



The **agile**
creative organization

NOVAEKA

Introducing Novaeka

Novaeka is an Italian company founded in 2018 specialized in providing high quality fluidic and mechanical solutions for the aerospace industry, primarily for the ground segment.

The team is composed of highly qualified experts with different background, ranging from aerospace engineering to mathematics, physics and computer science.

Our core skills are Fluid dynamics, Cryogenics, Mechanical Engineering, Physical Modeling and Software development.

Around our core team we have built, during the years, a constellation of trusted suppliers and subcontractors that allow us to deliver turnkey solutions to our clients maintaining the flexibility and adaptability that only a small team can guarantee.

To ensure extremely quick response times to changes in requirements we have developed software tools that automate and streamline many time-consuming and error-prone tasks in the design process.

Fluidic Ground Segment for Launchers

We are experts in managing **fluid loading** into launch vehicles and **emergency draining**, as well as **storing and preparing the propellants** inside the spaceport.

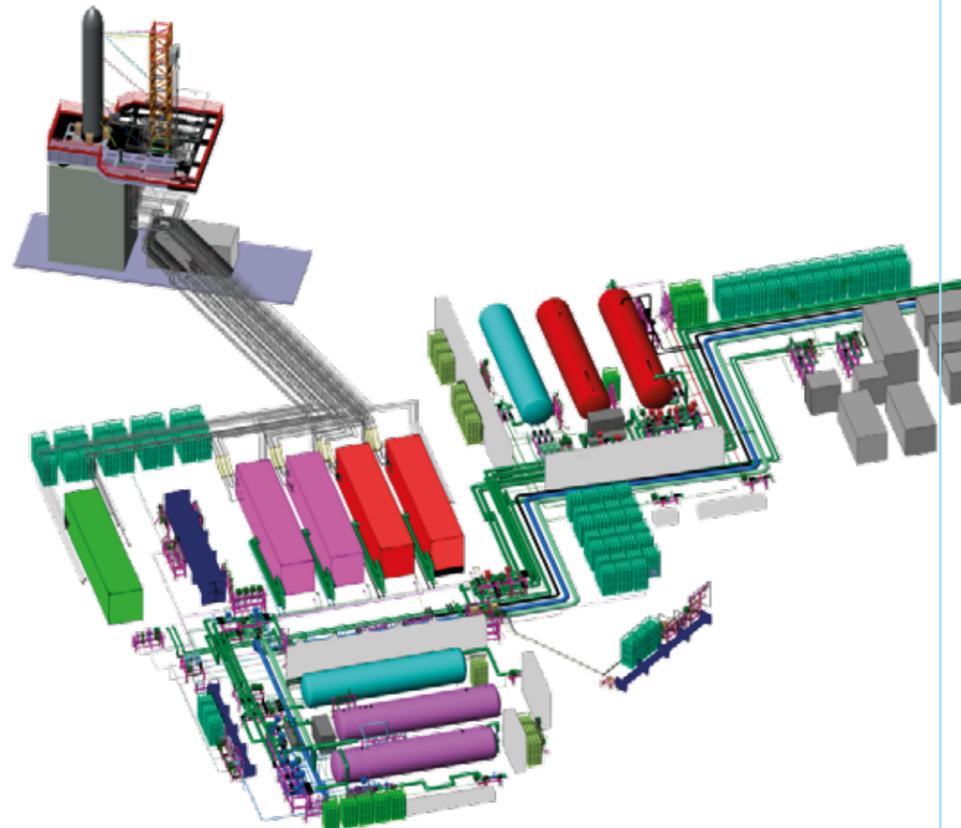
In 2023 AVIO selected us to lead the design of the Fluidic Ground Means for a small **two stage LOX/LCH4 launcher** that will be launched to test several technologies in flight.

We designed the **lines and equipment to connect the bulk storage of fluids to the launcher**. The entire system is on shelters so it can easily be transported and adapted to different launch sites.

