjah (UAE) was visited by the representatives of over 100 delegations from more than 50 countries.

They are:

- Representatives of major businesses — more than 200;
- Ambassadors and Consuls — 9;
- Government officials and politicians of various ranks (deputies, mayors, governors, etc.) — more than 200;
- Ministers — 27;
- Members of royal families — 2;
- King — 1.

The guests of the Center included representatives of the UAE, Brazil, Russia, the Czech Republic, Romania, Vietnam, Switzerland, Colombia, Croatia, Tunisia, Peru, Lesotho, the Dominican Republic, and other countries.

Thus, the uSky Test & Certification Center was visited by the delegations from Colombia headed by the Minister of Transport Angela Maria Orozco Gomez, the Royal Couple from Lesotho — His Majesty King Letsie III with His wife Her Majesty Queen Masenate Mojato Bereng Seiso, His Excellency the Ambassador of Rwanda to the UAE Emmanuel Hategeka, representatives of the major Romanian developer SDC Properties Group, heads of major UAE industrial companies, and other preeminent guests.



Prospects for the use of the UST transport and infrastructure technology:

- Development of hard-to-reach territories, creation of a unified network of cargo, passenger, and high-speed intercity routes of the “second level”;
- Development of the related industries to product string rail transport overpass and rolling stock (metallurgical, chemical, petrochemical, and radio electronic industries, mechanical engineering, construction, etc.);
- Qualitative change in the economic structure and increase in the GDP of the countries and regions, creation of new jobs in almost all sectors of the national economy;
- Maximum reduction of capital and operating costs in transport and infrastructure construction;
- Improving urban, regional, and global ecology;
- Integration of the countries into international transport corridors, creation of a fundamentally new world logistics of the XXI century that will be highly efficient, environmentally friendly and safe.

2.9.1. Commercial Projects

Work on the design documentation has been completed and construction has begun — **1 project.**

Feasibility study completed and paid by the customer — **2 projects.***

Payment is expected for the work on the preparation of the feasibility study — **2 projects.**

Agreements of intent have been concluded — **17 projects.***

Negotiations to conclude contracts for the preparation of a feasibility study — **more than 30 projects** in 10 regions of the world.

* Supporting documents can be provided upon the request, subject to signing of the NDA.



His Excellency Ambassador of Rwanda in UAE, Emmanuel Hategeka inside uCar at uSky Test & Certification Center, Sharjah, UAE, 2022

3. Development of the UST Inc. Engineering Company

In the period from 2015 to 2022 inclusive, UST Inc. the parent engineering company (Minsk, Republic of Belarus) made the transition from the “startup” stage to the “business” stage, having passed a number of stages from the first search solutions to the creation of a commercial product in the field of transport and infrastructure projects:

- 1** A complex of research works has been carried out, 11 types of uST test transport and infrastructure complexes have been designed and partly implemented (5 in Belarus and 1 in the UAE), with a total length of about 5 km of string rail overpasses, and 5 more complexes are being built (3 in Belarus and 2 in the UAE) with a total length of about 8 km. Transport complexes — passenger (urban and intercity) and cargo ones, both in mounted and suspended versions, with a flexible, semi-rigid, and rigid string rail track structure — are made with spans of 40, 48, 50, 100, 144, 200, 250, 288, and 400 m;
- 2** More than 30 buildings and structures (passenger stations combined with anchoring structures, service workshops, and depots, laboratory buildings, production workshops, etc.) have been designed and built in Belarus and the UAE on 5 construction sites with a total area of more than 100 hectares;
- 3** There have been designed and built 22 anchoring structures up to 15 m high, intended for a horizontal load of up to 2000 tons, and more than 120 supporting towers up to 20 m high;
- 4** There have been designed, manufactured in-house and tested 12 fundamentally different models (mounted and suspended) of steel-wheeled electric string rail vehicles (uPods) of the 4th generation, 5 of which have been already certified. There are 6 models of urban high-speed (up to 150 km/h), super-speed (up to 600 km/h), and hyper-speed (up to 1500 km/h) passenger, cargo, and cargo-passenger uPods in the design and manufacturing stages, three of which are of the 5th generation;
- 5** Home-developed systems of automated control, communication, power supply, and safety of the uST complexes have been developed and successfully tested.

3.1. General Designer's Office

Head of the General Designer Department - Deputy General Designer for Transport Complexes, Viktor Garakh.

The General Designer's Office includes the following departments:

- High-speed Transport Complex Design Office;
- Rapid Transport Complex Design Office;
- Cargo Transport Complex Design Office;
- Engineering Design Team.

The General Designer's Office consists of 21 specialist.

The main tasks of the General Designer's Office:

1. Ensuring activities in the development of innovative transport complexes for the transportation of passengers at speeds up to 600 km/h and cargo at speeds up to 150 km/h;
2. Continuous improvement of performance through the use of data analysis results, corrective and preventive actions, management analysis results;
3. Participation in the development of new technologies and equipment at manufacturing enterprises aimed at the implementation and production of the completed developments (products);
4. Preparation and development of technical documentation at different stages of design and project schedules;
5. Design and managerial support for the development and construction of transport complexes;
6. Conducting virtual tests and simulations, developing measures for constructive and software improvements;
7. Formalization, standardization, and optimization of processes, including process automation in terms of project support;
8. Search and analysis of information in the areas of ongoing research and work in the field of transport and infrastructure technologies;
9. Development of logistics and design concepts;
10. Modeling of transport processes;
11. Participation in development and research;
12. Development of technical specifications for the design and construction of transport complexes;
13. Development, tracking of project schedules;

14. Assessment of the need for finishing work based on the results of full-scale and virtual tests of product samples;
15. Conducting design support for the manufacture of prototype products;
16. Participation in preliminary, acceptance, and certification tests;
17. Distribution of the information environment for managing the development process;
18. Ensuring the effective work of related departments at the intersection of areas in terms of supporting development projects;
19. Preparation of reporting information on projects and provision to interested and appropriately accessed persons upon the request;
20. Ensuring the process of obtaining relevant and reliable information on ongoing projects;
21. Development of conceptual solutions for vehicles;
22. Pre-design and design development of a line of vehicles;
23. Development of exterior and interior solutions for vehicles;
24. Selection of materials, validation of requirements;
25. Modeling and prototyping;
26. Development of 3D graphics, optimization of 3D models of transport and overpass;
27. Development of the visual part.



Head office of Unitsky String Technologies Inc., Minsk, Belarus

3.1.1. Rapid Transport Complex Design Office

Chief Designer is Vitaly Lapkovsky

The Rapid Transport Complex Design Office is a part of the General Designer's Office, which develops string transport complexes designed to transport passengers and their luggage and cargo by rail vehicles with a maximum speed of 150 km/h.

At the moment, the Design Office consists of 10 specialists:

1. Chief Designer of the high-speed transport complexes;
2. 1 Chief Specialist;
3. 1 Project Manager;
4. 7 Engineers.

Rapid Transport Complex Design Office is working in the following areas:

1. Management of ongoing projects of uSky Test & Certification Center - TU4 and uLight;
2. Project management for VESKS 7, 4, 2, 1 (lower belt), uSky Test & Certification Center's TU1;
3. Layout and calculation for the stage of a request for a commercial project (track type, station option, logistics, energy consumption);
4. Formation of tasks according to the technical specifications for related departments;
5. Creation of a template for technical specifications for the complex;
6. Creation of an optimal automated control system for the shopping mall;
7. Traction power supply for shopping malls;
8. The system of operational documentation;
9. Giving string transport systems the status of a subject of legal relations in the Republic of Belarus;
10. Research work aimed at scientific substantiation of the effectiveness of string transport complexes in the Republic of Belarus;
11. Modeling of logistics processes taking into account energy consumption, as well as the movement of passengers through the station;
12. Development of an alternative method for determining the stiffness of the track structure (math. modeling);
13. Development of alternative structural types of track structures;
14. Development of a vehicle power drive (electric motor - inverter - battery);
15. Cheaper layout, design, technological solutions of the uPods.

Achievements of the Rapid Transport Complex Design Office include:

1. Preparation of documentation of the “conceptual level of requirements” prospective;
2. Supervision of work on the automated control system and its subsystems;
3. Development of technical solutions for uPods subsystems (together with BFSA), RAMS analysis;
4. Development of the Stand of the automated traffic control system;
5. Analysis of options for traction power supply of TU4;
6. Requirements for electrical insulation of traction power supply;
7. Development of operational documentation system;
8. Technical Operation Rules for “Experimental String Road on the territory of Unitsky’s Farm Enterprise”;
9. Instructions for Technical Diagnostics and Assessment of the State of Track Structures of Unitsky String Transport Complexes (Unitsky String Technologies). Operational instruction IS.DPS.0000.001-LU;
10. Instructions for the organization of emergency recovery work at the facilities of Unitsky String Transport Complexes (Unitsky String Technologies);
11. A comparison of the requirements of TNLA for ropeways in the Republic of Belarus and technical solutions implemented in Unitsky’s string transport complexes;
12. The article “Transport systems of the “second level”: current state and development prospects” was prepared and sent to the editors of the journal “Mining Mechanics and Engineering” (publication in the IV quarter of 2022 in the journal No. 4), the volume of the article is 18 sheets;
13. Negotiations with specialists from GosPromNadzor on preparation of a letter from Unitsky String Technologies Inc. in order to make changes and additions to the TNLA regulating the operation of ropeways in the Republic of Belarus;
14. The article “Development of the concept of an intelligent system for continuous remote diagnostics of the technical condition of the track structures of the equatorial overpass of the General Planetary Vehicle” was prepared for the participation in the V International Scientific and Technical Conference “Non-Rocket Near Space Industrialization: Problems, Ideas, Projects”, the volume of the article is 25 sheets;
15. Research work “Analysis of the efficiency of modern land transport systems and development of measures aimed at integrating Unitsky’s string transport systems (uST) into the transport complex of the Republic of Belarus”;
16. A comparative assessment with the unit cost and costs for the implementation of traction power supply of TS4 was prepared;
17. CTs are formed for TC insulators;
18. Logistics for 26 projects. In the last 5 projects, the calculation of energy supply is automated;
19. Simulation of station loading (passenger traffic inside the stations, 19 pcs.);
20. Bases of buildings and structures (250 slides);

21. Works on designing/construction of a dead-end section of TS4, including calculations;
22. A mathematical model of an alternative method for determining the rigidity of the track structure. Loads, accelerations, jerks - stiffness;
23. Calculation of structural types of track structures (model, calculation);
24. A proposal for the "Transport HUB";
25. The development of an electric motor optimal for our shopping malls. Halbach axial/radial/combined;
26. Testing the motor Permagsa 3/6 kW;
27. Recommendations for choosing a method for obtaining a coating;
28. An assessment of the condition of the sheathed ropes and related elements in the area of their support on the anchoring structures of TU4;
29. A mathematical model for replacing stiffness with tension;

Plans of the Rapid Transport Complex Design Office for 2023-2024:

1. Supervision of work on the automated control system and its subsystems;
2. Development of technical solutions for uPods subsystems (together with BFSA), RAMS analysis;
3. Development of the Stand of the automated traffic control system;
4. Support for projects implemented at EcoTechnoPark (VESKS No. 1, No. 2, No. 4) and Farm Enterprise (uLight);
5. Support for projects implemented in the UAE (TU-4);
6. Development of technical specifications for the VESKS complex No. 7;
7. Creation of an optimal automated control system for the shopping mall;
8. Logistics for targeted projects;
9. Simulation of loading stations for targeted projects.

3.1.2. High-speed Transport Complex Design Office

Chief Designer is Alexander Krivitsky.

High-speed Transport Complex Design Office is a part of the General Designer's Office, which develops string transport complexes designed to transport passengers and their luggage and cargo by rail vehicles with a maximum speed of 600 km/h.

At the moment, the High-speed Transport Complex Design Office consists of 4 specialists: the Chief Designer of the high-speed transport complex, 3 Engineers and 1 Project Manager.

High-speed Transport Complex Design Office is working in the following areas:

1. Formation of working and prospective concepts for the provision of transport services for super-speed passenger transportation at speeds up to 600 km/h using uST technologies;
2. Development and implementation of innovative uST string transport systems for super-speed passenger transportation at speeds up to 600 km/h;
3. Design and organizational support of super-speed string transport complexes at all stages of the product life cycle;
4. Participation in the improvement of the company's business processes on the basis of existing and emerging projects of transport complexes in EcoTechnoPark (Maryina Gorka) and in the UAE;
5. Search for innovative solutions in the creation of super-speed transport complexes and super-speed vehicles (uFlash);
6. Design support for existing facilities at EcoTechnoPark and the UAE;
7. Development of promising areas: formation of the technical appearance of transport complexes.

Achievements of the High-speed Transport Complex Design Office include:

1. Development of the 21 km route;
2. The implementation of the uPod hitch from the ground;
3. Management of work on VESKS No. 5;
4. Systems for mounting and turning the uPod on single-track and double-track track structures;
5. The concept of suspended military-technical cooperation;
6. An analysis of the key basic solutions for military-technical cooperation (Cx, mass, brakes, transmission, traction drive, brake blowing, aerodynamic brakes, body, entrance doors);
7. Common basic HP for military-technical cooperation of suspended type;

8. Evacuation and self-rescue from suspended military-technical cooperation;
9. An analysis of the most modern airports and railway stations in the world (assessment of the level of equipment, comfort, safety, automation and provision of services for the transport of passengers, architecture, and modern styles);
10. An analysis on commercially available, suspension elements in railways, designs of eddy current brakes in railways, the use of seat belts and airbags in aircraft;
11. A project management methodology.

Plans of the High-speed Transport Complex Design Office for 2023-2024:

1. Validation and verification of the TS No. 1 project;
2. Development of solutions for transport complexes for targeted projects (Sweden, Israel, Ukraine, El Salvador);
3. Testing of the self-propelled chassis U4-362 within the framework of the complex;
4. Putting the self-propelled chassis and U4-362 into operation;
5. Management of projects implemented on the territory of EcoTechnoPark;
6. Implementation of an electrified track structure in the context of the VESKS No. 5 complex;
7. Testing the uCont in the context of the VESKS complex No. 5;
8. Development of the technical specifications for a new uFlash;
9. Development of the application of key basic solutions for military-technical cooperation - brakes, transmission, traction drive, bodywork. Experimental production and possible use for testing purposes on slower uPods;
10. Research work.



Photo of uFlash super-speed vehicle on the Rail in EcoTechnoPark, Belarus, 2021

3.1.3. Cargo Transport Complex Design Office

Chief Designer is Dmitry Tikhonov.

Cargo Transport Complex Design Office is a part of the General Designer's Office, which engaged in the development of string transport complexes designed to transport various types of cargo at speeds up to 150 km/h.

At the moment, the Design Office consists of 3 specialists:

Chief Designer of the Cargo Transport Complex and 2 Engineers.

Cargo Transport Complex Design Office is working in the following areas:

1. Design support for the existing facilities at EcoTechnoPark and the UAE;
2. Controlled operation and accumulation of a knowledge base on the transport complexes with ring traffic;
3. Development of prospective areas: formation of the technical appearance of the test sections, analytical calculations confirming the viability of the development, and analytics to determine the cost of 1 km of the track string-rail overpass;
4. Development of a test bench for demonstration and testing of hinged uPods;
5. Development of a map of the loading and unloading process for a uPod;
6. Development of a project of "uPort" Transport and Infrastructure Solutions that combine the "Sea Container Port", a logistics container hub - "dry port" (uHub);
7. Patenting of the research information to improve the quality of developments;
8. Participation in the development of organization standards and business processes;
9. Study and search for potential projects.

Achievements of the Cargo Transport Complex Design Office include:

1. Finished tests of the traction station of the transport complex with ring traffic (U4-100 - unitrans);
2. Modified uPod uTruck U4-131 to obtain the required value of insulation resistance;
3. The stage of product troubleshooting and the initiation of design improvements as part of the current repair of the process equipment of the complex (loading and unloading terminal gate);
4. SCADA was debugged for remote control of route tasks of a single U4-131 uPod during demonstration runs;
5. Bringing of prototype models U4-100 "uTrans" and U4-131 "uTruck" into operation.
6. Participation in the controlled operation and the accumulation of a knowledge base on the transport complexes with ring traffic (U4-100 - uTrans), measurements of the pressing forces of the wheel sets at various sections of the trajectory of the body tape;

7. The technical tasks were developed at the testing site for the following:

- a. hinged uPods (approved / archived);
 - b. suspended uPods (without approval/draft document developed);
 - c. mounted and suspended uPods (in progress).
8. Formation of solutions based on the suspended uPod uCont for the transportation of maritime ISO containers;
9. Preparation of a technical proposal for the basic product "uTrans Transport and cargo complex with ring traffic, modification 2".

Plans of the Cargo Transport Complex Design Office for 2023-2024:

- 1. Formation of a technical proposal and design support for the project "uSky transport system for Aljada in Sharjah" (Feasibility Study);
- 2. Completion of the "design" stage and implementation of test site No. 2 within the framework of the "uSky Test & Certification Center in the Emirate of Sharjah, United Arab Emirates" facility;
- 3. Entering the design implementation in the direction of transport and cargo complexes with continuous ring traffic - uTrans;
- 4. Formation of basic commercial offers and presentations for the cargo solutions (uCont, uTrans, uTruck).



Visualization of the uST container cargo transport line using uConts

3.1.4. Engineering Design Team

The Head of the Group is Alexander Kulai.

The Engineering Design Team is a part of the General Designer's Office.

It is engaged in the technical design of rolling stock.

At the moment, the Engineering Design Team consists of 3 specialists:

Team Leader and 2 Specialists in the field of industrial design and materials technology.

The Engineering Design Team is working in the following areas:

1. Draft study according to the requirements of the upper level, visualization of illustrations for agreement, definition of the general concept;
2. Conceptual design, proposal of design solutions, creation of a theoretical 3D model of the vehicle;
3. Design of uPods, creation of a model in a single space of the designed vehicle;
4. Design of interiors and exteriors of uPods with the conversion to other software for related departments;
- 5. Participation in R&D:**
 - a. Review of patent and literary sources on the topic, as well as world experience;
 - b. Conducting assessments of ergonomics. Development of patterns. Using the obtained data in practice.
6. Creation of unmanned aerial vehicles: research, creation of a knowledge base on aerodynamics, modeling;
7. Development of models and design proposals upon the request: souvenirs, scale models - SW Plant, Astroengineering Technologies LLC;

Achievements of the Engineering Design Team include:

1. The design of the exterior and interior of the uBus U4-212-01 uPod;
2. The design of the exterior and interior of the uBus U5-543-04, 3D models of the exterior and interior;
3. uCont uPod exterior design, 3D exterior model;
4. Development of additional solutions for the design of the exterior and interior of the uLight, creation of a 3D model of the interior;
5. Preparation of vehicles 3D model illustration for advertising and marketing activities of related departments;
6. Conceptual design: creation of additional design proposals for interior decoration of vehicles in various colors and using various finishing materials;
7. A number of models of uPods (VTS, UAV, UVR) were prepared for a wind-tunnel test;
8. The design of souvenir products.

Plans of the Engineering Design Team for 2023-2024:

1. Simulation of an unmanned aerial vehicle;
2. Planned work on current projects (corrections of the 3D model, preparation of models for wind-tunnel tests blowdowns, validation);
3. Conceptual design of uPods (additional design solutions for the designed rolling stock, as well as the search for forms and solutions, taking into account modern trends, identifying novelty);
4. Preparation of materials for the start of the registered R&D;
5. Development of a brand concept project in the design of rolling stock.



Employees of the Engineering Design Team at work, Minsk, Belarus, 2021

3.2. Transport Overpass Department

The department is engaged in the development of technical solutions in the field of designing transport overpasses, application of the decisions made in the form of design documentation.

The Department consists of:

1. Transport Overpass Design Office
2. Infrastructure Equipment Design Office
3. Tooling Design Office
4. Tooling and Test Equipment Control Systems Design Office
5. Technical Documentation Design Office
6. Design and Technological Division

The department consists of 38 employees.

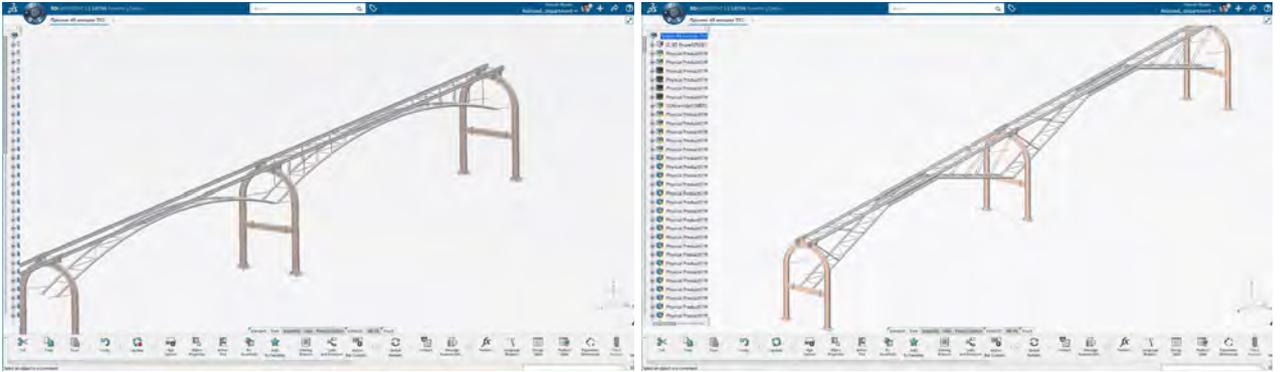
Department's tasks: development of design documentation for transport overpass facilities, infrastructure equipment, and accessories. Development of installation technology and wiring diagrams for the construction of transport overpasses. Development of operational documentation for transport overpasses, infrastructure equipment, and accessories.

Division's plans: implementation of track structures at the facilities in the Republic of Belarus and in the UAE (TU4, TU2, line 7, VESKS No. 5, etc.).

