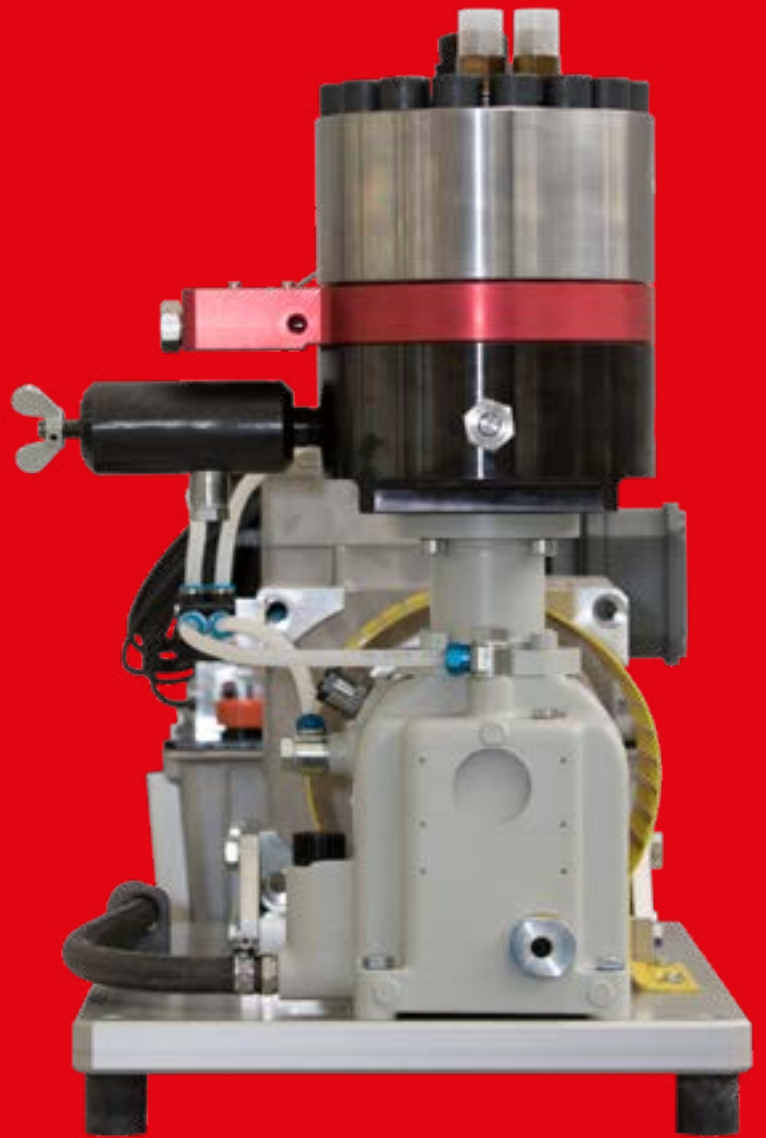


NOVA SWISS



DIAPHRAGM COMPRESSORS



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HYDROGENIUM

NOVA SWISS FUTURE TECHNOLOGY ON A WORLD TOUR

The Energy Observer has been travelling around the world since summer 2018. The catamaran is powered by solar, wind and hydrogen energy and is intended to provide information on renewable energies as well as sustainable technology and its potential during its six-year journey. Nova Swiss supplied the H₂ compressor system, which was installed in the expedition boat.



MK1000 / 3000 Range

DIAPHRAGM COMPRESSOR SYSTEMS FOR GAS APPLICATIONS



MK-1000-V09-GM / MK-3000-V09-GM

- 1'000 bar / 3'000 bar, for N₂, Ar, He applications
- Start/Stop function
- Asynchron motor drive (Standard)



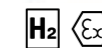
MK-1000-V09-SD / MK-3000-V09-SD

- 1'000 bar / 3'000 bar, for N₂, Ar, He applications.
- For precise pressure control
- Servo motor drive (Standard)



MK-1000-V09-GM-H₂ / MK-3000-V09-GM-H₂

- 1'000 bar / 3'000 bar, for hydrogen applications.
- Start / Stop function
- Asynchron motor drive in ATEX: II 2G IIC T4 Gb