We also designed the bulk storage subsystem, which includes the **handling and conditioning of propellants**.

The whole system is currently under construction.

We are currently working on the ground segment of the **VEGA-E launcher** for **AVIO**, adapting the old launchpad of Ariane 5 in the **Guiana Space Center**.



Mathematical Modeling and Software

Modeling and simulating **complex physical systems** is an absolute necessity. We have developed **custom software** and used commercially available solutions for a large variety of **thermo-fluid-dynamics studies**.

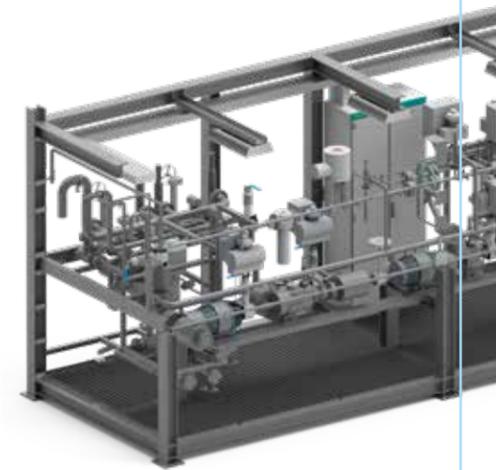
We apply these skills to develop **Hardware In The Loop** solutions and tools to automate the internal engineering processes and **streamline the design** of our solutions.

Portable Fluidic Subsystems

We offer turnkey solutions for **portable fluidic subsystems** that can be shipped in standard containers and used to provide basic fluidic functions.

These **modular** and **flexible systems** are ideal to build low cost, extensible test facilities and more.

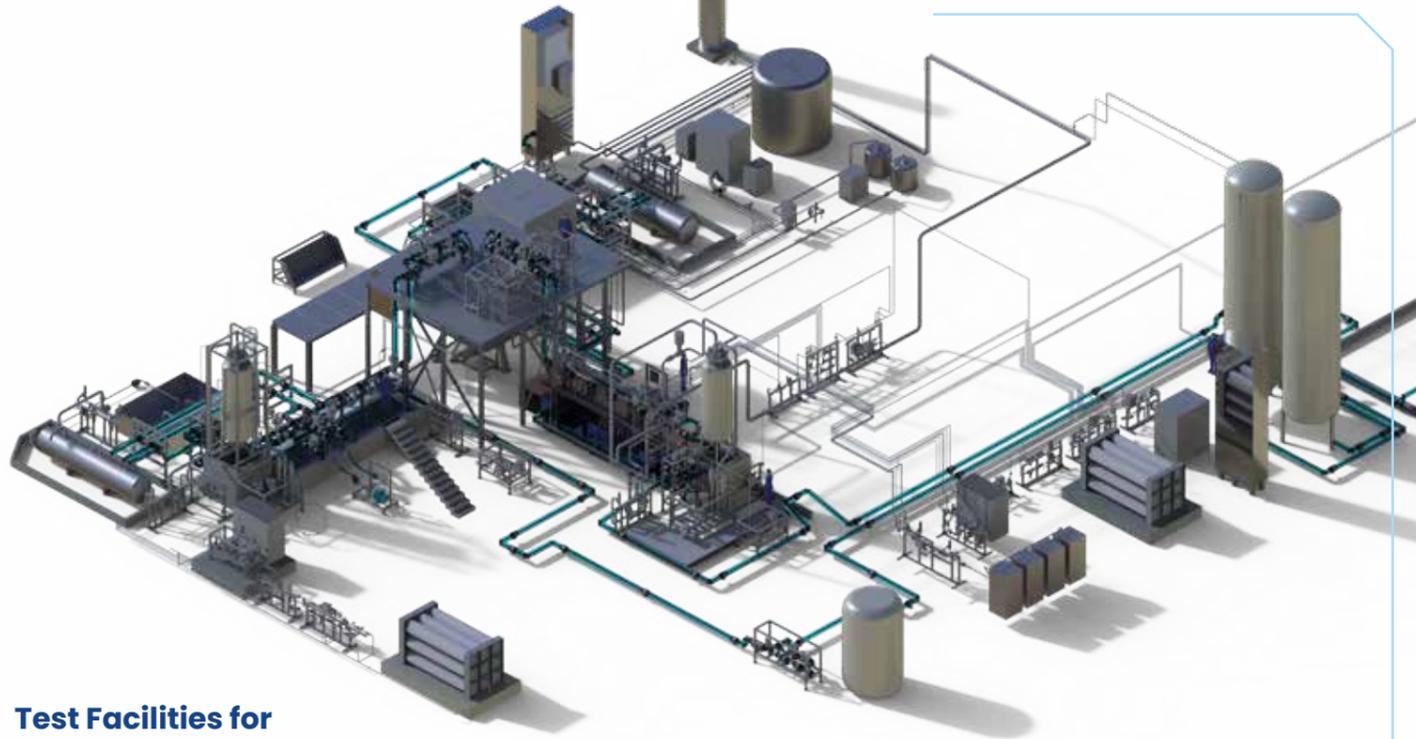
Among the subsystems we provide are **cryogenic** (LOX, LCH4, LN2) and **high pressure gasses** (GN2, GHe, GOX, GH2, GCH4) with **customized values of flow rate and pressure**.