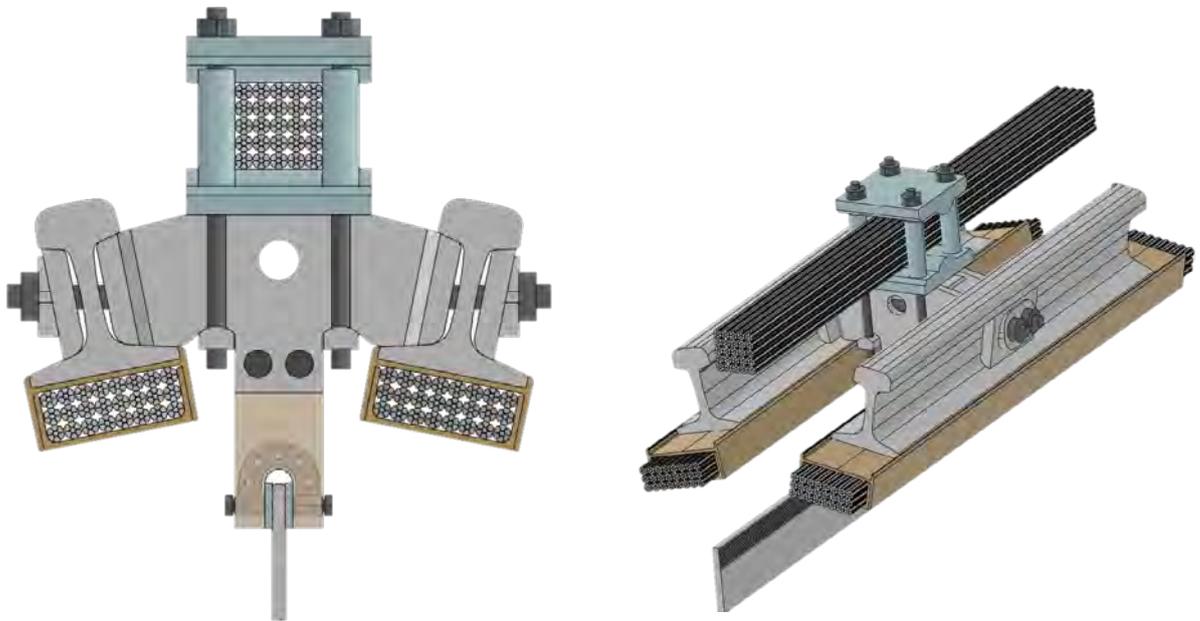


Maryina Gorka / Belarus / EcoTechnoPark Demonstration & Certification Center, Belarus, 2021

3.2.1. The Latest Achievements



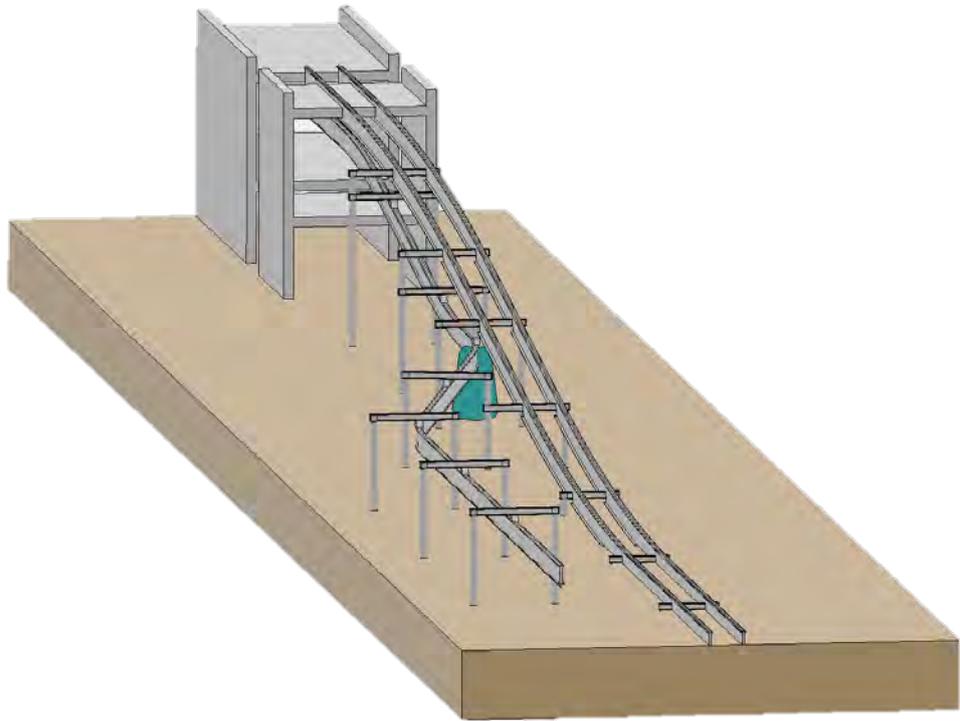
Semi-rigid and Arched types of the track structure for TU2 (line 6)



The layout of a new type of track structures, including the R50 rail



Dead-end section TU4 in Sharjah



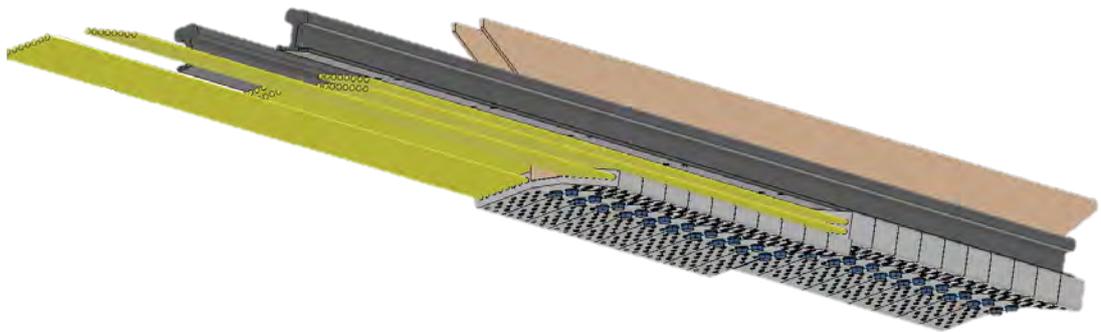
The preliminary layout of the unstressed section for the U2 line in Sharjah, UAE



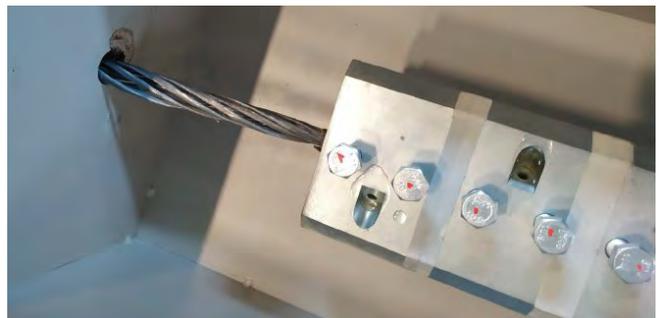
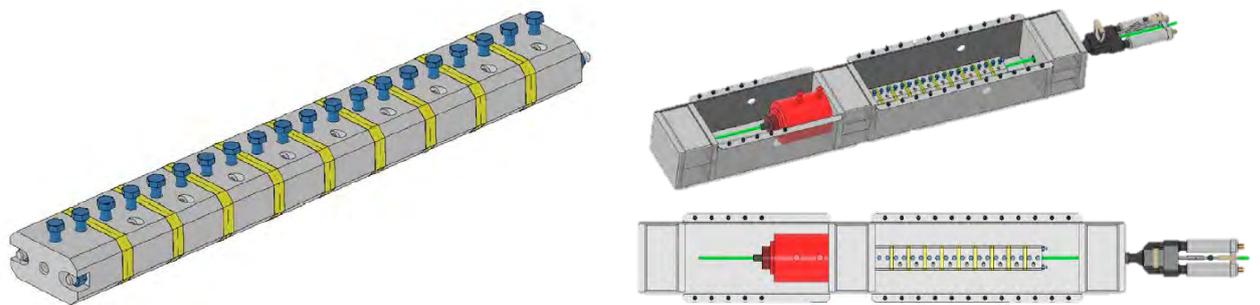
TU4 line installation technology in Sharjah, UAE, 2022



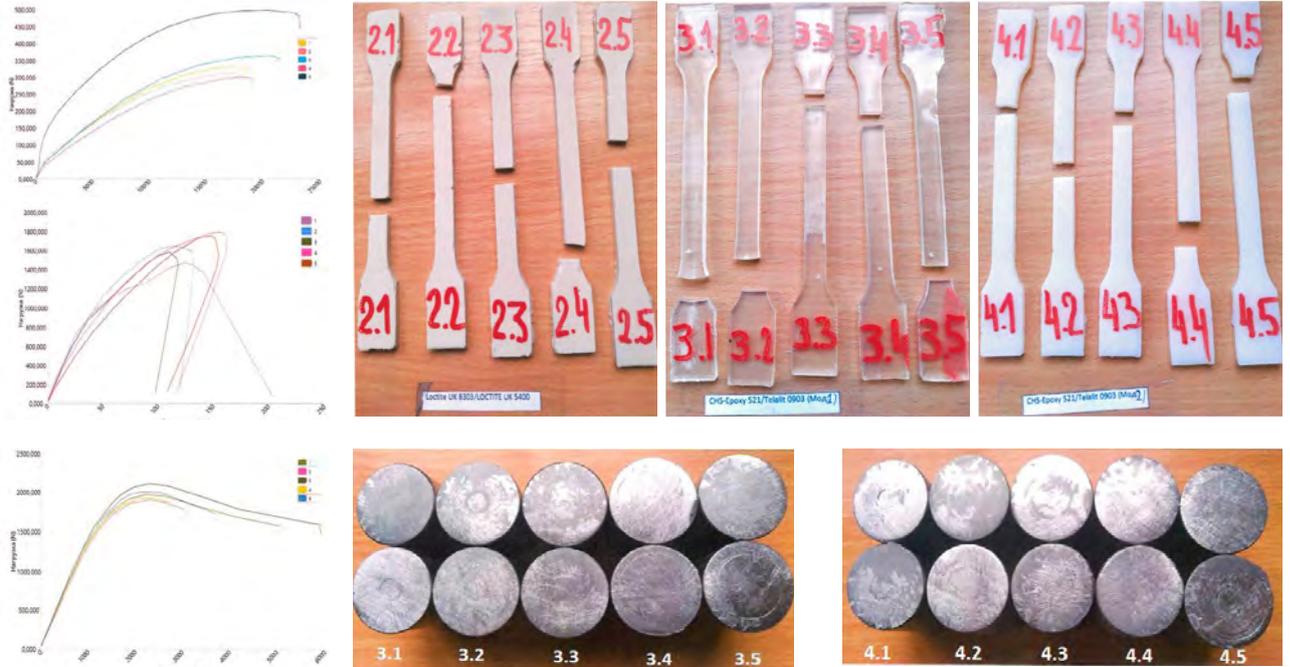
uLight line installation technology, Belarus, 2022



The layout of anchor assemblies, with the use of clamping screws for fastening the ropes.



Steel cables testing equipment, Minsk, Belarus, 2022



*A series of tests on structural adhesives.
Test sampling photos, Minsk, Belarus, 2022*



*Fabrication and testing of carbon fiber specimens.
Carbon cables testing equipment, Minsk, Belarus, 2022*

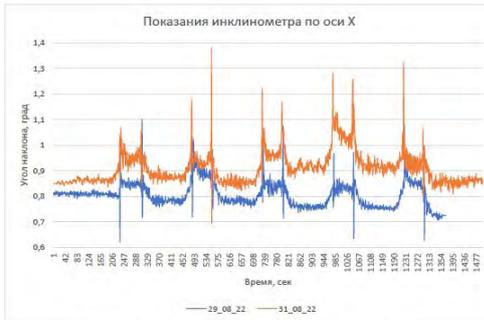
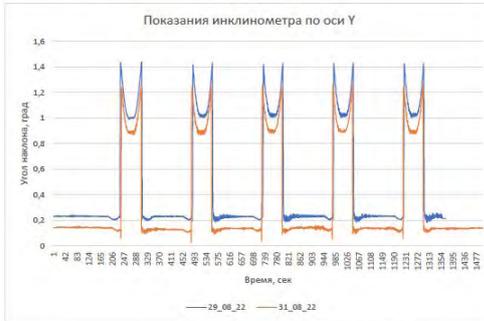


Рисунок 3 – Графики изменения угла наклона путей по оси X



Checking the performance of the test monitoring system in the UST Test & Certification Center, Minsk area, Belarus, 2022



2	Дубков С.А.	A6.04.0003 (отчет о разработке)	02.03.2022
		A6.04.0001 (отчет о разработке)	02.03.2022
3	Коташевич А.В.	A6.04.0004 (отчет о разработке)	02.03.2022
		A1.01.0006 (отчет о разработке)	02.03.2022
4	Руткевич А.В.	A6.03.0117 (отчет о разработке)	02.03.2022
		A5.08.0009 (отчет о разработке)	02.03.2022
5		A6.04.0002 (отчет о разработке)	02.03.2022
6	Тазиров М.Н.	A6.03.0042 (отчет о разработке)	02.03.2022
		A6.03.0026 (отчет о разработке)	02.03.2022
7	Фелоренко Д.Н.	A6.99.0012	22.02.2022
8	Дорож Д.Н.	DIN 6319 D	11.07.2022
		DIN 6319 C	11.07.2022
9	Дедко С.Д.	A6.03.0087 (отчет о разработке)	02.03.2022
		P141.85010.7100.000 (отчет о разработке)	02.03.2022
		P141.85010.7200.000 (отчет о разработке)	02.03.2022
		P141.82020.7200.000 (отчет о разработке)	02.03.2022
		A1.06.0005P3 (Изм. 1)	11.02.2022
		A1.02.0006 (тех. задание)	22.04.2022
		P141.72010.5100	10.05.2022
		3.6.99.0072	30.05.2022
		A1.02.0006	12.08.2022
		A5.08.0013 (Изм. 1)	29.08.2022
10	Ковширко А.В.	P141.42010.7100.000	08.02.2022
		P141.71101.2100.000	17.02.2022
		P141.42010.7102.200 (Изм. 1)	25.02.2022
		P141.42010.7104.000 (Изм. 1)	25.02.2022
		3.6.03.0162	07.06.2022
		3.6.04.0010	07.06.2022
		3.6.03.0165	07.06.2022
		P141.31100.4013 (Изм. 1)	08.06.2022
11	Кочетов О.В.	A6.03.0119	30.03.2022
		3.6.99.0068	07.06.2022
12	Мурог И.А.	3.6.03.0166	21.06.2022
		P141.42010.7104	08.02.2022

The documentation on the lines TU4 and uLight was transferred to the archive. On the photo is the uST technical archive, Minsk, Belarus, 2022

3.3. Test Center

The (Test Center) is an independent structural unit that reports directly to the CEO.

The management and organization of the activities the Test Center activities is carried out by the Deputy General Director for Testing - Head of Test Center (hereinafter referred to as the Head of Test Center).

The (Test Center) has 40 employees, of which 10 are test engineers, 21 engineers of appropriate qualifications, 4 design engineers, 5 technical specialists.

The structure of Test Center has the following Offices, divided into areas of activity:

- 1. Field Testing Office** carries out field tests of experimental and serial products; preparation of programs and test methods, and execution of reporting documentation based on test results;
- 2. Bench Testing Office** carries out bench tests of experimental and serial products; preparation of programs and test methods, and execution of reporting documentation based on test results;
- 3. Transport Overpasses and Structures Testing Office** carries out testing of transport overpasses and structures; preparation of programs and test methods, as well as execution of reporting documentation based on test results; monitoring the technical condition of commissioned and operated transport overpasses and structures; incoming quality control of the components of transport overpasses and structures upon delivery; and metrological support of the Company's activities;
- 4. Tests Preparation and Organization Division** carries out organization of testing of experimental and serial products, preparation and maintenance of test objects in good condition; installation of tested products, commissioning, adjustment and adjustment of equipment and measuring instruments; implementation of technical and organizational support of tests, ensuring safety during their conduct;
- 5. Management Systems Standardization and Certification Division** carries out development, implementation and maintenance of documents of the quality management system (QMS), the environmental management system (EMS) and the health and safety management system (HSMS); certification of the Company for compliance with qualification requirements in the field of design and construction; work under contracts concluded with third-party organizations on issues of standardization, certification and attestation;
- 6. Product Standardization and Certification Division** carries out development and updating of technological regulations in the field of technical regulation and standardization, incl. test and measurement methods; organization, provision and conduct of certification tests and conformity assessment in the form of certification or declaration of vehicles and their individual assembly units, parts and assemblies, as well as other products within the framework of national and international product conformity assessment systems;

7. **Compliance Assessment and Standardization Team** carries out control of compliance in the design documentation with the requirements, rules and norms established in the technological regulations;
8. **Rolling Stock Technical Service Office** carries out maintenance and repair of string vehicles; development of technological processes for technical maintenance and repair of the life cycle of vehicles as part of the transport complex; design of technical service facilities; selection of tools and equipment; calculation of operating costs of vehicles; study of technical and operational characteristics of units and assemblies of the vehicle; fixation and analysis of data on the reliability of vehicles in terms of safety, maintainability and persistence at the stages of the life cycle (tests; warranty period; intended use).
9. **Testing Equipment Design Office** carries out development and design of test equipment; development of operational documentation for test equipment; work on certification and commissioning of test equipment; development of devices for maintenance of Test Center.



Test and Certification Center, Maryina Gorka / Belarus / EcoTechnoPark, 2022

3.3.1. The Latest Achievements

For the period from 2021 to the present, the Test Center has completed:

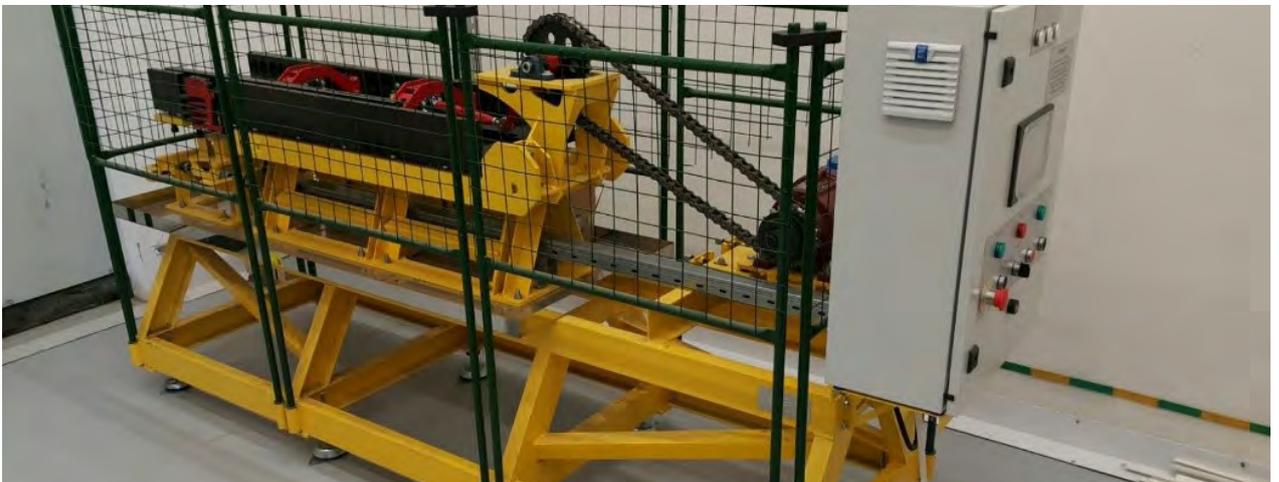
- The validity period of the certificates of the following systems operating in Unitsky String Technologies Inc. has been extended: quality management (QMS), environmental management (EM) and health and safety management (HSMS) systems according to national and international standards;
- Certificate of Conformity was obtained for the right to perform the functions of a general designer for objects of 2-4 categories of complexity;
- The regulatory framework for the construction of rail vehicles has been developed;
- Technical requirements for the development of a control and monitoring system for the movement of string rail vehicles have been established;
- Requirements for the design and calculation of string rail transport overpasses have been established;
- The following test equipment was designed: a device for strain measurement of vertical loads, devices for testing load-bearing ropes, an eddy current retarder test stand, a dead-end brake device, and a movable brake device.



High-speed vehicle test bench, Minsk, Belarus, 2022



Inter-car connections test bench, Minsk, Belarus, 2022



Bench for testing the track blocking mechanism, Minsk, Belarus, 2022

3.3.2. Development Plans

The main tasks of the Test Center for 2023-2024 are:

- Preparation of a regulatory framework for the design of string transport complexes;
- Obtaining a certificate for the documentation of an industrial design of a rail vehicle U4-212-01;
- Obtaining documents confirming the safety of a rail vehicle U4-212-01 in the accredited EU Bodies;
- Testing the rail vehicle U4-212-01 in terms of purpose and safety;
- Acceptance and commissioning of a uLight Transport Complex located in Belarus;
- Extension of validity of QMS, HSMS and EMS certificates according to national and international standards;
- Extension of the existing certificate of conformity for the right to provide engineering services for the integrated management of construction activities and technical supervision in construction at facilities of 2-4 categories of complexity;
- Obtaining certificates of conformity for the right to develop project documentation and perform the functions of a general designer for construction projects of the 1st (the highest in the Republic of Belarus) category of complexity;
- Expansion of the area of accreditation of the testing center;
- Design of various testing and measuring equipment for uPods and their composite systems of assemblies and parts (for example, a measuring wheel for uPods, a battery test stand, a weight measuring stand, etc.).



The photos show different tracks located at the EcoTechnoPark at Minsk area, Belarus, 2021-2022

3.4. Rolling Stock Department (RSD)

Department designation and affiliation:

- Creation of a high-quality innovative product that is needed tomorrow;
- Development of unique (breakthrough) technical solutions;
- Providing passengers with high-quality and safe transport services;
- Creation of a close-knit team of professionals to implement tasks of any level of complexity

The department reports to the General Designer A. Unitsky.

the Department consists of 52 people:

- Head of RSD head - 1;
- RSD deputy for the Head - 1;
- Manager - 1;
- Head of Design Office/Office - 6;
- Leading design engineer - 24;
- Leading process engineer - 1;
- Design engineer of the 1st category - 11;
- Design engineer of the 2nd category - 4;
- Design engineer - 3.

Purpose and main tasks of the unit are:

- Ensuring the design pace in accordance with the requirements of today;
- Product development in strict accordance with the required framework (ISO, EN, GOST, UDDS);
- Conducting and supporting the full product development process;
- Teamwork at any level, tuned only to the result;
- Systematized professional development of specialists, as well as acquisition of new competencies.



uCont Truck Assembly Workshop, SW Plant, Minsk, Belarus, 2022

3.4.1. Vehicle Layout Design Office

Part of the **Rolling Stock Department**

Participation at all stages of the product life cycle

The Office consists of 5 people:

- Head of the Office - 1;
- Lead Design Engineer - 4.

Purpose and main tasks of the unit are:

- Performance of search, design, and research works;
- Project management and support at all stages of the product life cycle;
- Development of conceptual solutions;
- Coordination of design work in the direction during the entire life cycle of the product;
- Formation of technical requirements and functions for rail vehicles (uPods);
- Development of technical solutions, appropriate layout schemes, as well as selection and justification of uPods design;
- Formation of the technical image of uPods;
- Development of terms of reference for uPods;
- Performance of design (preliminary) calculations;
- Development of organizational and technical documentation;
- Development and maintenance of a general digital layout of uPods.



uCar Maintenance, SW Plant, Minsk, Belarus, 2022

3.4.2. Chassis Design Office

Part of the **Rolling Stock Department**

Design of traction modules that ensure the movement of vehicles that meets the technical requirements specified by the customer.

The Office consists of 12 people:

- Head of the Office - 1;
- Leading design engineer - 8;
- Design engineer of the 1st category - 2;
- Design engineer of the 2nd category - 1.

Purpose and main tasks of the unit are:

- Development of the concept of power traction drive and design of traction bogies of vehicles;
- **Development of components and systems (determination of design, layout, calculations, modeling, and issuance of design documentation) such as:**
 - Frame;
 - Suspension;
 - Wheels;
 - Emergency and traction coupling devices;
 - Cooling system;
 - Brake system;
 - Hydraulic system;
 - Pneumatic system;
 - Auxiliary systems;
- Maintenance of uPods production;
- Initiation and support of uPods tests.



uCont chassis assembly at manufacturing plant, Minsk, Belarus, 2021

3.4.3. Bodies Design Office

Part of the **Rolling Stock Department**

Development of uPods passenger modules and its systems that provide safe and comfortable accommodation for passengers during movement, as well as exterior and interior.

The Office consists of 13 people:

- Head of the Office - 1;
- Leading design engineer - 7;
- Design engineer of the 1st category - 5.

Purpose and main tasks of the unit are:

- **Designing units and systems of vehicle bodies, such as:**
 - Vehicle frame;
 - Glazing;
 - Doors;
 - Interior;
 - Seats;
 - Handrails;
 - Microclimate system.
- Design of vehicle traction module covers.
- Assembly support of the developed products.
- Testing support of developed systems.



Bodies Design Office

3.4.4. Electrical Equipment Design Office

Part of the **Rolling Stock Department**

Development of power supply systems, control and auxiliary electrical equipment of uPods.

The Office consists of 10 people:

- Head of the Office - 1;
- Leading design engineer - 5;
- Design engineer of the 1st category - 2;
- Design engineer of the 2nd category - 1;
- Design engineer - 1.

Purpose and main tasks of the unit are:

- Development of electrical circuits;
- Installation of electrical equipment on vehicles;
- Development of design documentation for electrical installations;
- Tracing of electrical communications (power wires, on-board network, interfaces, etc.);
- Development of design documentation for bundles and cables;
- Development of concepts and activities on ensuring electrical and fire safety, as well as electromagnetic compatibility of vehicles;
- Development of technical requirements for units and systems, introduction of new components and systems of electrical equipment;
- Maintenance of assembly, commissioning and testing of vehicles.



uPod "Carat" located at assembly area of the manufacturing plant, Minsk, Belarus, 2022

3.4.5. Functional and System Analysis Office

Part of the **Rolling Stock Department**

Using the principles of system engineering, it carries out structural and functional modeling, development of scenarios and work algorithms, uPods security analysis, as well as simulation modeling of uPods systems.