MK-1000-V09-SD-H₂ / MK-3000-V09-SD-H₂

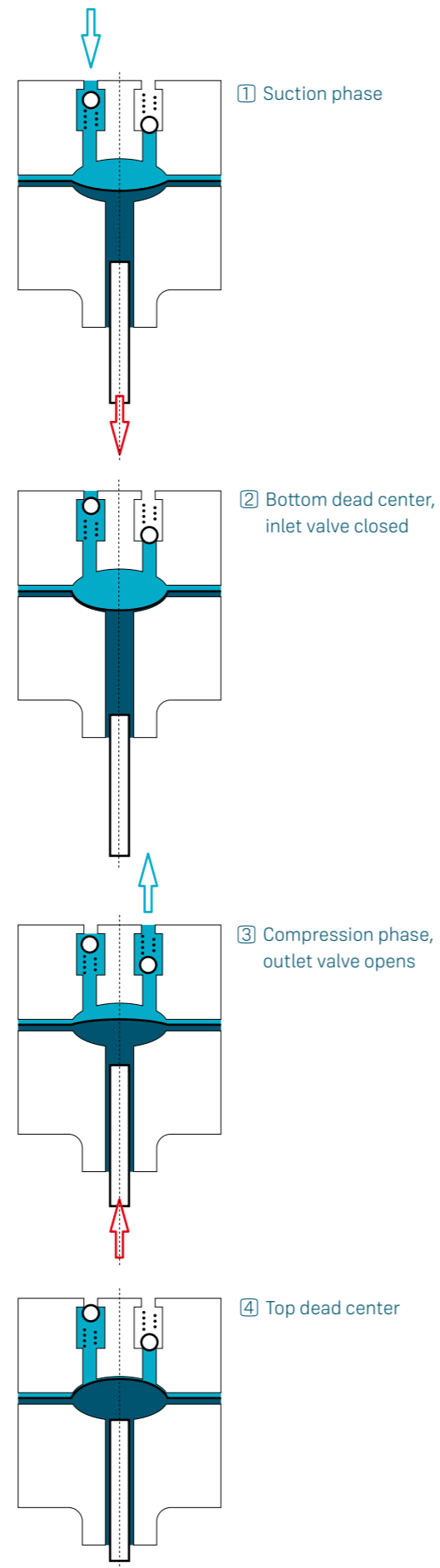
- 1'000 bar / 3'000 bar, for hydrogen applications.
- For precise pressure control
- Servo motor drive and lubrication unit in ATEX: II 2G IIC T4 Gb

Customized compressor systems on request.

FUNCTIONAL PRINCIPLE

- Gas compression from 20 bar (300 psi)* minimum inlet pressure up to 1'000 or 3'000 bar (14'500 or 43'500 psi) maximum outlet pressure
- Standard version for compressing Nitrogen, Argon, Helium or Clean air
- Special explosion proofed version for Hydrogen compression (using special lubrication oil)

In a double concave chamber the gas is compressed by an oscillating membrane insert consisting of three membranes, which is hydromechanically set in motion from one side. The diaphragm »seals and separates« the gas chamber hermetically against the drive unit. The three-part diaphragm insert is clamped between two diaphragm plates on the outer circumference and set in motion by the hydraulic pressure.



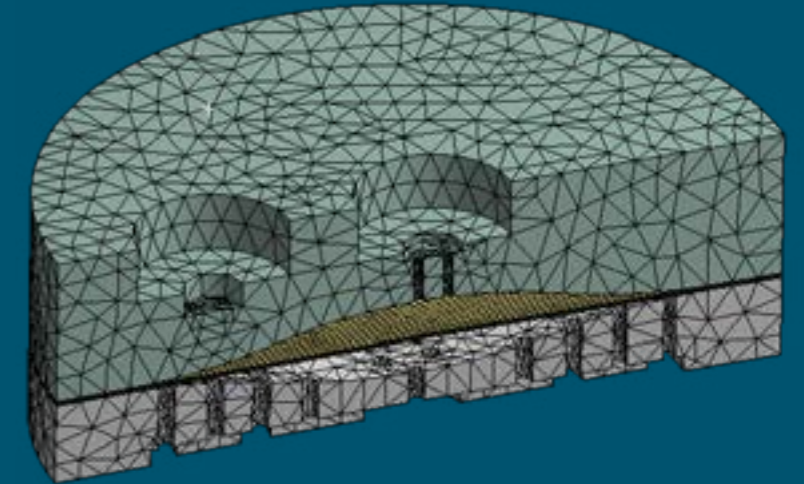
* lower inlet pressures upon request

ADVANTAGES

- Maximal tightness
- Low operational costs
- Very clean: no contamination and no dirt or particles through oil free compression
- Diaphragm plates lifetime up to 2'500 hours (MK1000)
- Several options available