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Test Facilities for Rocket Engines

We started working on test facilities in 2019, when we were trusted with the **design** of the **fluidic subsystem** of one of Europe largest test facilities for cryogenic liquid rocket engines: the **Space Propulsion Test Facility for AVIO**.

The facility was built in 2021 in Sardinia, and **a 100 kN (22,000 lbf) LOX/LCH4 engine** has been successfully tested there several times. The facility will soon be expanded to allow testing **engines up to 1,000 kN (220,000 lbf)**.

Thanks to this first experience we were selected to design a test facility for a **40 kN (8,800 lbf) LOX/LCH4 engine** that The

Exploration Company will build very soon in Bordeaux (France), and we supported Pangea Aerospace in the design of a facility for **a 500 kN (110,000 lbf) LOX/LCH4 engine** that will be built in the coming years near Barcelona (Spain).

After being recognized as experts for the fluidic subsystem of test facilities, we went on to become **Prime Contractors for the whole design phase**, thus including civil works, electric engineering, safety and regulations, authorization and permitting, data acquisition and control.

As Prime Contractors we designed the **Orbital Propulsion Test Facility** for

AVIO, for the testing of a **4 kN (880 lbf) HTP/RP1 engine**. The facility has been used for the first time in late 2024 achieving successful ignition of the engine.

The next growth step was done in 2024, when we also became **manufacturers of test facilities**, delivering to the client the **turnkey system** ready for use.

As manufacturers we created a facility for the **testing of cryogenic flight tanks with LN2**, that was delivered at the end of 2024, and we are currently building a facility for the **testing of turbopumps with GN2/LN2**. Both facilities are for AVIO and located near Rome.



Fluidic Ground Support Equipment for Satellites and Spacecrafts

Since 2018 we have worked on **Fluidic Ground Support Equipment** for large satellites and other spacecraft.

We designed the FGSE used to load **HFE** into the thermal control loop of the **Orion capsule** and the FGSE used to load pure **Ammonia** into the thermal control loop of the **NEOSAT satellites**.

As **prime contractors** we work for **Thales Alenia Space** and **AVIO**, delivering the finished product including **testing** and **certification**.

We assemble and test these small systems in a construction site near our offices.



Flight Components for Spacecrafts

In 2020 we were chosen by **Thales Alenia Space** to develop a prototype of a **Pressure Regulation Valve** to be installed in habitation modules for the future **moon orbiting station**. The first prototype was received with enthusiasm and the project to make it space certifiable was started in 2024.

We are currently working on the component design and the documentation required for its certification.