The Office consists of 6 people:

- Head of the Office - 1;
- Design engineer of the 1st category - 2;
- Design engineer of the 2nd category - 2;
- Design engineer - 1.

Purpose and main tasks of the unit are:

- Implementation of a system-engineering approach in the development of vehicles (more complete accounting and work with requirements, structural and functional modeling)
- Cause and effect analysis of failures (D-FMEA methodology)
- Analysis of the occurrence of failures of complex systems (building FTA fault trees)
- Risk analysis and assessment (methods of HAZID and HAZOP analysis)
- Development of scenarios and algorithms for the operation of vehicle systems
- Simulation modeling and analysis of processes in vehicle systems
- Participation in the study of the vehicle interacting with other elements of the transport complex



Participation in an open seminar involving Dr. Anatoli Unitsky, Minsk, Belarus, 2021

3.4.6. Operation Documentation Office

Part of the **Rolling Stock Department**

Detailed study and creation of operational documentation in sufficient volume and in a format convenient for the consumer.

The Office consists of 3 people:

- Head of the Office - 1;
- Leading process engineer - 1;
- Design engineer - 1.

Purpose and main tasks of the unit are:

- Development of operational documentation: statements, instructions, catalogs, operation manuals (OM) for products developed in the RSD. Both a paper type of documents and an interactive format are being developed;
- Development of interactive operational documentation (IOD);
- Studying the issues of reducing the number of current repairs and reducing maintenance to scheduled preventive works to minimize unplanned costs;
- Development of maintenance processes.
- Tasks of the technological direction:
- Development of product designs for manufacturability.
- Carrying out experimental work and participation in the development of programs for CNC equipment together with the manufacturer to master new technological processes for production of parts and assembly units.



At the head office in Minsk, Belarus, 2022

3.4.7. The Latest Achievements

Project uBus U4-212-01

1. Design support for the assembly of uPods, commissioning, etc.
2. Development and issuance of design documentation for changeable nodes (search for the optimal solution).

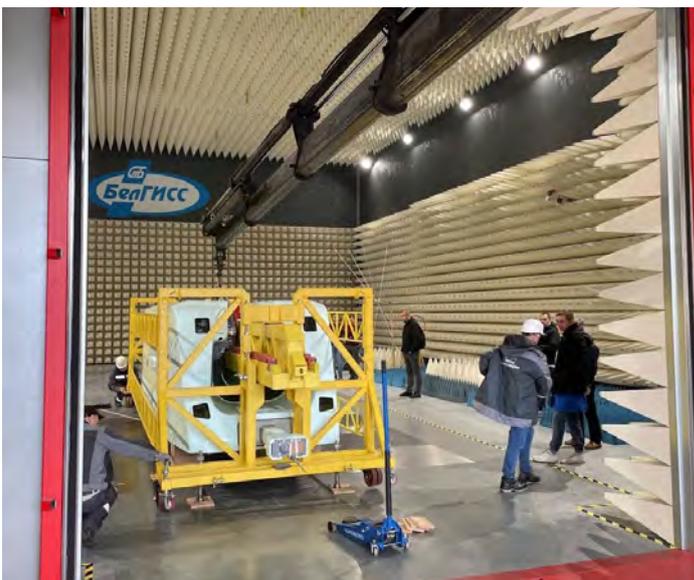
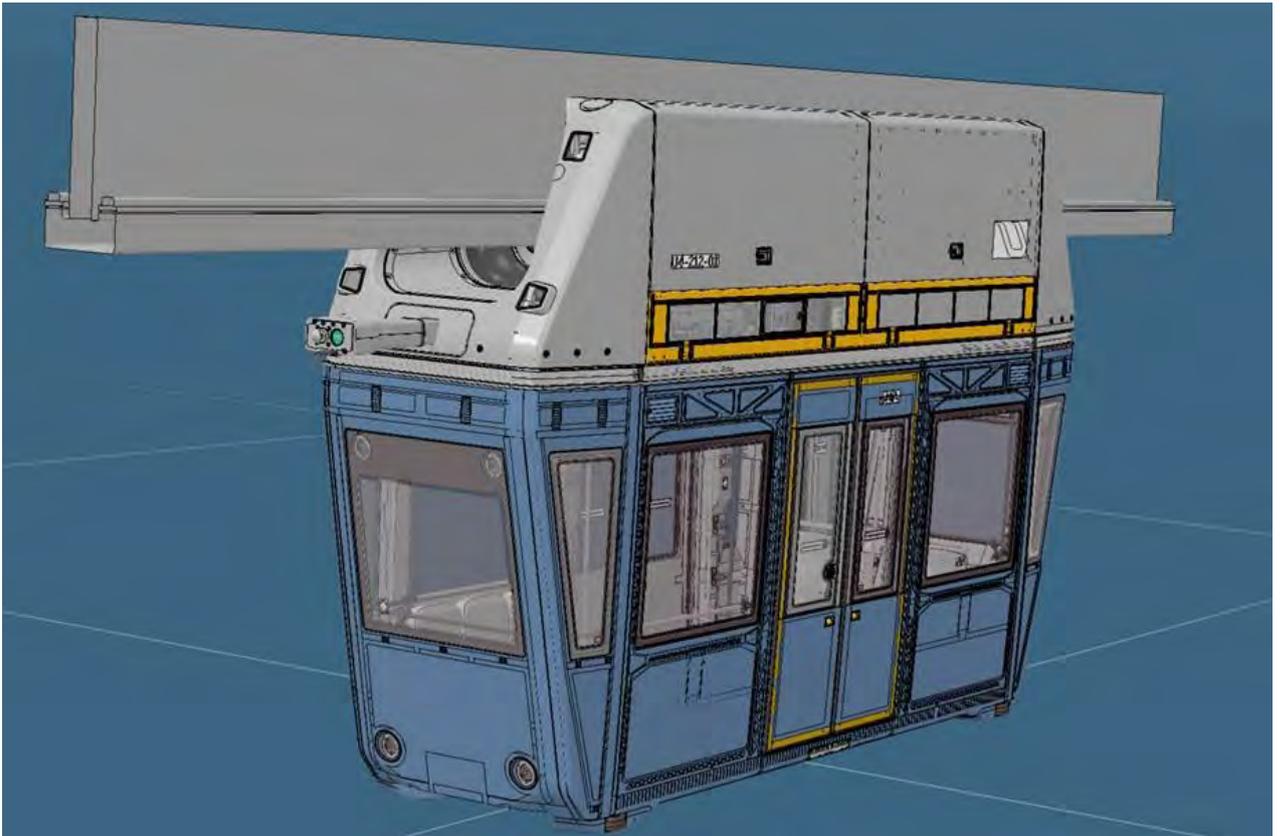
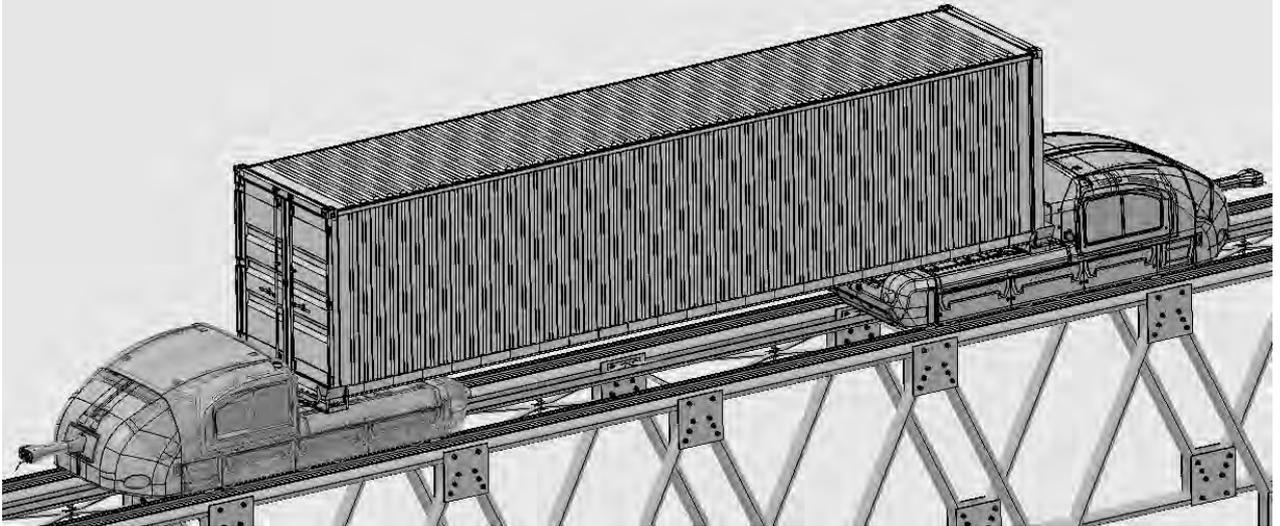


Photo of uBus at the logistic hub of manufacturing plant, Minsk, Belarus, 2022

Project uCont U4-192-21:

1. Development and issuance of design documentation for changing the technical requirements (TR) to uPods and SS (change of uPods design for ground operation and for operation of uPods at the second level of electrified BЭCKC5)
2. Design support for uPods assembly.



uCont U4-192-21 visualization

Project uBus U4-220-T2:

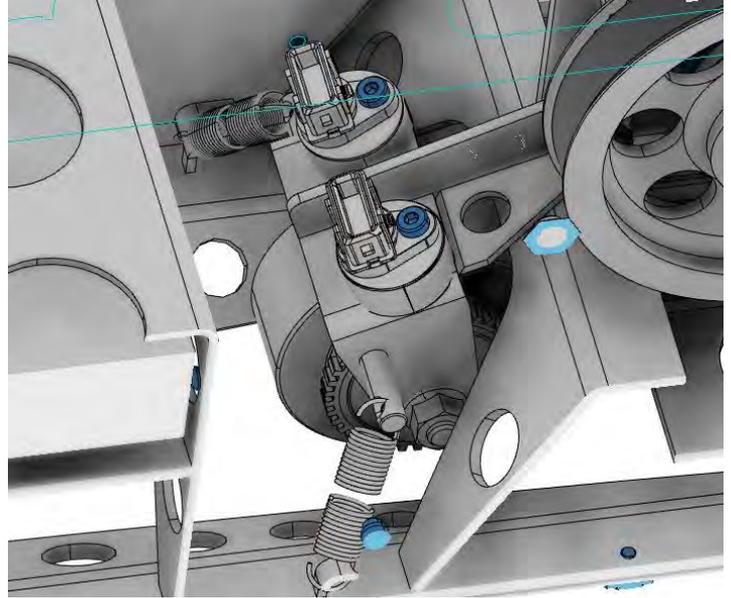
1. Development and issuance of design documentation for the modernization of the uPods for air suspension and an improved microclimate system.
2. Maintenance of uPods assembly.
3. Commissioning.
4. Installation of uPods on the track structure;
5. Maintenance of uPods tests on the track structure.



*uBus in the EcoTechnoPark Demonstration & Certification Center,
Maryina Gorka, Belarus, 2021*

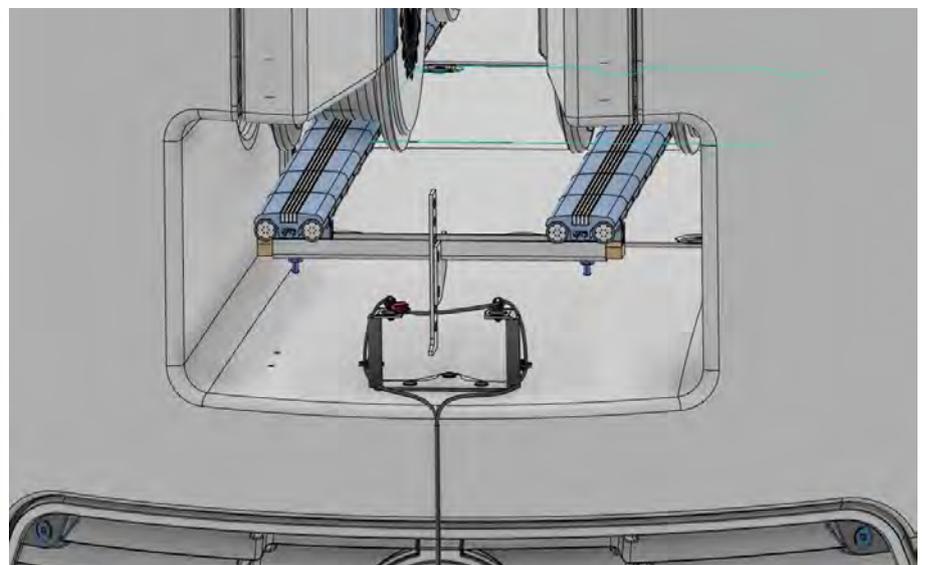
Project uWind U4-651:

1. Refinement of the indicator wheel;
2. Submission the design documentation for uWind U4-651 to the Archive;
3. Transfer of uPods for preliminary tests.
4. Modification of the operation manual for design improvements.



Project uLight U4-830:

1. Development and issuance of design documentation for variable nodes (search for the optimal solution);
2. Design support for the assembly of uPods, commissioning, etc.;
3. Development of safety equipment for commissioning at the substation;
4. Installation of uPods on the track structure;
5. Maintenance of uPods tests on the substation.
6. Development of the operation manual.



Refinement of the exhibition kit of uCar U4-430

1. Shipping to the UAE
2. Development of the operating manual



uCar U4-430 at the manufacturing plant, Minsk, Belarus, 2022

Project uBus U5-54304:

1. Pre-project study of uPods:

- Requirements for uPods;
- Description of the functions required for uPods, as well as uPods systems and mechanisms.

2. Draft study of uPods:

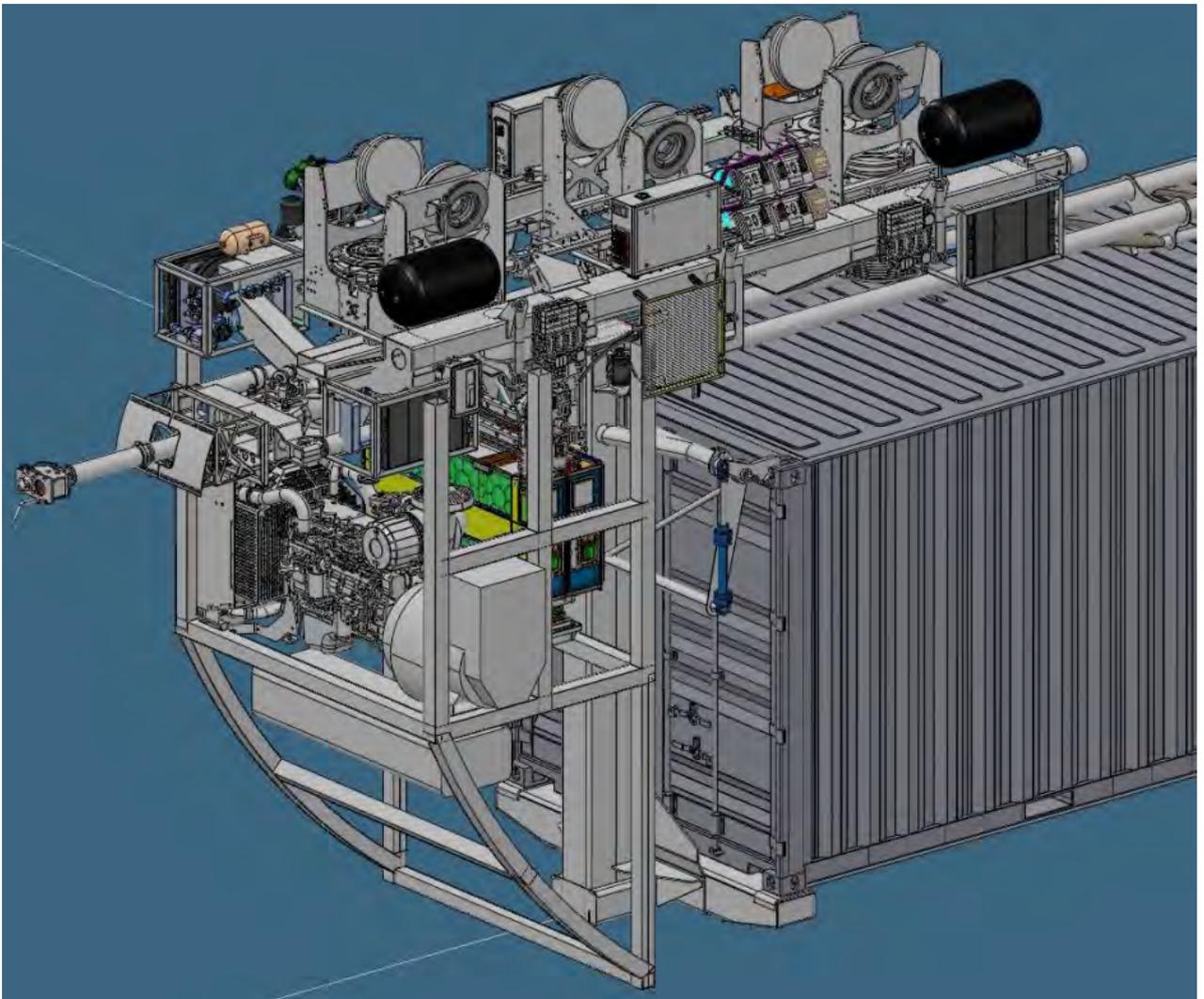
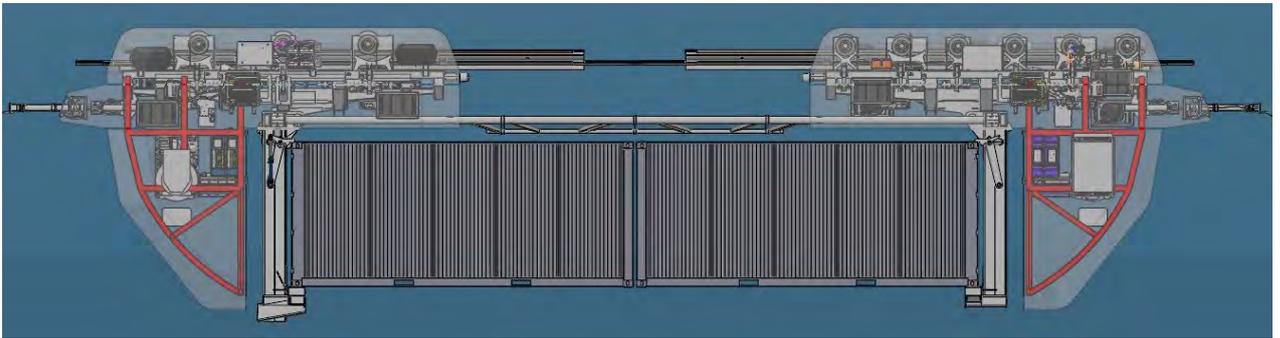
- Determination of overall dimensions, track and uPod body;
- Product design;
- Formation of the uPods technical appearance;
- Determination of the main technical characteristics of uPods;
- Traction-dynamic calculation of uPods;
- Selection of electric motors and energy storage;
- Preliminary design of the passenger module;
- Preliminary design of the traction module;
- Theoretical surfaces of external contours (preliminary);
- Development of a traction bogie for a rectangular pipe rail track structure;
- Development of a traction bogie for track structure with an inclined raceway;
- Development of a new concept of ABU with a screw actuator;
- Hazard accounting log and risk assessment in the interaction of uPods with track structure;
- Preliminary weight analysis;
- Tentative list of purchased components;
- Draft TOR (terms of reference) for uPods.



uBus U5-54304 scheme

Project uCont U5-24704:

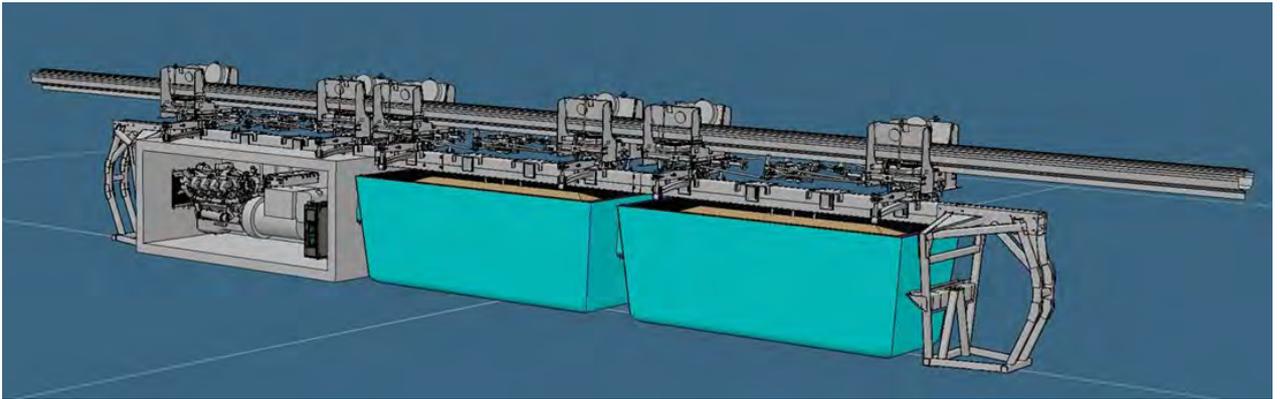
1. Pre-project study of uPods;
2. Draft study of uPods: (optional) development of a traction bogie from 6-axle to 3-axle (5t load per wheel).



Draft study of uCont U5-24704

Project uTruck U5-34504:

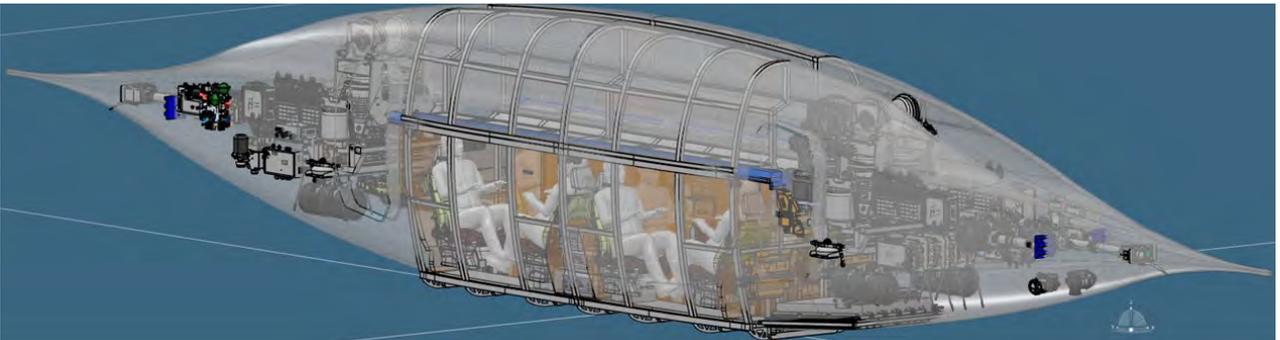
1. Pre-project study of uPods;
2. Draft study of uPods.