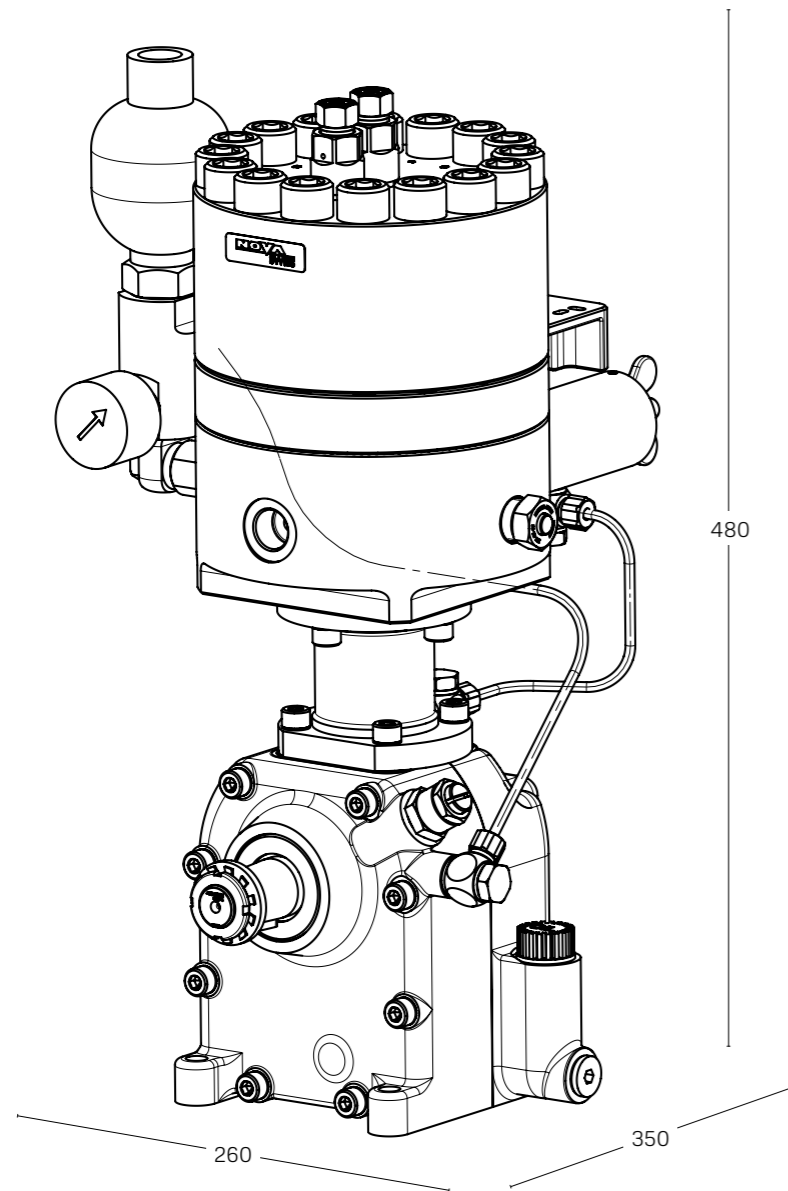
Due to the high leakage-free design of the compressor head, dangerous gases for humans and the environment can safely be compressed to high pressure.

NovaSwiss diaphragm compressors are therefore frequently used for applications with explosive gases.



Heart of Diaphragm Compressor

Technical Data

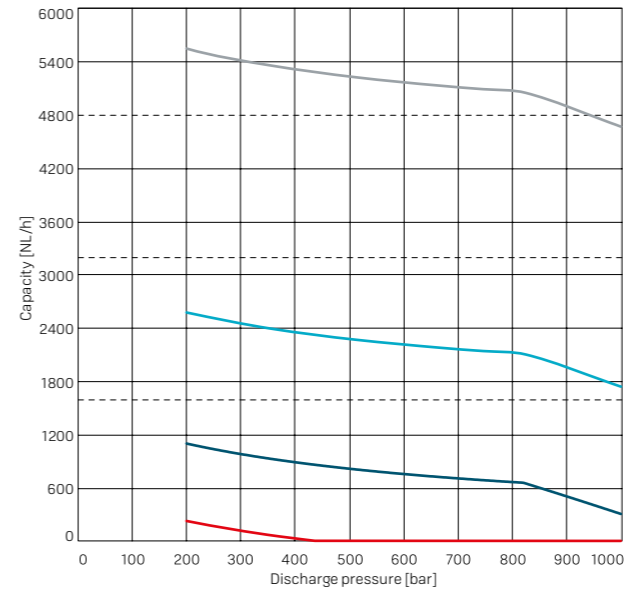


TECHNICAL DATA			
Dimensions	480 × 350 × 260 mm (height × length × depth)	Gas connection	HP 1/4" AVA (Anti vibration connection assembly)
Weight	38 kg (without options)	Drive motor (option)	Gear motor (fixed speed) or Servo motor (0 - 350 RPM)
Working medium standard	Nitrogen, Argon, Air, Helium	Working medium for H ₂ types	additionally Hydrogen, (spec. oil, ATEX: II 2G IIC T4 Gb)
Suction pressure	min. 20 bar, max. 200 bar	Discharge pressure	max. 1'000 / 3'000 bar
Rotation Speed	min. 300 RPM, max. 350 RPM	Power	2,2 kW
Mounting orientation	vertical	Diaphragm rupture indicator	mechanical indicator (pin)
Operating Temperature	+10 °C ... +40 °C	Storage Temperature	+30 °C ... +60 °C