Draft study of uTruck U5-34504

Project uBus U5-74304:

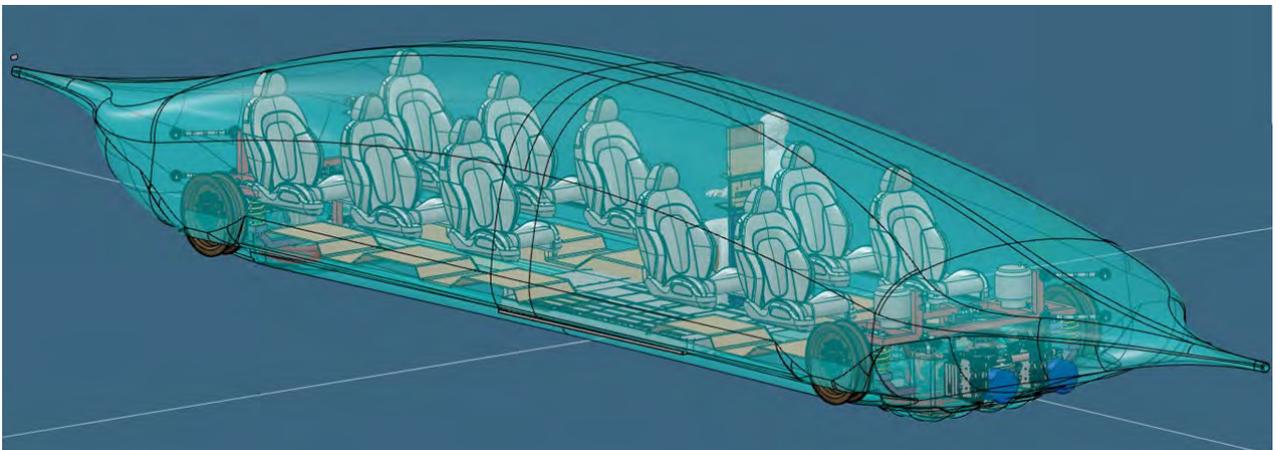
1. Pre-project study of uPods;
2. Draft study of uPods.



Draft study of uBus U5-74304

Project uBus U5-75304:

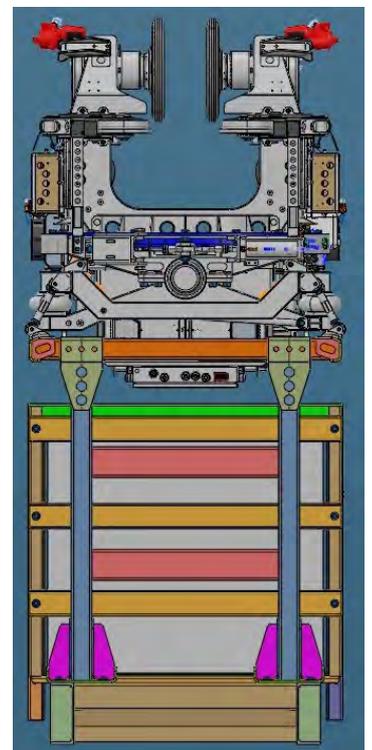
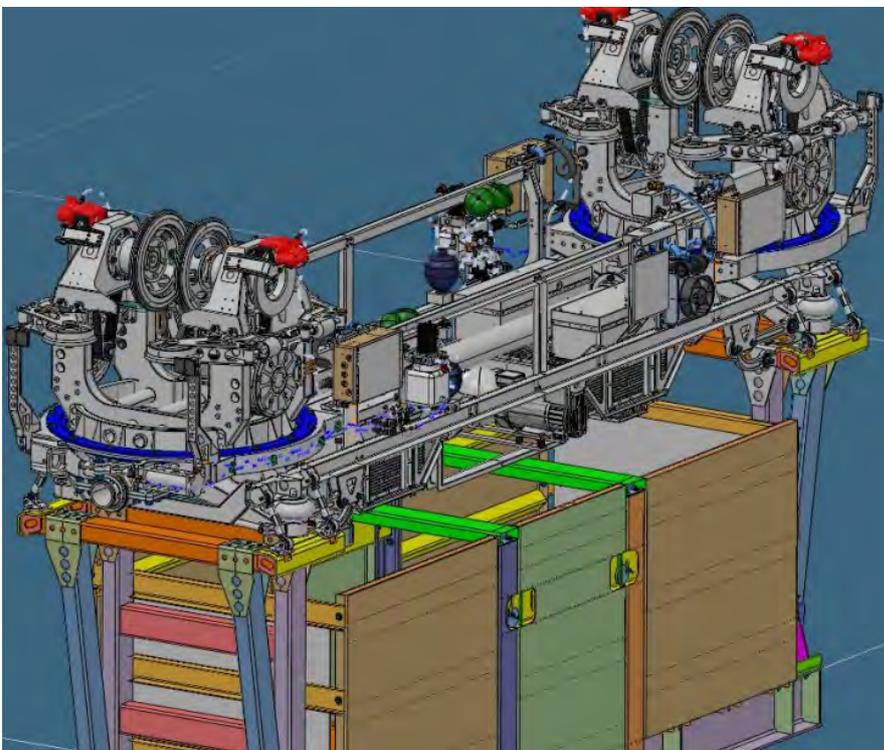
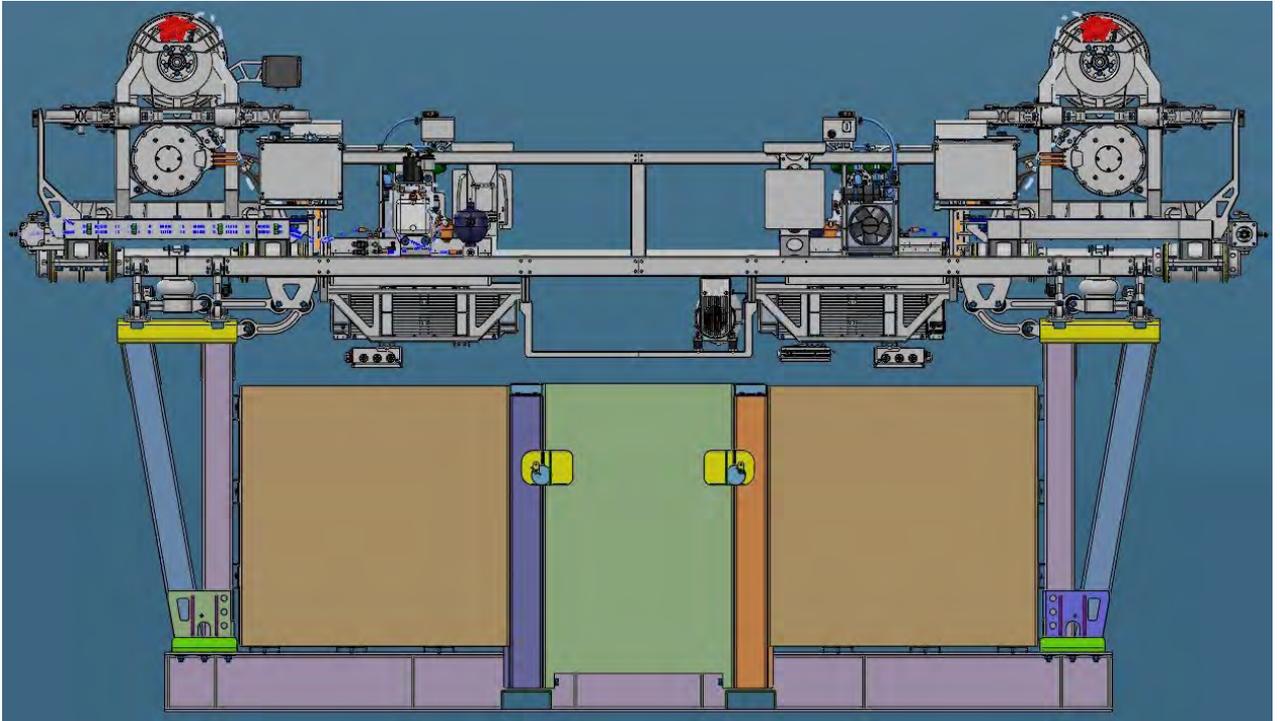
1. Pre-project study of uPods;
2. Draft study of uPods.



Draft study of uBus U5-75304

Project UVR 1.557.34300.0000.000:

1. Collection of data and requirements;
2. Pre-project study of uPods.
3. Draft study of uPods.
4. Development and issuance of design documentation.
5. Maintenance of uPods assembly.



Draft study of Mini-Mul

Maintenance of uCar U4-431-01 operation in the UAE;

1. Bleeding the cooling system, replacing the inverter, replacing the motor, restoring energy storage devices, repairing the rail cleaning system, restoring the charger, etc.
2. Completion of the operating manual.



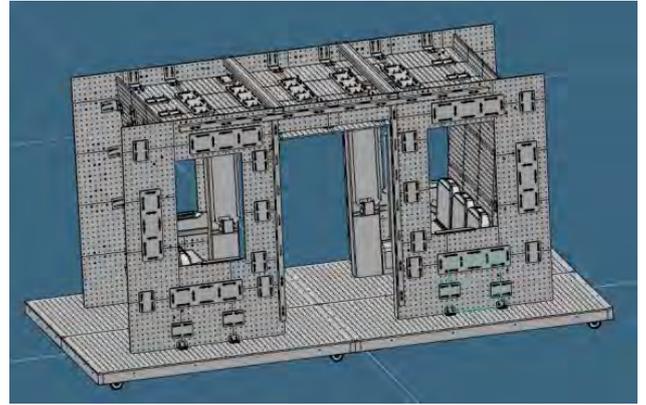
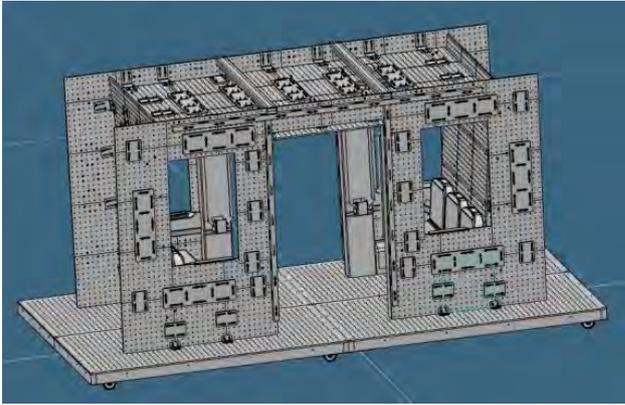
Cargo and Passenger line in the uSky Test and Certification Center, Sharjah, UAE, 2021

Operation support for uCont ERV-212 in the UAE;

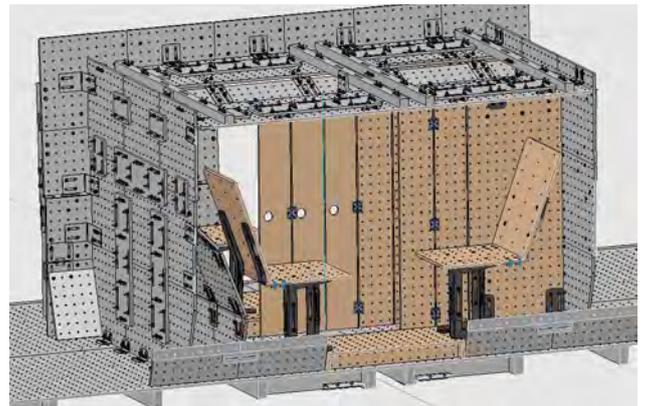
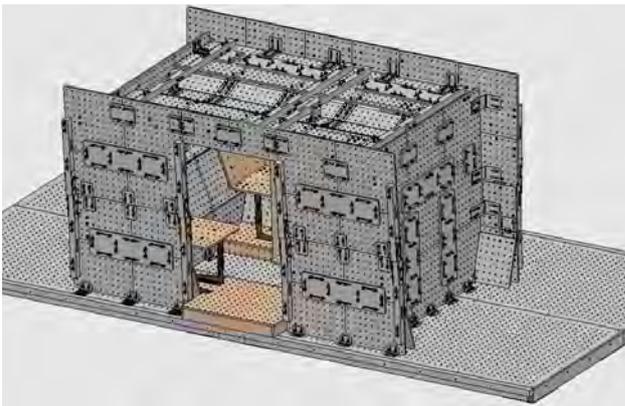
1. Bleeding the cooling system, replacing the inverter.
2. Development of an instruction manual.



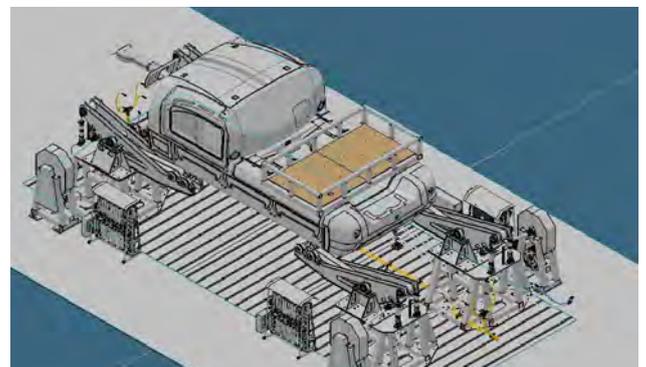
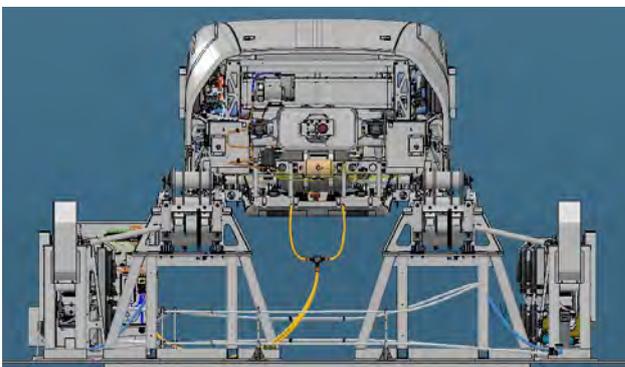
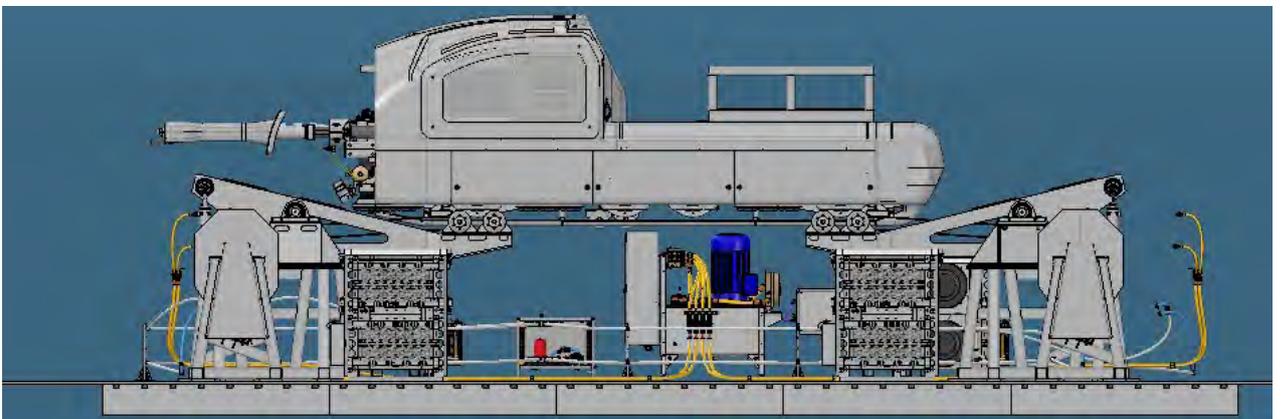
Cargo and Passenger line in the uSky Test and Certification Center, Sharjah, UAE, 2021



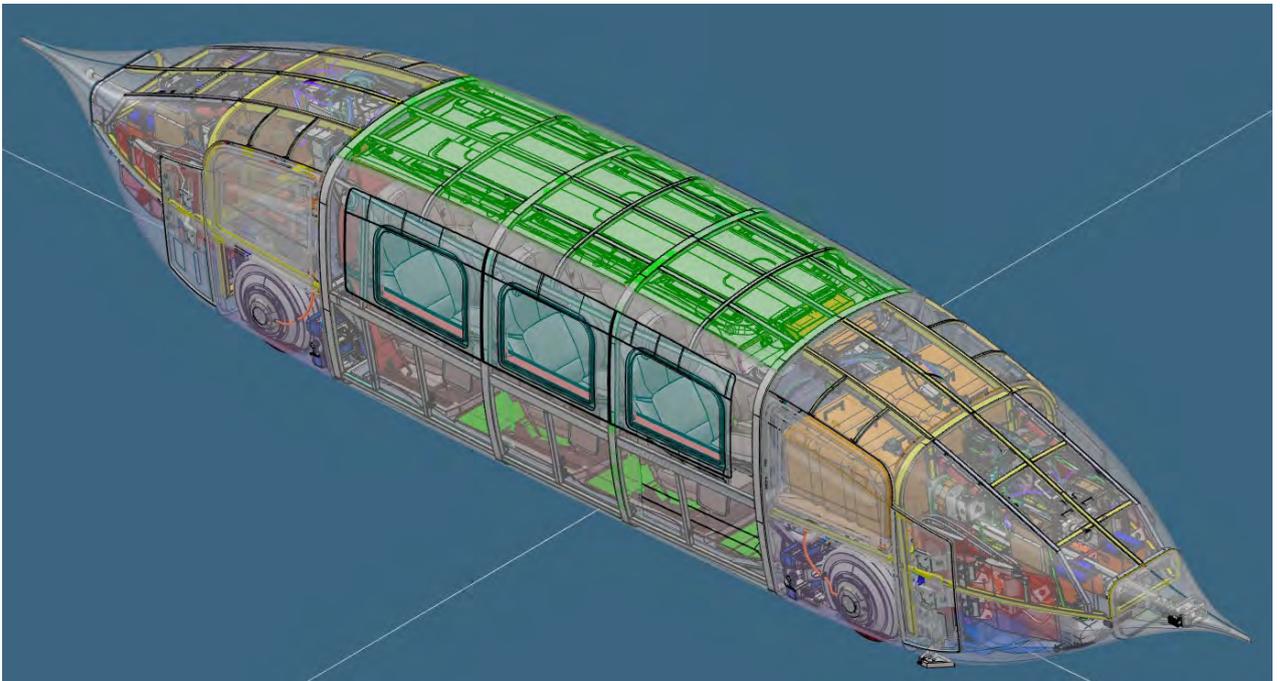
Development and assembly of a landing layout for uBus U5-54304



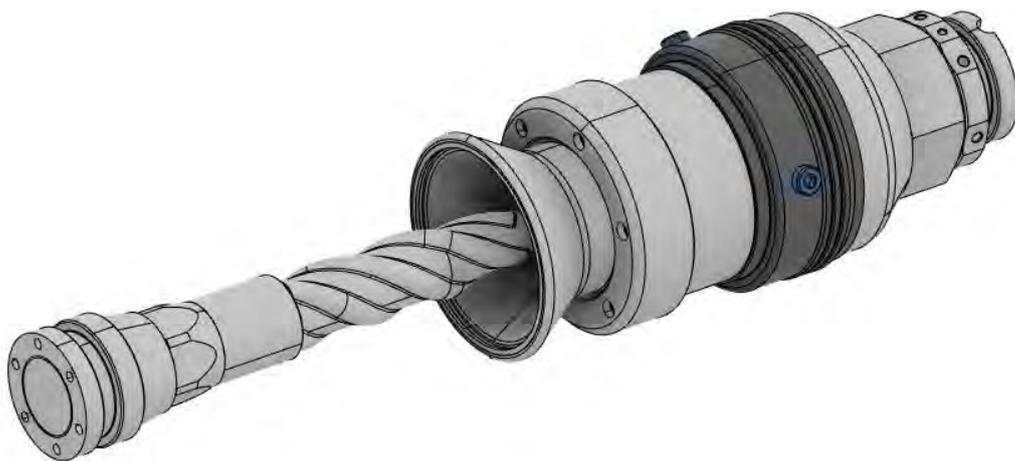
Development and assembly of a landing mock-up for uFlash U5-75304



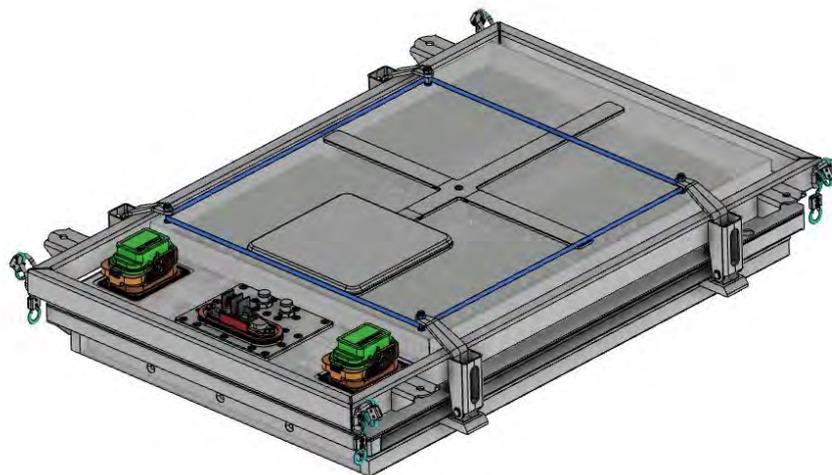
Development of the design documentation for the commissioning stand for uPods traction modules



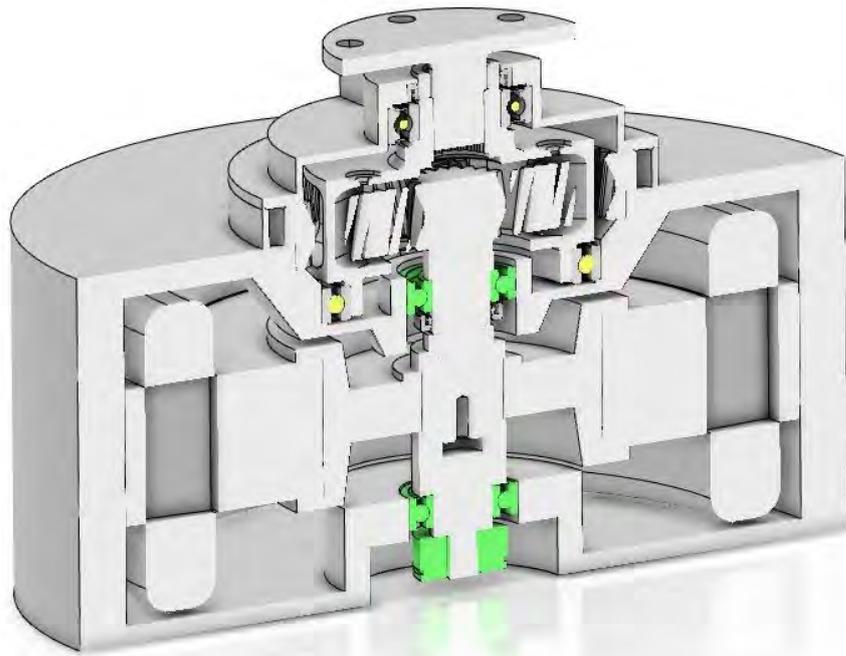
Project ERV-362: completion of the traction bogie and uPods suspension



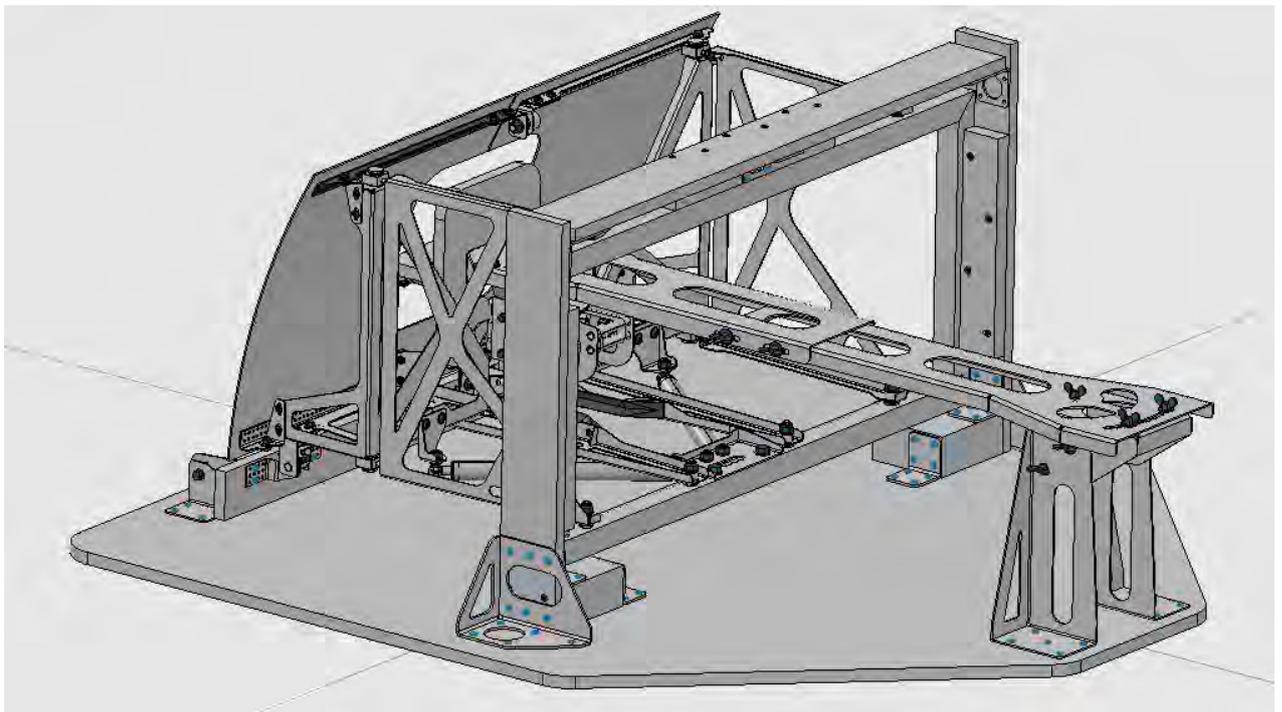
Development of a new concept for Automatic Towing Device (ATD) with screw actuator



Development of a drive reset test bench for the fifth generation uPods



Development of a geared motor for fifth generation vehicles



Development of a mock-up for testing automatic opening of the towing system doors



Design support for uPods operation in the ETP: uCar U4-430, uBus U4-210

Endurance testing of sliding plug doors

Sliding plug doors have passed the stage of life tests for 50,000 cycles. This duration was chosen to determine the frequency of routine maintenance work.

Development of the document “ConOps” (concept of operation)

The ConOps document describes the intent of the customer/management, as well as the characteristics of the system being developed from the customer’s or user’s point of view. ConOps precedes the TOR and may be the basis for writing it.

Expanding competencies in the field of risk assessment and simulation modeling.

Elimination of remarks and approval of documents on Revelator certification.

Developments of the Electrical Equipment Design Office

- Development of a unified advanced power distribution architecture using new components, such as: a “smart” high-voltage power distribution cabinet, and a bidirectional DC/DC converter.
- Development of a unified advanced 24 V power distribution architecture with a significant reduction in the number of fuses (from more than 150 to 12 on uPods) and electromechanical relays (from 40 to 5 on uPods). Application for power distribution of electronic switches or electronic fuses. Development of a technical requirements for a lithium 24 V buffer battery.
- Development of measures to ensure electromagnetic compatibility and successful passing of tests of the uBus U4-212-01 traction module for electromagnetic compatibility in accordance with the requirements of GOST and European regulatory documents for railway transport.

Transition to a new software platform for the development of operating manuals, which allows creating interactive operational documentation.

- The extensible XML markup language has been mastered, which allows to consider a document as a set of the united elements according to the sets of conditions;
- Templates of documents were developed for uniform execution of documents;
- The possibility of parallel work of users on modules when creating a common document was implemented;
- The separation of content from styling has been worked out : now the time is not wasted on document design;
- The algorithm of "One XML data source" was developed for various formats (PDF, HTML, WEB...);
- The ability to filter these documents by condition (product configuration) was implemented;
- The possibility of creating an electronic catalog of parts and assembly units with their visualization has been worked out;
- The possibility of creating multilingual documents has been worked out.

Руководство по эксплуатации

4.2 Мотор-колесо - назначение, состав и описание

4.2.1 Мотор-колёса предназначены для преобразования электрической энергии вырабатываемой ТЭД в энергию вращения колёс.

4.2.2 Мотор-колесо P143.83000.2103.020 представлено на рисунке 8.

[Общий вид.](#)

[Вид 1 – разобранный вид.](#)

[Вид 2 – увеличенный вид демонтажных отверстий.](#)

Рисунок 8 – Мотор-колесо P143.83000.2103.020

Пояснительные данные к рисунку 8:

1 – Винт специальный M8x19 P143.83000.3501.121	5 – Электромотор 3-28/90 P801.00600.0000.000-01 28164217 (ТЭД)
2 – Диск тормозной TRW MST338	

Software window for creating interactive User's Manuals

3.4.8. Development Plans

Designing of the suspended vehicle uBus U5-54304 ("Karat") of climatic modification T1 for 16 passengers:

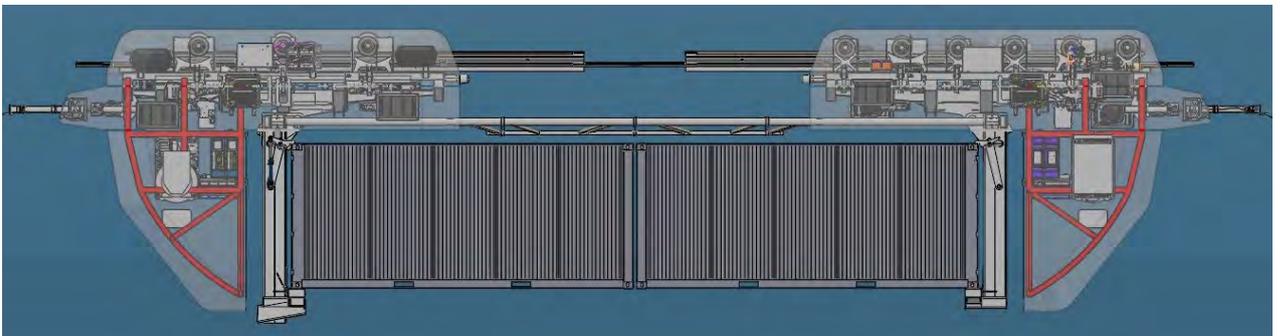
- Detailed study of the 3D model;
- Development of design documentation for the vehicle;
- Manufacture and assembly of the vehicle according to the design documentation.



Visualization of uBus U5-54304 (Karat)

Design of the suspended cargo vehicle uCont U5-24704 with a load capacity of 30.5 tons, climatic modification is T1:

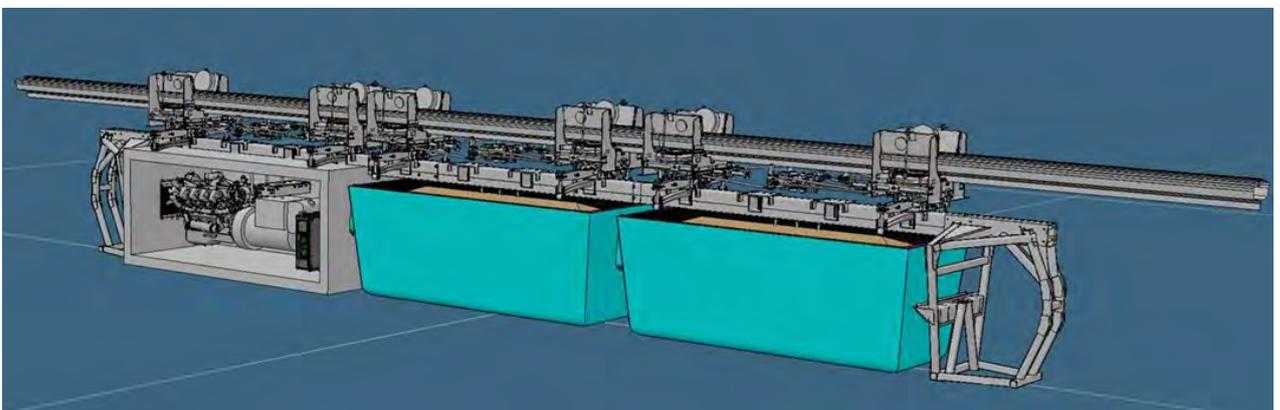
- Formation of the technical appearance of the vehicle;
- Detailed study of the 3D model;
- Development of design documentation for the vehicle.



Draft study of uCont U5-24704

Design of the suspended cargo vehicle uTruck U5-34504 for bulk cargoes, climatic modification is T1:

- Development of technical specifications for the vehicle;
- Formation of the technical appearance of the vehicle;
- Detailed study of the 3D model;
- Development of design documentation for the vehicle;
- Manufacture and assembly of the vehicle according to the design documentation.



Draft study of uTruck U5-34504

Design of the passenger high-speed vehicle uBus U5-75304 (500 km/h), with a track gauge of 2 m, climatic modification is T1:

- Development of technical specifications for the vehicle;
- Formation of the technical appearance of the vehicle;
- Detailed study of the 3D model;
- Development of design documentation for the vehicle.



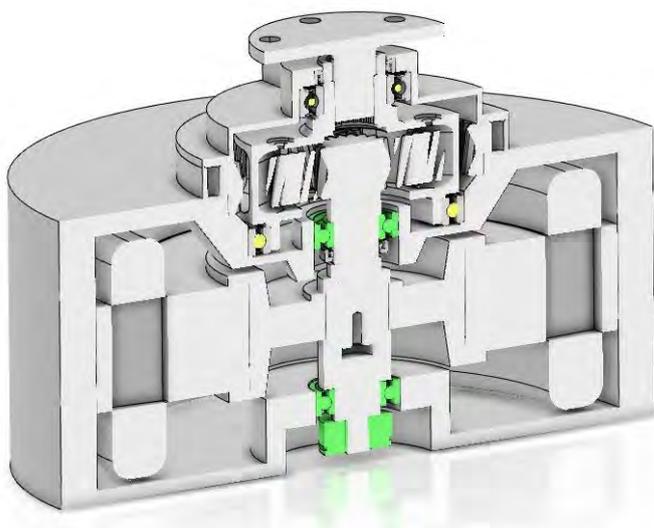
Draft study of the passenger high-speed vehicle uBus U5-75304

Design a cargo multi-part high-speed vehicle uBus of the fifth generation (500 km/h), climatic version T1:

- Formation of technical requirements;
- Design study of the exterior of the vehicle;
- Development of technical specifications for the vehicle;
- Formation of technical appearance and 3D model.

Designing of the geared motor for vehicles of the 5th generation:

- Development of design documentation for the motor-reducer.
- Manufacture and assembly of the motor-reducer according to the design documentation;
- Testing.



A geared motor for the 5th generation uPods

3.5. Design Engineering Department

The Design Engineering Department of Unitsky String Technologies Inc. operates in the market of design services in the field of transport and industrial civil construction, offers the Clients new engineering and technical solutions. The projects developed by the Company meet the requirements for rationality, efficiency, and safety of the facilities.

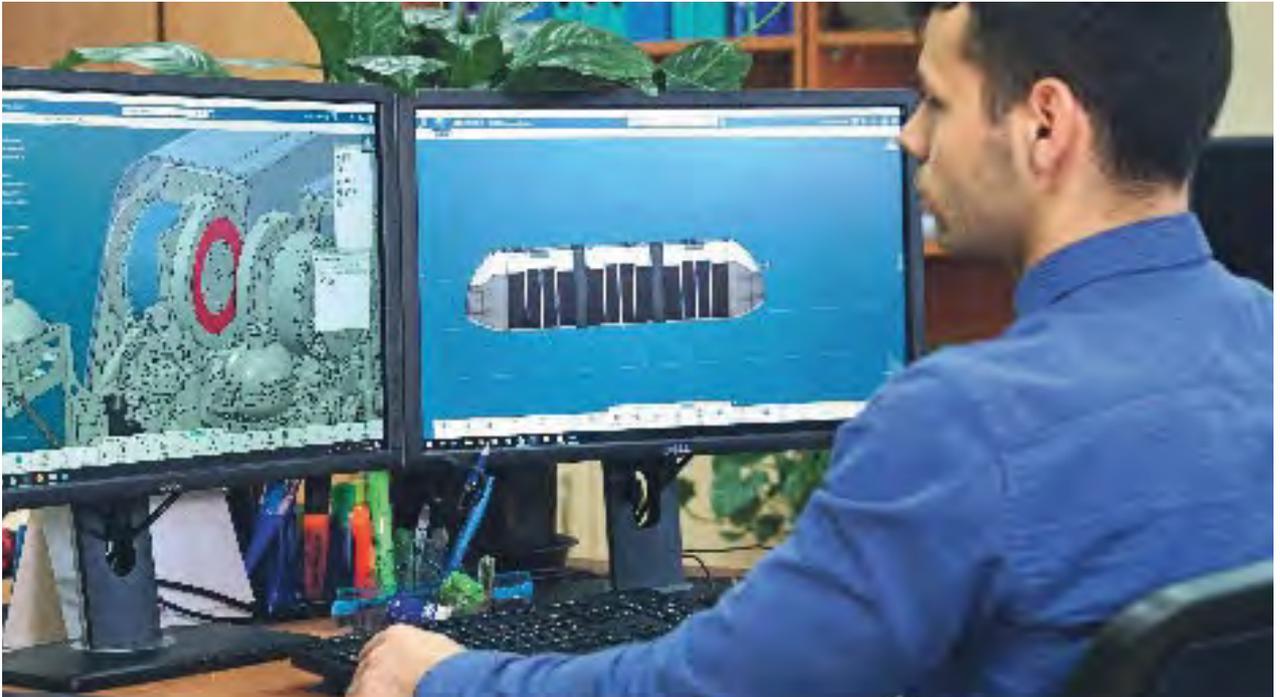
The Department contains 66 employees in 8 divisions.

Areas of activity of the Department:

- Designing infrastructure solutions as a part of the uST transport complex;
- Traction power supply of the uST transport complexes;
- Design of buildings and structures for industrial purposes;
- Design of public buildings;
- Other innovative objects;
- Scientific activity.

Plans for 2023-2024 for the design of the uST transport systems:

- Design of a 21 km section of the uST high-speed transport system in the Pukhovichi district of the Minsk region, Belarus;
- Design of 2 test sections of the uST transport systems in EcoTechnoPark, Maryina Gorka, Belarus;
- Design of the 1st test section of the uST transport system in Sharjah, UAE.



The process of designing infrastructure solutions as a part of the uST transport complex, Minsk, Belarus, 2022

3.5.1. The Latest Achievements

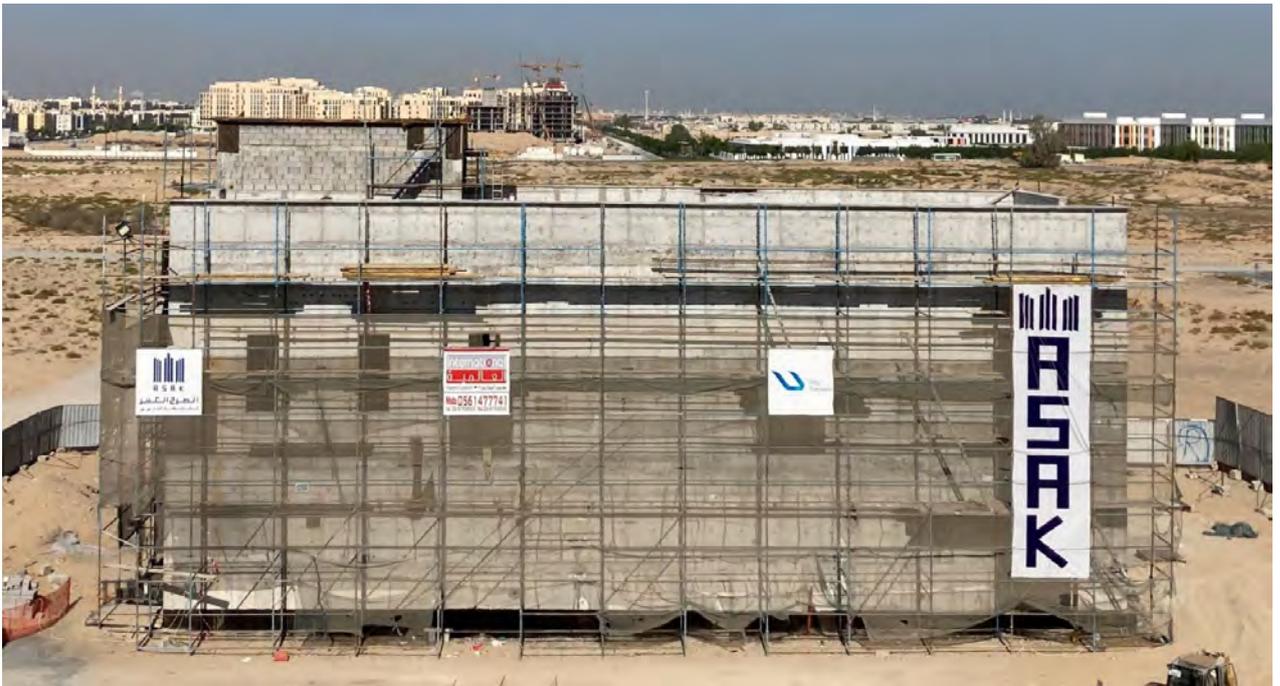
Construction, supervising, and design of TU2 anchoring structures 2.1 and 2.3

Anchoring structure 2.1 is a two-story building 15 meters high with plan dimensions of 30.5x11.5 meters. The total area of the building is 524 m², building area is 380m².

The structure of the building is monolithic reinforced concrete walls and ceilings. The thickness of the walls is 300 and 400 mm, the ceilings are designed with a thickness of 400 and 600 mm, the structures are made of concrete of C40/20 and C40/10. The volume of the above-ground concrete part of the buildings is 850 m³.

All materials used for construction are certified in the UAE.

The contractor started reinforcing the foundation slab in September 2021, and in October 2022, the main construction and installation work on the anchoring structure was completed.



Anchoring structure 2.1 under construction, Sharjah, UAE, 2021



Reinforcement of the floor slab of the 1st floor. The photo clearly shows profiled metal pipes - these are welded I-beams installed in several rows along the height of the building, Sharjah, UAE, 2021



Lifting the embedded part for fixing the anchor unit with a 100-ton crane, Sharjah, UAE, 2021

Anchoring structure 2.3 is a two-story building 13 meters high with plan dimensions of 26x8 meters. Building area is 222 m².

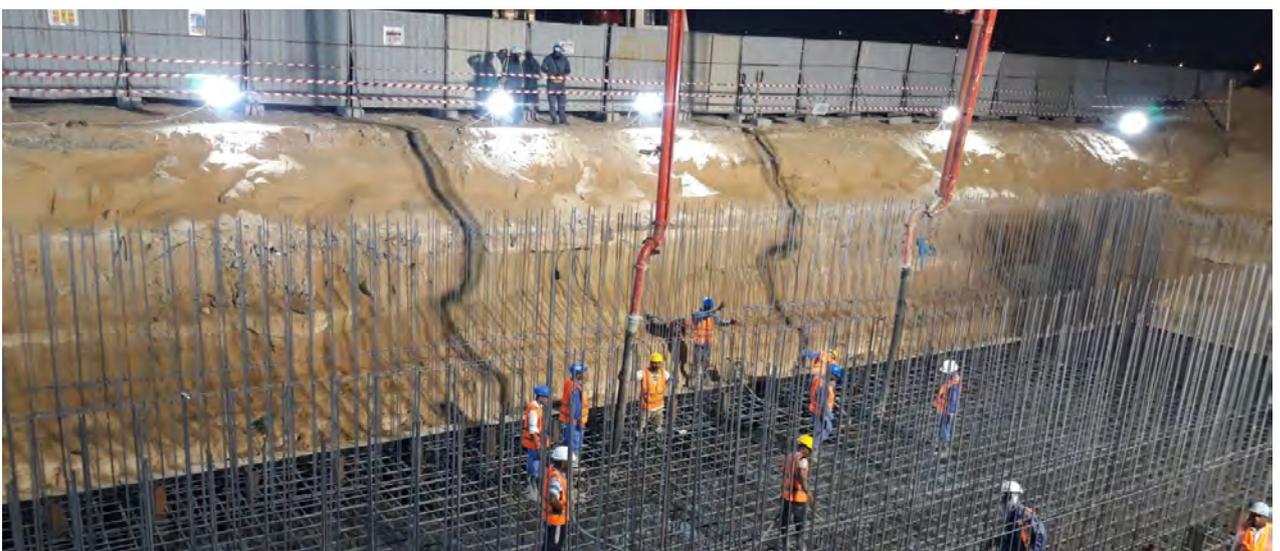
The structure of the building is monolithic reinforced concrete walls and ceilings. The thickness of the walls is 400 mm, the ceilings are designed with a thickness of 400 and 600 mm, the structures are made of concrete of C40/20 and C40/10.

All materials used for construction are certified in the UAE.

The building was being built from September 2021 to February 2022.



Photo of finishing work. The decorative elements on the facade of the building repeat the outlines of the ornament on the administration building of the SRTI park, Sharjah, UAE, 2021



Concreting takes place at night to avoid the negative impact of high temperatures at the initial stages of concrete hardening, Sharjah, UAE, 2020

Design, construction, and supervising of TS4, unstressed section, and anchoring structures 4.1 and 4.2



Currently, the installation of the track structure of Test Section No. 4 with a length of 2400 m is being carried out. Last year the construction of anchoring structures was completed. The basis of the track structure is the upper and lower chords consisting of bundles of high-strength steel ropes stretched between the anchoring structures.



During the installation work, temporary support devices are used for rope bundles, Sharjah, UAE, 2022



The photo shows that a hydraulic lift is installed on the supporting tower, it is an equipment for lifting the track structure to the design mark after assembly. Diagonal connections between the columns are established after the track structure has been raised, Sharjah, UAE, 2022

Construction and architectural supervision of the transportation complex near Minsk

Currently, the installation of the track structure 1119 m long is in process. The station structures are being erected on combined anchoring structures. The distance between the supporting towers is up to 250 m. There are 4 supporting towers. The height of supporting towers is from 14.8 to 16.00 m.



Anchoring structure 24.2, Maryina Gorka / Belarus / EcoTechnoPark Demonstration & Certification Center, 2022



Installation of track structure elements on supporting towers, Minsk area, Belarus, 2022



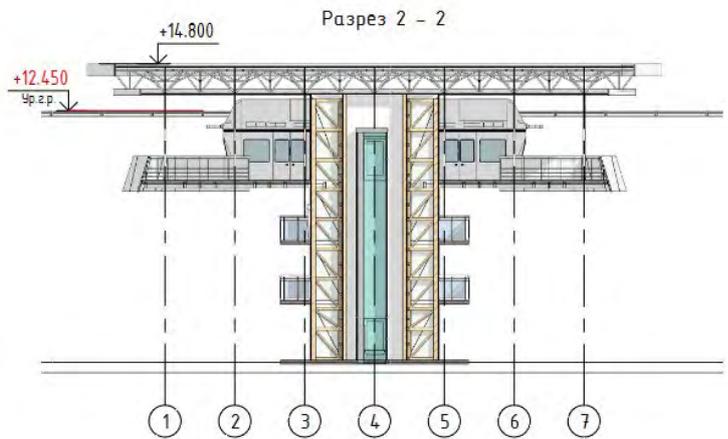
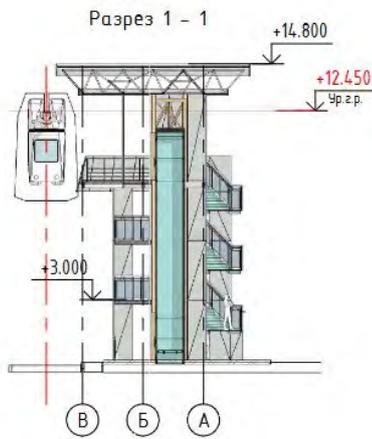
Supporting rotary tower at EcoTechnoPark, Minsk area, Belarus, 2022

Development of standard solutions for stations and depots

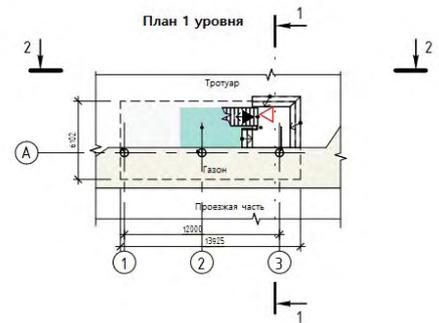
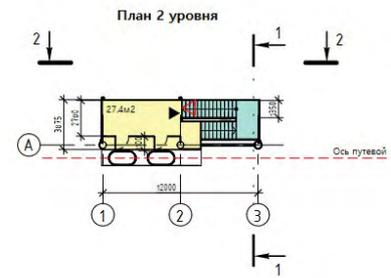
In 2022, a constant development of standard design solutions for buildings and structures of the uST transport complex is being in process. During this period more than 35 standard projects of stations, anchoring structures, depots, and supporting towers have been developed.



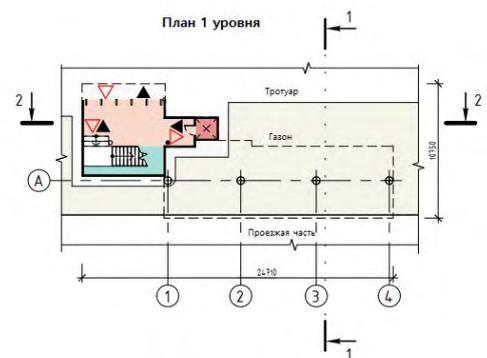
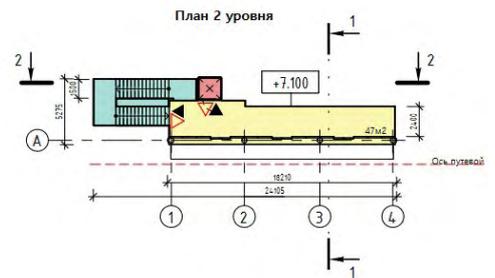
Система доступа располагается на первом уровне. Посадка осуществляется с платформы на втором уровне.
Вертикальные связи – лестница. Также предусмотрено вертикальные коммуникации для маломобильных групп населения в виде подъемной платформы г/п. 400кг. В шахте несущие конструкции – стальные вертикальные колонны связанные между собой и образующие жесткую структуру и пространственная стержневая структура системы "Тагил" (треугольно-гексагональная схема). Несущие конструкции лестницы – металлические. Отделка фасада – набор металлических фасадных панели, витражная система. Кровля плоская, фальцевая из листового оцинкованной стали с полимерным покрытием.



Visualization of standard solutions for stations and depots



Условные обозначения: Направление выхода ► Направление входа ◄



Условные обозначения: Направление выхода ► Направление входа ◄

Visualization of standard solutions for stations and depots

3.5.2. Development Plans

- Design a 21 km section of the uST high-speed transport system near Minsk, Belarus;
- Design of 2 test sections of uST transport systems in EcoTechnoPark, Maryina Gorka, Belarus;
- Design of the 1st test section of the uST transport system in Sharjah, UAE.

3.6. Patent and License Division Advanced Research and Development Department

Advanced Research and Development Department of Unitsky String Technologies Inc. The main task of department is the development of innovative promising projects.

The Department consists of 19 employees in 3 bureaus.

Areas of the department's activity:

- Design of electrical equipment for installations and technological lines;
- Development of high-voltage impulse installations $V=50$ kV;
- Development of electrohydropercussion installations, control and safety systems for them and the use of electric discharge in various sectors of the national economy and industry;
- Development of technological solutions and technological processes, including their subsequent unification and modernization;
- Implementation of technological design;
- Design, modernization, development, and implementation of experimental and non-standard equipment, machines, and devices of the produced complexes and lines;
- Prototyping;
- Development of innovative energy solutions and processes;
- Design of energy systems;
- Development of prospective types of energy sources;
- Development of environmentally friendly methods of waste disposal in the energy sector;
- Development and manufacture of equipment (experimental, laboratory, non-standard);
- Carrying out of fundamental and applied research on the topics under study.

3.6.1. Patent and License Division

Simultaneously with the design study, experimental testing, and current events on the certification of Unitsky's transport systems, Unitsky String Technologies Inc. is implementing a set of measures for national and international patenting of the design, technological, and artistic design solutions related to string transport.

The preparation of applications for registration of intellectual property objects is carried out in several directions:

1. Visual means of individualization of Unitsky's string transport systems and their components, associated vehicles, as well as related goods and services for various purposes (construction-architectural, electrical, instrument-making and communications, chemical, agricultural, etc.) - author's development and preparation for the registration of trademarks, including brand logos of the enterprise;
2. Original art and design solutions for the main structural components and modules of string transport, including rolling stock, - author's developments and preparation of applications for obtaining patents and certificates for the relevant industrial designs;
3. Innovative design solutions based on a set of know-how developed by the engineer Anatoli Unitsky, which have such features of patentability as world novelty, inventive step, and industrial applicability - preparation of applications for patents for inventions;
4. Objects of copyright associated with the listed areas of patenting.

The geography of international patenting includes areas of corporate interest of UST Inc. and the Group of Companies.

In particular, for the period from November 2021 to the present, within the framework of international patenting, five applications for inventions have been entered into the national phase under the procedure in the patent offices of Europe, China, and the United Arab Emirates, a Eurasian application for an invention has been filed, 2 European, 2 Chinese patent, and 1 Eurasian patent for inventions.

Within the framework of national patenting, during the reporting period, 4 applications for utility models and one application for an industrial design were submitted to the National Patent Office of Belarus. As of the end of 2022 2 patents of the Republic of Belarus were received for utility models and one patent for an industrial design.

In addition, three patents for inventions in relation to various types of Unitsky transport systems are valid and are maintained in force on the territory of the Russian Federation.

In 2021-2022, the previously deployed patenting of Unitskiy's main types of space systems was continued as a part of the concept of non-rocket space exploration.

Registration of objects of intellectual property in different states allows not only a legally correct entry into the relevant markets with their products, but also ensuring their protection from unauthorized use and unfair competition.

The table below shows applications for inventions, utility models and industrial designs filed during the specified period and pending, as well as patents received.

Three Eurasian applications for inventions and three Eurasian applications based on previously filed Belarusian applications for utility models are being prepared for filing this year and the first months of next year.



Soft copies of some patents received in 2022

3.6.2. Table of Applications and Patents for Inventions, Utility Models, Industrial Designs (EU, China, UAE, EAPO, Belarus)

Original application	Date of filing of the original application	PCT application	National application	Name	Author	Abstract
Applications for inventions (in the regional phase in the EU under the PCT procedure)						
1900379-PCT	2019-05-23	PCT/BY2020/000005	EP20808905	HYPERSPEED TRANSPORT COMPLEX OF UNITSKY	Unitsky Anatoli Eduardovich (BY)	https://worldwide.espacenet.com/publicationDetails/biblio?I1=0&ND=3&adjacent=true&locale=en_EP&FT=D&date=20220330&CC=EP&NR=3974278A1&KC=A1
1900412-PCT	2019-07-12	PCT/BY2020/000006	EP20841141	UNITSKY TRANSPORT SYSTEM (OPTIONS)	Unitsky Anatoli Eduardovich (BY)	https://worldwide.espacenet.com/publicationDetails/biblio?I1=0&ND=3&adjacent=true&locale=en_EP&FT=D&date=20220504&CC=EP&NR=3992049A1&KC=A1
1900540-PCT	2019-09-11	PCT/BY2020/000011	EP20862498	METHOD OF MANUFACTURING AND DESIGN OF ULTRA-SPEED TRANSPORT COMPLEX OF UNITSKY	Unitsky Anatoli Eduardovich (BY)	https://worldwide.espacenet.com/publicationDetails/biblio?I1=0&ND=3&adjacent=true&locale=en_EP&FT=D&date=20220720&CC=EP&NR=4029754A1&KC=A1
1900541-PCT	2019-09-25	PCT/BY2020/000012	EP20868100	UNITSKY'S STRING TRANSPORT SYSTEM	Unitsky Anatoli Eduardovich (BY)	https://worldwide.espacenet.com/publicationDetails/biblio?I1=0&ND=3&adjacent=true&locale=en_EP&FT=D&date=20220727&CC=EP&NR=4032775A1&KC=A1
2000099-PCT	2019-12-12	PCT/BY2020/000014	EP20898099	TRANSPORT SYSTEM OF UNITSKY	Unitsky Anatoli Eduardovich (BY)	https://worldwide.espacenet.com/publicationDetails/biblio?I1=0&ND=3&adjacent=true&locale=en_EP&FT=D&date=20221019&CC=EP&NR=4074570A1&KC=A1
Applications for inventions (in the national phase in China under the PCT procedure)						
1900379-PCT	2019-05-23	PCT/BY2020/000005	202080047781	HYPERSPEED TRANSPORT COMPLEX UNITSKY	Unitsky Anatoli Eduardovich (BY)	https://worldwide.espacenet.com/publicationDetails/originalDocument?FT=D&date=20220513&DB=&locale=en_EP&CC=CN&NR=114502446A&KC=A&ND=4
1900412-PCT	2019-07-12	PCT/BY2020/000006	202080050675	UNITSKY TRANSPORT SYSTEM (OPTIONS)	Unitsky Anatoli Eduardovich (BY)	https://worldwide.espacenet.com/publicationDetails/originalDocument?FT=D&date=20220422&DB=&locale=en_EP&CC=CN&NR=114390991A&KC=A&ND=4
1900540-PCT	2019-09-11	PCT/BY2020/000011	202080070495	METHOD OF MANUFACTURING AND DEVICE OF ULTRA-SPEED TRANSPORT COMPLEX UNITSKY	Unitsky Anatoli Eduardovich (BY)	https://worldwide.espacenet.com/publicationDetails/originalDocument?FT=D&date=20220719&DB=&locale=en_EP&CC=CN&NR=114765977A&KC=A&ND=4
1900541-PCT	2019-09-25	PCT/BY2020/000012	202080081946	UNITSKY'S STRING TRANSPORT SYSTEM	Unitsky Anatoli Eduardovich (BY)	https://worldwide.espacenet.com/publicationDetails/biblio?I1=0&ND=3&adjacent=true&locale=en_EP&FT=D&date=20220727&CC=EP&NR=4032775A1&KC=A1
2000099-PCT	2019-12-12	PCT/BY2020/000014	202080095072	TRANSPORT SYSTEM OF UNITSKY	Unitsky Anatoli Eduardovich (BY)	https://worldwide.espacenet.com/publicationDetails/biblio?I1=0&ND=3&adjacent=true&locale=en_EP&FT=D&date=20221019&CC=EP&NR=4074570A1&KC=A1

Original application	Date of filing of the original application	PCT application	National application	Name	Author	Abstract
Applications for inventions (in the national phase in the UAE under the PCT procedure)						
1900379-PCT	2019-05-23	PCT/BY2020/000005	P6002138/2021	HYPERSPEED TRANSPORT COMPLEX OF UNITSKY	Unitsky Anatoli Eduardovich (BY)	https://worldwide.espacenet.com/publicationDetails/biblio?I1=0&ND=3&adjacent=true&locale=en_EP&FT=D&date=20220330&CC=EP&NR=3974278A1&KC=A1
1900412-PCT	2019-07-12	PCT/BY2020/000006	P6000056/2022	UNITSKY TRANSPORT SYSTEM (OPTIONS)	Unitsky Anatoli Eduardovich (BY)	https://worldwide.espacenet.com/publicationDetails/biblio?I1=0&ND=3&adjacent=true&locale=en_EP&FT=D&date=20220504&CC=EP&NR=3992049A1&KC=A1
1900540-PCT	2019-09-11	PCT/BY2020/000011	P6000421/2022	METHOD OF MANUFACTURING AND DESIGN OF ULTRA-SPEED TRANSPORT COMPLEX UNITSKY	Unitsky Anatoli Eduardovich (BY)	https://worldwide.espacenet.com/publicationDetails/biblio?I1=0&ND=3&adjacent=true&locale=en_EP&FT=D&date=20220720&CC=EP&NR=4029754A1&KC=A1
1900541-PCT	2019-09-25	PCT/BY2020/000012	P6000547/2022	UNITSKY'S STRING TRANSPORT SYSTEM	Unitsky Anatoli Eduardovich (BY)	https://worldwide.espacenet.com/publicationDetails/biblio?I1=0&ND=3&adjacent=true&locale=en_EP&FT=D&date=20220727&CC=EP&NR=4032775A1&KC=A1
2000099-PCT	2019-12-12	PCT/BY2020/000014	P6001102/2022	TRANSPORT SYSTEM OF UNITSKY	Unitsky Anatoli Eduardovich (BY)	https://worldwide.espacenet.com/publicationDetails/biblio?I1=0&ND=3&adjacent=true&locale=en_EP&FT=D&date=20221019&CC=EP&NR=4074570A1&KC=A1
Invention Patents (EU)						
EP3560786	EP17883693	2019-10-30	2017-12-19	TRANSPORT SYSTEM OF UNITSKY	Unitsky Anatoli Eduardovich (BY)	https://worldwide.espacenet.com/patent/search/family/062624320/publication/EP3560786B1?q=EP3560786
EP3702231	EP18873794	2020-09-02	2018-10-31	STRING TRACK STRUCTURE	Unitsky Anatoli Eduardovich (BY)	https://worldwide.espacenet.com/patent/search/family/066331167/publication/EP3702231B1?q=pn%3DEP3702231B1
Patents for inventions (China)						
CN110662692B	201880034145	2020-01-07	2018-03-16	HIGH SPEED TRANSPORT MODULE	Unitsky Anatoli Eduardovich (BY)	https://worldwide.espacenet.com/patent/search/family/063585913/publication/CN110662692B?q=CN110662692B
111417558B	201880077283	2020-07-14	2018-10-31	STRING TRACK STRUCTURE	Unitsky Anatoli Eduardovich (BY)	https://worldwide.espacenet.com/patent/search/family/066331167/publication/CN111417558B?q=CN111417558B
Patents and Applications for Inventions (EAPO)						
039257	202000099	2021-12-22	2019-12-12	TRANSPORT SYSTEM OF UNITSKY	Unitsky Anatoli Eduardovich (BY)	http://www.eapatis.com/Data/EATXT/eapo2021/PDF/039257.pdf
	202292351		2022-08-08	TRANSPORT SYSTEM OF UNITSKY	Unitsky Anatoli Eduardovich (BY)	

Original application	Date of filing of the original application	PCT application	National application	Name	Author	Abstract
Patents and Applications for Utility Models (Belarus)						
12991	u20210142	2022-08-01	2021-05-28	HIGH SPEED TRANSPORT MODULE	Unitsky Anatoli Eduardovich (BY)	https://docs.google.com/viewerng/viewer?url=http://80.94.162.50/tmp/13.rtf
13040	u20220040	2022-10-03	2022-02-18	HEAT-INSULATING GLAZING MODULE	Unitsky Anatoli Eduardovich (BY)	
	u20210324		2021-12-14	RAIL OF THE UNITSKY STRING TRANSPORT SYSTEM	Unitsky Anatoli Eduardovich (BY)	
	u20210325		2021-12-14	RAIL OF THE UNITSKY STRING TRANSPORT SYSTEM	Unitsky Anatoli Eduardovich (BY)	
	u20220149		2022-06-21	EMERGENCY TOWING DEVICE	Unitsky Anatoli Eduardovich (BY)	
Patents for industrial designs (Belarus)						
4971	f20220043	2022-07-28	2022-03-23	MOBILE VEHICLE FOR STRING TRANSPORT SYSTEMS	Unitsky Anatoli Eduardovich (BY)	http://search.ncip.by/database/index.php?pref=prom&lng=ru&target=8607&page=4&doc=1

3.7. Commercial Department

Commercial Department is an independent structural subdivision of Unitsky String Technologies Inc. (hereinafter referred to as the Company), directly reports to the General Director, and is headed by the Deputy General Director for Commerce.

The Department includes:

Analytics Division;

Marketing and Lead Generation Division:

- Information and Communication Team;
- Internet Marketing Team.

Sales and Customer Support Division;

Media Production Division:

- Video Editing Team;
- Video Editing Team;
- Commercial Design Team;
- Translation Team.

Publishing Division:

- Editorial Team.

Object and Spatial Design Division.

The Department employs 37 specialists, including managers, analysts, marketers, PR-specialists, designers, translators, and others.

The main tasks of Department:

- Development, management, and optimization of the commercial process;
- Development of positioning and market entry strategies;
- Development of local marketing plans for target markets/industries;
- Lead generation (outgoing and incoming marketing);
- Increasing brand awareness and consumer loyalty.

Functions assigned to the Commercial Department, according to the areas of its activity department:

- Positioning of the Company and its products;
- Development of a market entry strategy;
- Conducting marketing research of the product, market, channels;
- Conducting internal analysis of the quality of commercial processes;
- Development of a feasibility study.
- Lead generation through digital channels, through offline channels (ATL/BTL);
- Lead generation through inbound marketing (content marketing, SMM, SEO, branding);

- Participation and organization of event marketing;
- Development and implementation of PR and communication strategy;
- Communications with external contractors;
- Preparation of marketing materials;
- Organization of internal marketing;
- Customer support throughout the SQL sales cycle;
- Preparation and presentation of commercial offers;
- Conclusion of contracts (MoU, Feasibility Study, Transport Solution Contract, Commission Contract);
- Monitoring of the progress of the project from the side of commerce (terms, money);
- Evaluation and improvement of customer satisfaction;
- Development of sales to clients;
- Communication and support for existing and old clients.
- Production of video and audio materials;
- Photo and video shooting for the commercial process;
- Production of graphic materials (raster and vector graphics) for the commercial process;
- Production of 3D materials for the commercial process;
- Translation of materials for the commercial process;
- Creation of multi-page publications (books, brochures, etc.), as well as other printed presentation products (leaflets, booklets, letterheads, envelopes, calendars, etc.);
- Development of corporate identity, creation of branded products, electronic mailing lists, etc.;
- Design of souvenirs, packaging (covers, packages, labels, boxes, etc.);
- Elaboration of the design concept, creation of templates (selection of fonts, colors, design options, etc.);
- Creating illustrations, drawing images, tables, charts, retouching, and collage;
- Choice of printing options;
- Pre-print preparation of layouts, preparation of terms of reference for the printing house;
- Carrying out literary and scientific editing, correction of texts and layouts, as well as other materials produced by the department, including those created by other divisions of the Society;
- Editorial processing of information data in accordance with established standards and norms accepted in scientific and regulatory literature;
- Checking the correctness of the use of numbers, formulas, symbols, units of measurement, and other scientific terms, as well as abbreviations, quotes, dates, spelling of full name, and etc.;
- Participation in resolving issues related to the artistic and technical design of materials being prepared for release (books, brochures, booklets, presentations, and other promotional products);
- Development of preliminary designs of buildings and structures, interior design projects (drawings and diagrams; visualization; author's supervision, etc.).

3.7.1. The Latest Achievements

The main achievements of the Department from December 2021 to the present

- Signed 2 cooperation agreements on projects for the creation of the uST transport and infrastructure complexes
- Participation in 9 international events (exhibitions, conferences) of various scales
- Updated and revised Company positioning
- Updated and revised business plan of the Company
- Launch a of new Company website <https://ust.inc/>

Marketing activities: participation in exhibitions and conferences for the period from January to November 2022

Smart Cities India Expo 2022 / New Delhi, India

From March 23 to March 25

At the largest thematic exhibition in Asia, the Company presented an unmanned and environmentally friendly transport that most fully meets the requirements of our time.

[Mass media](#) about participation in the exhibition.



Smart Cities India Expo 2022 / New Delhi, India

11th Caspian International Exhibition "Road Infrastructure and Public Transport" Baku, Azerbaijan / from June 1 to June 3

Within the framework of the exhibition, a booth of the Company and a speech by representatives with a presentation of the uST technology and a comprehensive proposal for the development of transport and road infrastructure were organized.

[Mass media](#) about participation in the exhibition.



*11th Caspian International Exhibition "Road Infrastructure and Public Transport"
Baku, Azerbaijan, 2022*

International Arctic Summit “Arctic: Prospects, Innovations and Development of the Region”

Saint Petersburg, Russian Federation / from June 8 to June 10

The Company acted as a silver sponsor of the event and presented its comprehensive solutions in the areas of transport infrastructure, biotechnology, non-rocket industrialization of space, and unmanned aerial vehicles on a large scale.

[Mass media](#) about participation in the exhibition.

[Letter of thanks](#) to the Senior Management of UST Inc. from the Directorate of the International Arctic Summit.



UST delegation at the International Arctic Summit, Russia, 2022

CHOGM Rwanda 2022 / Kigali, Rwanda, East Africa

From June 21 to June 23

The Company took part in an international business forum in Rwanda to present a comprehensive solution in the field of transport infrastructure for the state and business.

During the forum, representatives of UST Inc. and marketing company uDiscovery DMCC held B2G meetings with the high-ranking officials from Rwanda and Lesotho: Minister of Infrastructure of Rwanda Ernest Nsabimana, Vice Mayor of Kigali Mbabwanamagura Merarda, Director of the innovative settlement Tesi Rusagara and Prime Minister of Lesotho Moeketsi Majoro.



Mr. Oleg Zaretskiy, CEO of uDiscovery DMCC, is meeting a potential customer at CHOGM Rwanda 2022 / Kigali, Rwanda, East Africa

International Scientific Conference WHEC - 2022

Istanbul, Turkey / From June 26 to June 30

The team of UST Inc. headed by General Designer Anatoli Unitsky presented an article on the use of an alternative “green” energy source - liquid hydrogen.

The company’s own development - an integrated thermal energy balance system - can help to reduce the energy consumption of the uPod cooling system.

Original scientific [article](#).



Interdepartmental scientific and practical conference with international participation “Development of the Transport Infrastructure of the City of Yakutsk: Proposals and Recommendations”

Yakutsk, Russian Federation / From August 15 to August 19

UST Inc. presented the uST solutions during a scientific and practical conference dedicated to the development of the transport infrastructure of Yakutsk.

The event was held on the territory of the [North-Eastern Federal University](#).



Yakutsk, Russian Federation / 2022, From August 15 to August 19

Sonsonate, El Salvador

October - November

Representatives of UST Inc. held a B2G meeting with the authorities of the city of Sonsonate, El Salvador and acted as experts to study potential routes for the construction of the uST transport and infrastructure complexes.

International Scientific and Practical Conference

"Transport of Russia: Problems and Prospects"

Saint Petersburg, Russian Federation / From November 12 to November 13

The representatives of UST Inc. made a scientific report and held a separate presentation of transport infrastructure complexes for the Director of the Institute of Transport Problems of the Russian Academy of Sciences Igor Malygin. A working meeting was held with Vice-President of the Arctic Academy Arseniy Mitko, during which an agreement was reached on the preparation of an expertise on the use of the uST transport in the Far North.

As a result of the conference, a collection of scientific papers and a resolution will be prepared, where UST Inc. made its proposal.

Delegations and visits to build partnerships for the period from January to November of 2022

Visit of Deputy Sharapat Mazhitova from the Kyrgyz Republic

March 4

Deputy of the Kyrgyz Parliament, owner of the construction company "Modern Style", as well as the General Director of two transport companies "Azhy Akpar" and "Caravan Express" Sharapat Mazhitova.

Delegation from Nizhny Novgorod, Russian Federation

May 19

The Government of the Nizhny Novgorod Region, headed by the Acting Minister of Construction of the Nizhny Novgorod Region Anatoli Molev

Delegation from India

August 8

1. Mr. Vaibhav Dange, Advisor to the Ministry of Road Transport and Highways of India
2. Mr. Guru Prasad Hari Prasad, Director of Hari Prasad Convergences Pvt Ltd
3. Mr. Sheikh Ahmed Shahil Anuf, CEO of National Infrabuild Pvt Ltd

Delegation from Moscow, Russian Federation

August 13

A visit to EcoTechnoPark of the excursion group of entrepreneurs in order to get acquainted with the transport and infrastructure product of the Company, assess the investment attractiveness of the project, and subsequently establish business relationships with the Top Management of the Company.

Delegation from Yakutsk, Russian Federation

September 13

1. Dmitry Filippov, Dean of the Faculty of the North-Eastern Federal University named after M.K. Ammosov,
2. Ivan Noev, Director of the "NEFU Test Site"

Delegation from Vietnam

October 4

Visit of the representatives of big business of Vietnam.

Delegations of representatives of the Governor of the Autonomous Chukotka District and JSC "Corporation for the Development of the Far East and the Arctic" / Russian Federation

6 – 7 of October

The representatives of the Governor of the Autonomous Chukotka District Roman Kopin. Aleksey Tokar (Executive Director for Public-Private Partnership Projects), Kirill Kamenev (Managing Director), Vitaly Lapaev (Head of the Public-Private Partnership Center).

Visit of representatives of the Deputy Governor of the Rostov Region / Russian Federation

November 1

The Government of the Rostov region:

1. Deputy Governor of the Rostov Region Alexander Skryabin;
2. Minister of Economic Development of the Rostov Region Maxim Papushenko

The first commercial project on the territory of the Republic of Belarus (located on the territory of another legal entity and having an external customer with constant passenger access).

The overpass allows organizing the movement of heavy uPods weighing over 30 tons. At the same time, it is distinguished by a large length of unsupported spans - more than 250 meters, that makes it possible to effectively overcome water barriers, mountain gorges, lay roads over objects of transport, industrial, residential, and energy infrastructure. Currently, the overpass is being built in two versions for different configurations of the uST complexes (northern and tropical) - in the Republic of Belarus and the United Arab Emirates.

Characteristics:

- Length (with anchoring structures) - 756 m.
- Distance between supporting towers - up to 288 m.
- Number of supporting towers — 3 pcs.
- Height of supporting towers - up to 16.3 m.
- Technically permissible maximum mass of a uPod is up to 60 tons.
- Pretensioning force of the track structure (total) is up to 1800 tons.

Project implementation status:

1. At the moment, work on the uLight project is at the completion stage (the installation of the track structure is almost completed).
2. String-rails are installed in the design position. Rail head assembly is in progress. The uLight electric car is planned to be installed on the track structure in early December 2022.
3. Decoration work has begun at the stations.
4. Planned work has begun with the government agencies to prepare the uLight for start-up and commissioning in the first quarter of 2023.

The Date	Publication	Media	Link
27.09.2021	Climate Change Will Bring More Transportation Problems – Unitsky String Technologies Has A Solution	Clean Technica (USA)	https://cleantechnica.com/2021/09/27/climate-change-will-bring-more-transportation-problems-unitsky-string-technologies-has-a-solution/
13.10.2021	Cities Must Consider Flexible Transit Options Before The Next Pandemic – Here's One Answer From UST	Clean Technica (USE)	https://cleantechnica.com/2021/10/13/cities-must-consider-flexible-transit-options-before-the-next-pandemic-heres-one-answer-from-ust/
08.11.2021	Unitsky String Technologies Inc. Has Developed An Electric Car More Eco-Friendly Than A Tesla	Clean Technica (USE)	https://cleantechnica.com/2021/11/08/unitsky-string-technologies-inc-has-developed-an-electric-car-more-eco-friendly-than-tesla/
10.12.2021	Unitsky String Technologies Inc. Turns a New Page in Transport Development	World Construction Today (India)	https://www.worldconstructiontoday.com/pressreleases/unitsky-string-technologies-inc-turns-a-new-page-in-transport-development/
28.12.2021	Mobilità sostenibile, gli Emirati sperimentano il trasporto con la funivia 2.0	AGI-Agenzia Giornalistica Italia	https://www.agi.it/expo-dubai/news/2021-12-28/emirati-sperimentano-trasporto-funivia-15052357/
04.01.2022	The future that is already here. Igor Shnurenko, Anatoli Unitskiy	DayTV (RU)	https://dentv.ru/programs/nauka/buduschee-kotoroe-uzhe-nastupaet-igor-shnurenko-anatoliy-unitskiy.html
13.01.2022	Two Different Systems: What is the Difference between String Transport and Cable Cars?	World Construction Today (India)	https://www.worldconstructiontoday.com/news/two-different-systems-what-is-the-difference-between-string-transport-and-cable-cars/
20.01.2022	Unitsky String Technologies Inc. – the developer of the most efficient transport system?	World Construction Today (India)	https://www.worldconstructiontoday.com/news/unitsky-string-technologies-inc-the-developer-of-the-most-efficient-transport-system/
20.01.2022	Transportadores brasileiros conhecem, em Dubai, sistemas de transporte público e projetos futuristas	Paraiba (Brazil)	https://paraiba.com.br/2022/01/20/transportadores-brasileiros-conhecem-em-dubai-sistemas-de-transporte-publico-e-projetos-futuristas/
26.01.2022	Unitsky String Technologies Inc. continues transport testing	Maagulf.com	https://www.maagulf.com/view/64457/featurednews/unitsky-string-technologies-inc-continues-transport-testing
10.02.2022	String Transport Resonated with Authorities and Industries	Transport Advancement (India)	https://www.transportadvancement.com/news/string-transport-resonated-with-authorities-and-industries/
15.03.2022	Traditional transport systems and uST. How did it all start?	World Construction Today (India)	https://www.worldconstructiontoday.com/news/traditional-transport-systems-and-ust-how-did-it-all-start/
21.03.2022	Unitsky String Technologies Inc. Will Showcase String Transport at Smart Cities India Expo 2022	Mena FN (Jordan)	https://menafn.com/1103881853/Unitsky-String-Technologies-Inc-Will-Showcase-String-Transport-at-Smart-Cities-India-Expo-2022
24.03.2022	uST String Transport Is Among the Brightest Technologies at Smart Cities India Expo 2022	World Construction Today (India)	https://www.worldconstructiontoday.com/news/ust-string-transport-is-among-the-brightest-technologies-at-smart-cities-india-expo-2022/
04.04.2022	Unitsky String Technologies Inc. Has Introduced String Transport at Smart Cities India Expo 2022	Railway Technology (UK)	https://www.railway-technology.com/contractors/data/stadler-wins-vms-contract-for-citylink-tram-trains/pressreleases/unitsky-string-technologies-string-transport/
05.04.2022	A meeting of the Council for Business and Entrepreneurship Development was held in Bishkek	Evening Bishkek, Kyrgyzstan	https://www.vb.kg/doc/416476_v_bishkeke_proshlo_zasedanie_soveta_po_razvitiu_biznesa_i_predprinimatelstva.html
08.04.2022	Unitsky String Technologies Inc. – response to challenges in the transport sector	Magazine "International Exhibitions" (Belarus)	https://unitsky.com/storage/files/11/%D0%96%D1%83%D1%80%D0%BD%D0%B0%D0%BB%20%D0%9C%D0%B5%D0%B6%D0%B4%D1%83%D0%BD%D0%B0%D1%80%D0%BE%D0%B4%D0%BD%D1%8B%D0%B5%20%D0%B2%D1%8B%D1%81%D1%82%D0%B0%D0%B2%D0%BA%D0%B8.pdf
15.04.2022	7 technologies from science fiction films that have become a reality today	PopMech (Russia)	https://www.popmech.ru/technologies/1541770-7-tehnologiy-iz-fantasticheskikh-filmov-kotorye-segodnya-stali-realnostyu/

The Date	Publication	Media	Link
18.04.2022	What technologies from science fiction films have become a reality today	ForPost technologies, Russia (news reprinted from PopMech edition)	https://tech.sevastopol.su/2022/04/18/kakie-tehnologii-iz-fantasticheskikh-filmov-segodnja-stali-realnostju/
25.04.2022	Unitsky String Technologies Inc. Has Beaten Virgin Hyperloop	World Construction Today (India)	https://www.worldconstructiontoday.com/news/unitsky-string-technologies-inc-has-beaten-virgin-hyperloop/
17.05.2022	Unitsky String Technologies Inc. Becomes a Scientific Organisation	Railway Technology (UK)	https://www.railway-technology.com/contractors/passenger-transportation-rail/unitsky-string-technologies/pressreleases/unitsky-string-scientific-organisation/
06.06.2022	Unitsky String Technologies Inc. Took Part in the International Exhibition in Baku	Railway Technology (UK)	https://www.railway-technology.com/contractors/passenger-transportation-rail/unitsky-string-technologies/pressreleases/unitsky-string-international-exhibition/
10.06.2022	String transport for freight and passenger transportation will provide a breakthrough in the development of the Russian economy	Veteran News (Russia)	https://vvesti.com/ekonomika/strunnyj-transport-dla-gruzovyh-i-passazirskih-perevozok-obespecit-ryok-v-razvitii-ekonomiki-rossii
10.06.2022	The Russian Federation can acquire unique transport in the Arctic and build "EcoHouses"	SM News (Russia)	https://sm.news/rf-mozhet-obzavestis-v-arktike-unikalnym-transportom-i-postroit-ekodoma-56509/
10.06.2022	A step towards the development of the Arctic: String Technologies talked about unique transport and EcoHouses	Poliexpert (Russia)	https://politexpert.net/23481532-shag-k-razvitiyu-arktiki-v-strunnih-tehnologiyah-rasskazali-ob-unikal-nom-transporte-i-ekodoma
29.07.2022	Mr. Boglaev about uST	Studio "Frontier"	https://www.youtube.com/watch?v=7_Tq9ELak9I
01.08.2022	Mr. Boglaev about A.E. Unitsky and string technologies (from 34.30)	Roy TV	https://www.youtube.com/watch?v=UWt-feGjQOA
01.08.2022	Special project about ports	PortNews Information and Analytical Agency	https://portnews.ru/projects/project41/
02.08.2022	Expert opinion of the CEO of UST. for the Forbes (on the issue of air pollution from transport).	Forbes	https://www.forbes.com/sites/forbesbusinesscouncil/2022/08/02/how-businesses-can-help-reshape-urban-transportation-to-improve-air-quality/?sh=1a3c1a571627
18.08.2022	Sharjah's electric sky pods to transport shipping containers and boost UAE's green drive	The National (UAE)	https://www.thenationalnews.com/uae/2022/08/18/sharjahs-electric-sky-pods-to-transport-shipping-containers-and-boost-uaes-green-drive/
01.09.2022	Sharjah is travelling into the future with skypods	Khaleej Times (UAE)	https://www.khaleejtimes.com/opinion/sharjah-is-travelling-into-the-future-with-skypods
22.09.2022	UPods to help: a solution to the transport problem in hard-to-reach regions of Russia is named	FederalPress (Russia)	https://fedpress.ru/article/3101697
29.09.2022	Zero accident rate: which type of transport is not threatened by disasters	TechInsider (Russia)	https://www.techinsider.ru/technologies/1558577-nulevaya-avariynost-kakomu-vidu-transporta-ne-grozyat-katastrofy/
03.10.2022	Unitsky String Technologies Inc. showed what a rush hour in the air looks like	AP NEWS (USA)	https://apnews.com/press-release/ein-presswire-newsmatics/technology-business-belarus-0f9e948431c189ac7b007dc2fc67f386
25.10.2022	Lakukan Transfer Teknologi Sistem Transportasi, Unitsky String Technologies Teken MoU dengan ITS Indonesia	indonews.id (Indonesia)	https://indonews.id/artikel/328317/Lakukan-Transfer-Teknologi-Sistem-Transportasi-Unitsky-String-Technologies-Teken-MoU-dengan-ITS-Indonesia/
25.10.2022	Garap Sistem Transportasi Cerdas, ITS Indonesia Gandeng Unitsky String Technologies	Bisnis (Indonesia)	https://ekonomi.bisnis.com/read/20221025/98/1591387/garap-sistem-transportasi-cerdas-its-indonesia-gandeng-unitsky-string-technologies
27.10.2022	Potensial Diterapkan di Indonesia, uDiscovery Beberkan Keunggulan Unitsky String Technologies	Industry.co.id (Indonesia))	https://www.industry.co.id/read/114498/potensial-diterapkan-di-indonesia-uscovery-beberkan-keunggulan-unitsky-string-technologies
28.10.2022	How Can Unitsky String Technologies Inc. Improve Indonesia's Transport Accessibility?	Railway Technology (UK)	https://www.railway-technology.com/contractors/power-systems/unitsky-string-technologies/pressreleases/unitsky-string-technologies-improve-indonesias-transport/

3.7.2. Development Plans

Plans for 2023-2024 (main tasks)

- 2023 – bringing the number of contracts to 10 (the total length of the uST routes should be at least 100 km);
- 2023 – development of Unitsky String Technologies Inc. to achieve self-sufficiency with the money received from the work on the projects for the creation of commercial uST transport complexes;
- 2024 - start of operation of the first commercial tracks built according to the projects of the engineering company Unitsky String Technologies Inc.;
- 2024 - signing of the first contract for the design and construction of a commercial uST high-speed transport and infrastructure complex.

4. Rolling Stock Manufacturing plant (SW PLANT)



Rolling Stock Manufacturing plant, Belarus

SW PLANT LLC is a dynamically developing company with a wide range of services. We are constantly improving our technologies. Our fleet includes the high-tech equipment from the world's leading manufacturers. Our Company has the ability to develop and design technological documentation.

The staff consists of 147 people, while 90 of them are production personnel.

Today SW PLANT LLC carries out the following activities:

- Turning and milling processing of complex parts made of various materials on multifunctional machining centers;
- Manufacture of complex pattern equipment;
- Laser cutting;
- Bending of sheet metal parts;
- Profile bending (pipe, angle, etc.);
- Fitting and welding works of any complexity;
- Manual and vacuum molding of products made of composites;
- Production of parts made of two-component polyurethanes;
- 3D prototyping;

- Production of various scale models, including vehicles for exhibition purposes and aerodynamic tests from M1:3 to M1:200
- Development and production of electric drives and accumulators;
- Full cycle of painting works.

The advantages of our Company are:

- High processing accuracy;
- Reliable components;
- Guaranteed quality;
- Fast execution of orders;
- Ability to create exclusive products.

The production facility includes two production workshops with specialized areas, equipped with modern and high-precision equipment, as well as a technical control department.

Production shop No. 1 with an area of 2,050 sq.m. with equipment for machining blanks and painting.

It includes the following areas:

1. A mechanical section equipped with six multifunctional 5-axis machining centers. This equipment allows to process parts of complex shapes with high speed and accuracy, perform various operations (milling, turning, threading, etc.) with the use of only one machine.



Multifunctional 5-axis machining centers, SW Plant, Minsk, Belarus, 2022

2. A locksmith and welding section, where preparation for production, procurement work, as well as full-fledged manufacturing of parts on a laser cutting machine and a bending press are carried out. Production of bent-welded structures on multi-purpose stocks using contact, semi-automatic, and argon-arc welding of steels, non-ferrous metals and alloys. Cutting with plasma and gas cutters, assembly of various metal structures and the whole range of locksmith work.



Locksmith and welding area, SW Plant, Minsk, Belarus, 2022

3. A molding and painting area: production of model tooling for subsequent use in the manufacture of fiberglass and plastic parts is carried out here; equipment for manufacturing parts from two-component polyurethanes is placed in this area. A complete coating cycle is also performed with the use of the current equipment, from preparation to polishing and anti-corrosion treatment.



Molding and painting area, SW Plant, Minsk, Belarus, 2022

In the production workshop No. 2 with an area of 1,050 sq.m. assembly work, electrical work, as well as the manufacture of patterns and models are carried out. The workshop is divided into the following sections:

1. 3D prototyping works are carried out on the model area, namely 3D scanning of parts and assembly units for reverse engineering; 3D printing that is production of prototypes of final products, master models, and tooling for casting parts; replication of prototypes and final products; production of models of any complexity and various scales from M1:3 to M1:200; plotter cutting of films and stencils.



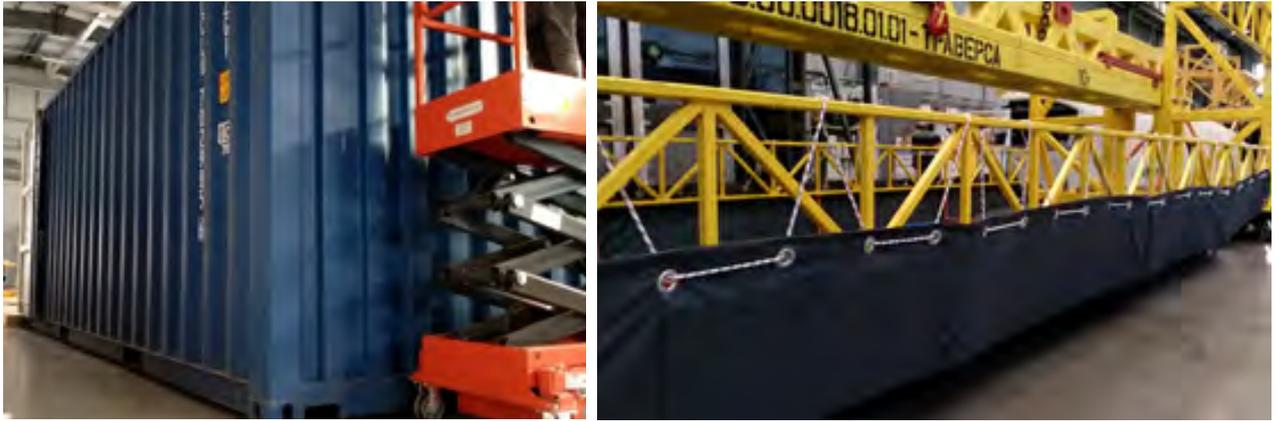
Model area for 3D prototyping, SW Plant, Minsk, Belarus, 2022

2. The electric drive assembly department is engaged in the development and manufacture of batteries and electric drives. The main activity of this section is manufacture of power converter equipment, chargers with a power of up to 20 kW, traction inverters, electric motors with a power of 3 kW or more, energy storage devices of various capacities, remote control units, etc.



The electric drive assembly department, SW Plant, Minsk, Belarus, 2022

3. The assembly shop is used to perform assembly of out on both simple structures, elements, assemblies, and units in general, as well as execution of orders and completion of vehicle assembly.



Assembly shop, SW Plant, Minsk, Belarus, 2022

SW PLANT LLC has its own department of technical control. This department has developed a system for ensuring the quality of work performed, specified in the standards of the organization, which complies with the requirements of ISO 9001. At the stage of delivery, the purchased products undergo control and verification. During the manufacturing process, products are controlled for compliance with certain technical requirements, which are established in the design and technological documentation. The quality of the final manufactured products is confirmed by the acceptance tests. The quality assurance work is based on the availability of qualified and trained personnel, as well as various measuring equipment that undergoes metrological evaluation and confirmation of suitability, and the presence of the necessary conditions to perform reliable control. For detected non-conforming products, procedures have been developed that exclude their further use and transfer to the Customer.



Technical control department, SW Plant, Minsk, Belarus, 2022

In recent years, the Company has manufactured all types of the uST transport being developed by Unitsky String Technologies Inc.

In 2016, the first suspended automatic passenger vehicle uBike U4-621 was assembled, it was designed for passenger transportation along the double-rail track of the string rail overpass route. The curb weight of the vehicle is 820 kg, the maximum technically permissible one is 970 kg. The maximum design speed is 150 km/h. Passenger capacity is two people. It is equipped with energy recovery systems and automatic fire extinguishing system. Since the same year, the uBike has been operated at EcoTechnoPark, as well as presented at many international exhibitions. A prototype uBike is presented been in the office of the General Designer of UST Inc. Anatoli Unitsky.



Suspended Automatic Passenger Vehicle uBike U4-621, Minsk, Belarus, 2022.

In 2017, a new suspended automatic passenger vehicle uBus U4-210 appeared, it is designed for passenger transportation on urban and suburban routes along the double-rail track of a string rail overpass with continuous circular traffic. The curb weight of the vehicle is 2,800 kg, the maximum permitted weight is 3,850 kg. The maximum design speed is 150 km/h. Passenger capacity is 14 people. The compartment contains two seats. It is equipped with energy recovery systems and an automatic fire extinguishing system, as well as the following safety systems: ABS, ASR, anti-derailment system, vision system, collision avoidance system, individual rescue system, emergency communication system. Since April 2017, uBus U4-210 has been operated at EcoTechnoPark in Maryina Gorka.



Suspended Automatic Passenger Vehicle uBus U4-210, Minsk, Belarus, 2022

In 2018, the suspended automatic passenger vehicle uBus U4-220-T2 was manufactured. This composite vehicle (consists of two sections) is designed for passenger transportation on urban and suburban routes along a quad-rail track of a string rail overpass route. The curb weight of the vehicle is 8,600 kg, the maximum technically permissible one is 12,200 kg. The maximum design speed is 150 km/h. Passenger capacity is 48 people, it contains 16 seats. It is equipped with energy recovery systems and an automatic fire extinguishing system, as well as the following safety systems: ABS, ASR, anti-derailment system, vision system, collision avoidance system, individual rescue system, emergency communication system. As the additional options, the vehicle can be equipped with a place to accommodate luggage. Since June 2018, the uBus U4-220-T2 has been operated at EcoTechnoPark in Maryina Gorka.



Suspended Automatic Passenger Vehicle - uBus U4-220-T2, Minsk, Belarus, 2022

In 2018, the suspended automatic passenger vehicle uCar U4-430-T3 was manufactured. This composite vehicle (consists of three sections) is designed for passenger transportation on urban and suburban routes along the bi-rail track of the string rail overpass with continuous circular traffic. The curb weight of the vehicle is 5,675 kg, the maximum technically permissible one is 7,075 kg. The maximum design speed is 150 km/h. Passenger capacity is 18 people, it contains 18 seats. It is equipped with energy recovery systems and an automatic fire extinguishing system, as well as the following safety systems: ABS, ASR, anti-derailment system, vision system, collision avoidance system, individual rescue system, emergency communication system. Since June 2018, the uCar U4-430-T3 has been operated at EcoTechnoPark in Maryina Gorka. Since the end of 2018, the three-section vehicle has undergone some design changes and was divided into two autonomous modules of the uCar U4-430-T3, with the subsequent operation of both vehicles on a flexible track structure at EcoTechnoPark.



Suspended Automatic Passenger Vehicle - uCar U4-430-T3, Minsk, Belarus, 2022

In 2019, the suspended automatic passenger vehicle uCar U4-431-01 was assembled. The single-module vehicle is designed for passenger transportation on urban and suburban routes in tropical climatic conditions along the double-rail track of the string rail overpass. The uCar is designed in T1 climate version according to GOST 15150 (IEC 721-2-1). The curb weight of the vehicle is 4,100 kg, the maximum technically permissible one is 4,550 kg. The maximum design speed is 120 km/h. Passenger capacity is 4 people. It is equipped with energy recovery systems and an automatic fire extinguishing system, as well as the following safety systems: ABS, ASR, anti-derailment system, vision system, collision avoidance system, individual rescue system, emergency communication system. Additional options include a VIP-salon with leather upholstery and wood paneling, a folding table, a mini-bar, and a multimedia system. Since September 2019, the uCar has been in operation at the uSky Testing and Certification Center located in Sharjah (UAE).



Suspended Automatic Passenger Vehicle - uCar U4-431-01, 2022

In the same year, the production of a completely new suspension automatic passenger vehicle uBus U4-212-01, designed for passenger transportation on urban and suburban routes in tropical climatic conditions, along the double-rail track of a string rail overpass, began. The uBus is designed in climatic version T1 according to GOST 15150 (IEC 721-2-1). The curb weight of the vehicle is 8,890 kg, the maximum permitted weight is 11,500 kg. The maximum design speed is 130 km/h. Passenger capacity is 25 people, it has 8 seats and a place to accommodate a disabled person in a wheelchair. It is equipped with energy recovery systems and an automatic fire extinguishing system, as well as the following safety systems: ABS, ASR, anti-derailment system, vision system, collision avoidance system, individual rescue system, emergency communication system. As the additional options, the vehicle can be equipped with a place to accommodate luggage. In December 2022, the fully finished vehicle is planned to be transferred to the uSky Testing and Certification Center in the UAE for commissioning as a part of the uST Transport and Infrastructure Complex.



Suspended Automatic Passenger Vehicle uBus U4-212-01, 2022

At the end of 2020, SW PLANT started assembling the uCont suspended automatic self-propelled chassis (SSh212), designed to transport cargo containers in tropical climatic conditions along the double-rail track of the string rail overpass route. The self-propelled chassis is designed in T1 climatic version according to GOST 15150 (IEC 721-2-1). Chassis curb weight is 6,500 kg, maximum technically permissible one is 10,800 kg. The maximum design speed is 80 km/h. Load capacity is 4,300 kg. It is equipped with energy recovery systems and automatic fire extinguishing system. Since March 2021, the self-propelled chassis has been put into operation at the uSky Testing and Certification Center in the UAE.



Suspended automatic self-propelled chassis uCont (SSh212), Sharjah, UAE, 2021

Since 2021, the active phase of pre-production preparation for the manufacture of a hinged automatic cargo vehicle uCont U4-192-21, designed to transport 20- and 40-foot cargo containers in tropical climatic conditions along the double-rail track of the string rail overpass, has begun. The curb weight of the vehicle is 22,155 kg, the maximum technically permissible one is 52,655 kg. The maximum design speed is 100 km/h. Load capacity is 30,500 kg. It is equipped with energy recovery systems and an automatic fire extinguishing system, as well as the following safety systems: ABS, ASR, anti-skid system, collision avoidance system. As the additional options, the vehicle can be equipped with a vision system. In the second quarter of 2023, it is planned to complete the assembly of the uCont U4-192-21 and start its to commissioning it as a part of the uST Transport and Infrastructure Complex at EcoTechnoPark in Maryina Gorka.

Due to the high quality of produced articles, the manufacture of products of any complexity and individual approach to each client in a relatively short period of time, SW Plant has made up a circle of major permanent partners from various industries who regularly apply to the Company for services great applications .

5. Test and Certification Center (uSky Transport FZE)

Being a member of UST Group with in-house firms covering the whole range of activities for implementation of innovative uSky Test & Certification center, such as fully-equipped advanced engineering company, own manufacture facility with an extensive experience in production of electric vehicles, two certification and testing facilities located in various climatic conditions and a separate unit responsible for certification and testing process, uSky Transport is capable to implement a project of any complexity in accordance with client's mandates and requirements, as well as local conditions.

Organisation chart includes 30 employees:

management representatives (MR) - 2 persons,
engineering and supervising stuff - 10 persons,
administrative, etc. - 18 persons.

A single marketing and sales center for technologies, design solutions, and engineering services, uSky Transport FZE is part of Dr. Anatoli Unitsky's Group of Companies.

uSky Transport (FZE) is the operator of uSky Test & Certification Center in Sharjah, UAE. The establishment has been set up to serve various purposes like:

- Managing day-to-day operations of uSky Test & Certification Center;
- Maintenance of testing and certification activities at uSky tracks in the Center;
- Marketing of Unitsky String Technologies (uST) in the Middle East and Africa region;
- Reception of delegations and business visitors, practical demonstrations of uSky Transport & Infrastructure advantages;
- Training of uSky technicians and operators for the Middle East and Africa region;
- Further development and expansion of uSky Test & Certification Center.

uSky Test & Certification Center in Sharjah is the state-of-the-art technical and marketing institution where uSky concepts have been brought to life. It avails running transport lines for moving passengers and cargo vehicles on suspended track structures with operational stations, service and maintenance workshops, exhibition ground and innovative eco-friendly reception house.

uSky Test & Certification Center occupies almost 300,000 sq.m. of land in the UAE prime venue for innovative technologies that is Sharjah Research Technologies and Innovation Park being under direct supervision of His Highness Sheikh Dr. Sultan bin Muhammad bin Saqr bin Khalid bin Sultan bin Saqr bin Rashid Al Qasimi.

Having different transport complexes in the UAE enables uSky Transport (FZE) to tailor engineering solutions for severe hot and tropical climate requirements. Hands-on everyday operations of different uSky transport systems (mounted, suspended, monorail, birail, rigid, semi-rigid or flexible structures) located at the Center, allows uSky to offer the best transport solution adaptable to any customer's requirement.

5.1. The Latest Achievements

In 2021, the uSky Test & Certification Center in the Emirate of Sharjah, United Arab Emirates began pilot operation of test track No. 1 with a flexible string rail overpass with a length of 475 m (spans of 100 and 200 m) of the uSky elevated Transport and Infrastructure Complex.



uSky Test and Certification Center, Sharjah, UAE, 2021

THE TEST TRACK INCLUDES:

- Rolling stock service station, consisting of: control room, switchboard, server room, repair shop, etc.;
- Passenger station;
- 2 supporting towers and 2 anchoring structures combined with stations;
- Flexible string rail track structure;
- Power supply and communication system, MEP (water supply and sewerage), road, landscaping, etc.;
- uSky freight and passenger rolling stock — electric rail vehicles on steel wheels, called uPods.



Passenger station in the uSky Test and Certification Center, Sharjah, UAE, 2021

THE TEST TRACK OF THE USKY COMPLEX MADE IT POSSIBLE TO CARRY OUT TESTS AND PILOT INDUSTRIAL OPTIMIZATION IN REAL CONDITIONS:

- Regulations for the operation of the Transport and Infrastructure Complex located on the second level, during the day and at night;
- Schedule of passenger and freight traffic;
- Operation of the automatic control system, control room and operators of the complex;
- Issues of maintenance of stations, string rail overpass, uPod, automatic control system, engineering networks and other structural elements of the uSky Transport and Infrastructure Complex.

In 2021, in accordance with international standards, the UAE for the first time certified the uSky Transport and Infrastructure Complex in tropical design with all the main structural elements (certification was carried out by the company TUV SW Standardization certifications, No: CR-SD-13940/05):

1. Prestressed string rail transport overpass;
2. Urban passenger uPod (electric vehicle on steel wheels with on-board component of an automated control system);
3. Anchoring structures (combined with station facilities, repair shop and control room);
4. Supporting towers;
5. Passenger stations with utility networks;
6. Service station (including a control room, repair shop and MEP);
7. Automatic control system of uSky Transport and Infrastructure Complex.



TUV Certificate



TUV SW Standardization Certifications at the uSky Test & Certification Center, Sharjah, UAE, 2021

These works made it possible to identify the optimal parameters of uST Transport and Infrastructure Solutions and their structural elements for subsequent commercial implementation in targeted transport and infrastructure projects launched in 2021.

Currently, 2 more test tracks with a length of 2.4 km each are being built on the territory of the uSky Test & Certification Center.

Start and completion dates of construction and installation works of 3 uSky Test Transport and Infrastructure Complexes	
Start of implementation: June 2018	Planned completion: December 2023*

3 TEST TRACKS				
Test tracks	Overpass (route) length, m	Start date of work	Planned / completion date	Status
Test track No. 1 Flexible string rail overpass	475	June 2018	March 2021	In operation
Test track No. 2 Rigid string rail overpass	2,400	May 2019	Q1 2024*	Under construction
Test track No. 4 Semi-rigid string rail overpass	2,400	May 2019	Q1 2023*	Under construction

* Factors and risks that may affect the completion dates: the economic consequences of COVID-19, the general increase in raw material prices, an increase in the delivery time of individual materials by contractors, difficulties in working with contractors.

TEST TRACKS	HIGHLIGHTS OF CONSTRUCTION PROGRESS
<p>Test track No. 1 Flexible string rail overpass</p>	<p>The test track was put into trial operation in 2021. The entire planned infrastructure of the facility has been completed in full.</p>
<p>Test track No. 2 Rigid string rail overpass</p>	<ol style="list-style-type: none"> 1. Completed installation of 46 supporting towers (spacing is 48 meters); 2. General construction work on anchoring structures has been completed, finishing work is underway; 3. The foundation and the lower level of the concrete walls of the second anchoring structure have been laid, general construction work is underway; 4. Preparatory work for connecting electricity is underway, the connection is planned for the first quarter of 2023.
<p>Test track No. 4 Semi-rigid string rail overpass</p>	<ol style="list-style-type: none"> 5. Installation of eight supporting towers is completed (spacing is 144 meters and 288 meters); 6. General construction works and engineering networks on both anchor supports were completed; 7. Installation works of the first stage were completed on the anchoring structures - installation of anchor units; 8. As of November 2022, 50% of the scope of necessary work for the installation of a string rail track structure has been completed; 9. For the implementation and completion of the string rail track structure installation, 95% of the necessary equipment and technological support facilities were manufactured and purchased; 10. Preparatory work to connect electricity is underway. Connection is scheduled for the second half of December 2022. 11. In the city of Minsk, Belarus, a new model of suspended urban passenger electric vehicle model U4-212-01 (with a capacity of 25 passengers) was manufactured at its own production complex, which will be operated at test site No. 4. All acceptance tests planned for implementation in the Republic of Belarus have been passed. The planned date of shipment to the UAE is December 14, 2022. In February 2023, the arrival of the uPod in the UAE and its subsequent placement on the track structure is planned. 12. Commissioning of test section No. 4 is scheduled for March 2023: upon completion of commissioning of the track structure and uBus U4-212-01.

Completion of civil works at Test Track No. 4, 50 % completion of track structure erection at Test Track No. 4



Laying the track structure for track number 4 at the uSky Testing and Certification Center, Sharjah, UAE, 2022

Assembly of Anchor Units



Dr. Anatoli Unitsky performed visual inspection of lower anchor unit, 2022

Completion of manufacturing of electric vehicle uBus (Europe), commencement of certification of Test Track No. 4



uCar assembly, Minsk, Belarus, 2022

Completion of structural civil works at Test Track No. 2



Test and Certification Centre, SRTIP, Sharjah, UAE, 2022

Commencement of manufacturing of electric vehicle uCont



Photo and visualization of the uCont

SRTIP

Sharjah / 21.10.2022

The range of vehicles at uSky Test & Certification Center had been replenished with one more passenger electric vehicle uCar U4-430, which became the latest addition to uFlash, uCont, and tropical uCar U4-431-01, which are under testing already.

The given uPod was set up at the headquarters of SRTI Park, which is home to uSky Test & Certification Center.



uCar at SRTI Park headquarters, home of the uSky Testing and Certification Center, Sharjah, UAE, 2022

Test and Certification Centre

Sharjah / 26.12.2021



Dr. MAC-Munir Ahmad Chaudhary, the head of the Office of H.H. Sheikh Abdulhakim Al Maktoum, respected representative of United Arab Emirates, 2021

Brazilian delegation in the uSky Test and Certification Centre

Sharjah / 11.03.2022

Representatives of Brazil during Expo 2020. The representative delegation comprised of: Mr. Darci José Lermen, Mayor of Parauapebas, Mr. Antonio Angelo Garcia dos Santos, Mayor of Innocence, Mr. Edson Rodrigues Nogueira, Mayor of Jaraguari, Mr. Cleverson Alves dos Santos, Mayor of Costa Rica, Mr. Anizio Sobrinho de Andrade, Mayor of Paraíso das Águas, Mr. Rodrigo de Souza Mota, Secretary of tourism of Parauapebas, Mr. Keniston de Jesus Rego Braga, Special secretary of the government of Parauapebas, Carajas mine project representatives, Mr. Fernando Luis Correa de Oliveira, Entrepreneur in the solar energy sector, Bruno Quick Lourenço de Lima, National Sebrae director, Carlos Franco Amastha, Owner Shopping Maringá Park. Journalist Alexandre Rafael Barros and cameraman José Luiz Morais Garcia were accompanying the delegates.



Brazilian delegation at the uSky Test and Certification Center, 2022

uSky Transport hosted the delegation visit from the Dominican Republic and the Republic of Haiti

Sharjah / 18.03.2022

The delegations from the Dominican Republic and the Republic of Haiti. The delegation was represented by UN Representative in the Dominican Republic, the Director of the Digital Services Institute of the Dominican Government Office of Information and Communication Technologies (OGTIC), and the Dominican Public Relations and Communications Representative.



Group photo of uSky Transport representatives and the delegates from the Dominican Republic and the Republic of Haiti, 2022

Here Brazil comes again

Sharjah / 27.03.2022

Mayors of 15 Brazilian cities along with directors and top managers of construction and consulting companies in Brazil: Mr. Alan Aquino Guedes de Mendonç, Mayor of Dourados/MS, Mr. José Marcos Calderan, Mayor of Maracaju/MS, Mr. Lucas Centenaro Foroni, Mayor of Rio Brillhante/MS, Mr. Edinaldo Luiz de Melo Bandeira, Mayor of Amambai/MS, Mrs. Clediane Areco Matzenbacher, Mayor of Jardim/MS, Mr. João Carlos Krug, Mayor of the city of Chapadão do Sul/MS, Mr. José Paulo Paleari, Mayor of Nova Alvorada do Sul/MS, Mr. Henrique Wancura Budke, Mayor of Terenos/MS, Mr. Nelson Cintra Ribeiro, Mayor of the city of Porto Murtinho/MS, Mr. Valdir Couto de Souza Júnior, President of Assomasul (Association of Municipalities of Mato Grosso do Sul) and Mayor of Nioaque/MS. Communications Representative.



Brazilian representatives exploring uFlash in demo pavilion in uSky Test ans Certification Center, 2022

uSky Test & Certification Centre has been again visited by His Excellency Emmanuel Hategeka, Ambassador of Rwanda to the UAE.

Sharjah / 07.04.2022

His Excellency Emmanuel Hategeka, Ambassador of Rwanda to the UAE. Ms. Clare Akamanzi, an International Trade and Investment Lawyer, who is currently the CEO of the Rwanda Development Board and a Cabinet Member.



H.E. Ambassador of Rwanda in UAE, Emmanuel Hategeka and Ms. Clare Akamanzi inside uCar at uSky Test & Certification Center, 2022

uSky Transport expands the pool of business contacts

Sharjah / 18.04.2022

uSky Transport & Infrastructure Technology keeps on attracting a great deal of interest from people globally. Recently, uSky Test & Certification Center has been attended by businessmen from different countries.



Dr. Ramzi Al Halasa, Advisor & Board Director of Hamriyah Steel in Sharjah, UAE, 2022



*Mr. Shaiban Mohammed Shaiban Alyasi Almheiri, Chairman of Virtus Group
in the uSky Test and Certification Center, Sharjah, UAE, 2022*



*Mr. Oswaldo Anyosa, Advisor to the mayor of the municipality of Huamanga, Peru
inside the uCar at the uSky Test and Certification Center, Sharjah, UAE, 2022*

Guests from the Philippines toured the uSky Centre

Sharjah / 18.05.2022

H.E. Princess of the Philippines Anne Shek, Mr. Mario Pacurso Marcos, Asian businessman, President & CEO of the PT Philippines Antiviral Indonesia, and Mr. Tomas Jan Zurek, Adviser of the Private Office of Sheikh Saeed Al Maktoum.



Mr. Tomas Jan Zurek, H.E. Princess Anne Shek, Mr. Mario Pacurso Marcos with uSky Transport rep at uSky Test & Certification Center with uCar, 2022

uSky Transport builds business bridges to India

Sharjah / 10.06.2022

Mr. G. Hari Prasad, Founder and CEO of HP Convergences, Bengaluru, Karnataka, India, Mr. Sheik Ahamed Shahil Anooof, Managing Director of the largest transport company Rainland Autocorp Private Limited, Shivamogga, Karnataka, India, Mr. Saji George, Managing Director/CEO of Arabian Coast Trading & Contracting



Mr. G. Hari Prasad, Mr. Sheik Ahamed Shahil Anooof, Mr. Saji George and uSky Transport representatives in tropical uCar, 2022

Mr. Gyan Singh Rathore, Tourism & Investments Advisor at National Tourism Advisory Council, Ministry of Tourism, India, Mr. Siril Saji George, Managing Partner at Ecolit Building Contracting L.L.C.

Sharjah / 02.08.2022



Guests in front of high-speed uFlash in the uSky Test and Certification Center, Sharjah, UAE

Mrs. Sowmya Yellappa, Exhibition & Sponsorship Sales Manager, and Mr. Oliver Bull, Conference Manager Mobility Live, Terrapinn Middle East – representatives of Mobility Live Middle East by Terrapinn Middle East.

Sharjah / 09.08.2022



Commemorative picture of delegates in front of a uCar inside the service station

Mr. José Agüero Avila, the Ambassador of the Republic of Paraguay in the UAE.
Sharjah / 10.10.2022



Commemorative picture of guests in front of a tropical uCar inside the passenger station

5.2. Development Plans

Completion, Testing, Commissioning, Certification of Test Track No. 4 including anchoring structures, supporting towers, Track Structure, uPod (uBus, 25-seater).

Completion, Testing, Commissioning, Certification of Test Track No. 2 including anchoring structures, supporting towers, Track Structure, uPod (uCont & uBus, 16-seater).

6. International Sales and Marketing centre (uDiscovery DMCC)

uDiscovery DMCC is based in Dubai and is committed to bringing innovative technologies and scientific developments to the Middle East, Africa, and beyond.

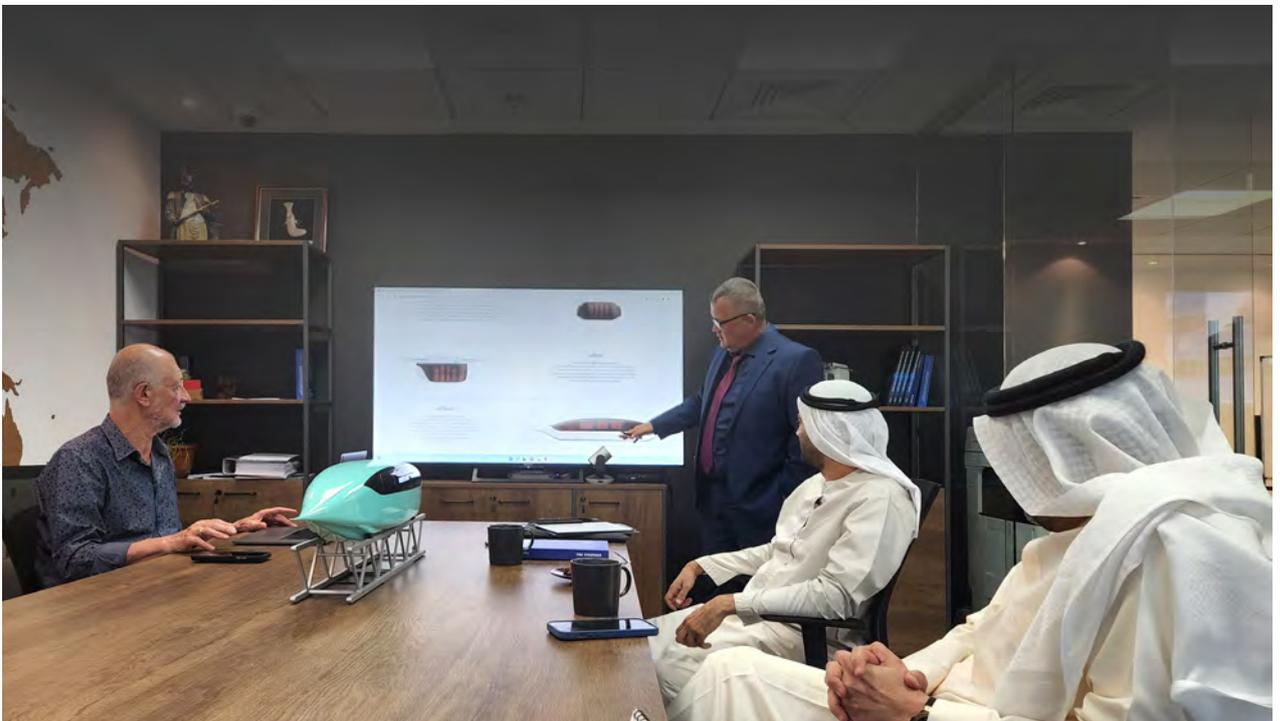
Its role is to promote new developments and attract investment in projects that will benefit our planet. Its activities include transport systems, crewless aerial vehicles, ecological farming.

The company employs specialists from different countries. All employees are highly qualified specialists in the field of marketing, advertising, financiers and sales managers.

Licensed activities include:

- Drafting, planning, and project management
- Project drafting and planning consulting
- Consulting on horizontal and vertical transport systems
- Green building consulting
- Consulting on scientific and technical issues
- Marketing and market research consulting

A single marketing and sales center for technologies, design solutions, and engineering services, uDiscovery DMCC is part of Dr. Anatoli Unitsky's Group of Companies.



Dr. Anatoli Unitsky, Founder of UGC and Mr. Oleg Zaretskiy, CEO of uDiscovery DMCC present UST Transport Complex

6.1. The Latest Achievements

Middle East Rail and Roads & Traffic 2022

17– 18 May 2022, Abu Dhabi National Exhibition Centre, UAE

uDiscovery and Unitsky String Technologies Inc. took part in the Road and Traffic Expo Middle East at Abu Dhabi National Exhibition Center for the Middle East.



Middle East Rail and Roads & Traffic 2022, Abu Dhabi, 2022

Smart Mobility and Transport EXPO 2022

uDiscovery DMCC participated in Malaysia's biggest international smart mobility & transportation technology exhibition

Middle East at Abu Dhabi National Exhibition Center for the Middle East.



Kuala Lumpur, Sep 27 - 29, 2022

Discussion with Mr. Samsi Gunarta

Mr. Samsi Gunarta, Head of DoT, The Provincial Government of Bali regarding the implementation of sustainable transportation solution in Bali urban areas



Bali, Oct 20 – 21, 2022

MoU is signed between ITS Indonesia and uDiscovery DMCC

As a result of this MoU, both parties are taking the first step toward improving the smart transportation system in Indonesia.

To realize its vision, ITS Indonesia is continuing to focus on the development of smart mobility, the development of a digital transportation ecosystem, economic growth, equitable mobility, and environmental sustainability.



On October 24, 2022, ITS (Intelligent Transport System) Indonesia signed a Memorandum of Understanding (MoU) with Unitsky String Technologies, Inc. to collaborate on the development of a smart transportation system in Indonesia

6.2. Development Plans

uDiscovery DMCC, being the part of Unitsky Group and sole authorized sales and marketing center, has an ambitious plans of introduction and distributing Unitsky String Transport Technology and other break-through technologies and developments to all continents.

In the last year uDiscovery DMCC has signed preliminary agreements and memorandums with government of Indonesia, Sonsonat municipality (Salvador), municipality of Chimkent (Kazakhstan). These are potential customers who have already made decision towards implementation of Unitsky String Transport technology in their countries and cities.

In 2022 uDiscovery DMCC, plans to finalize potential deals with government of Rwanda, states of Megalaya and Kerala (India), government of Lesotho, government of Bahrain.

In 2022 uDiscovery DMCC participated in the main transport and mobility exhibitions where it presented Unitsky String Technologies and its advantages to potential customers and users. The company's participation in EuroAsia Rail Exhibition in Turkey and Middle East Rail and Roads & Traffic Exhibition in Abu Dhabi has been also confirmed.

In the nearest future the ambitious tasks will require strengthening of the company staff from present 12 to 20 well-qualified professionals capable to cope with growing demand for Unitsky String Technologies around the world.

7. Conclusion

The primary goal of the current report is to provide an overview of the Unitsky Group of Companies, and String Transport Technology, as well as their developments and achievements in general and, especially, in 2021 and 2022.

In 2021-2022 all companies comprising UGC and all units of UST Inc. have been intensively working on developing the technology and technical solution, including the practical construction of string transport lines in Belarus and UAE, test operation of available passenger line in Sharjah and marketing of commercial projects around the globe.

The facts reflected in this information pack are clear: Unitsky String Technologies have been developed to the level when it can be applied and commercialized due to its advantages and accessibility. At the same time Unitsky Group of Companies has all capabilities to provide fully-fledged engineering, manufacturing and construction services towards the fast and affective implementation of the project regardless of the project's complexity.

Developments:

- Agreements to construct uST Transport Complexes been signed in Sharjah (UAE), Dubai (UAE), El Salvador, Rwanda, Kazakhstan, and the United States.
- Awareness and brand loyalty to the Unitsky Transport Complex has been increased.
- Customers' understanding of the system by developing and enhancing new marketing materials has been improved.
- Marketing agencies in regional development centers have been opened.



Unitsky String Technologies Inc. (UST Inc.)

Minks, Belarus
www.ust.inc

uSky Transport FZE

Sharjah, UAE
www.uskytransport.com

uScovery DMCC

Dubai, UAE
www.uscovery.com

UVR LLC

Minks, Belarus
www.uvr.aero

Astroengineering Technologies LLC

Minks, Belarus
www.aet.space

SW Plant

Minks, Belarus
www.sw-plant.by