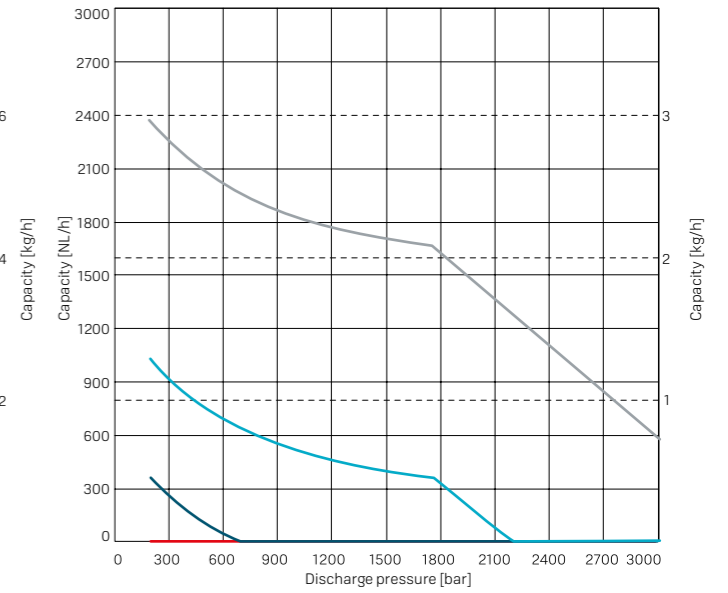
Performance Diagram

MK 1000 / 3000 NITROGEN

1'000 bar, max. 5'000 NL/h

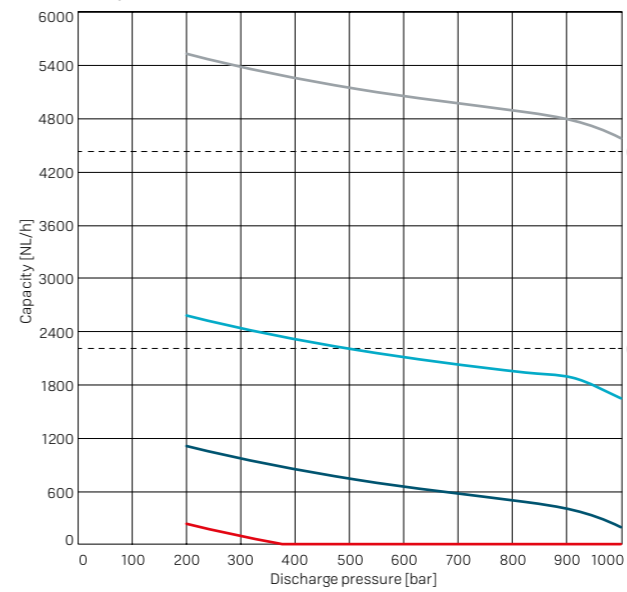


3'000 bar, max. 1'600 NL/h

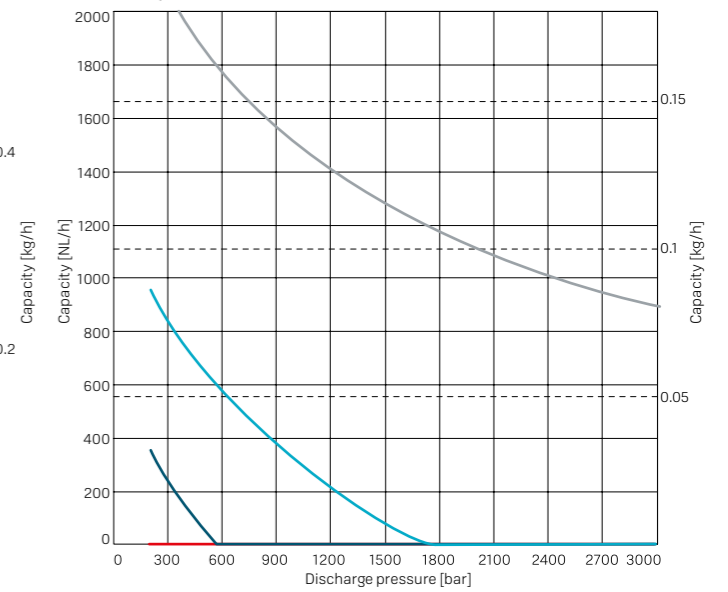


MK 1000 / 3000 HYDROGEN

1'000 bar, max. 4'800 NL/h



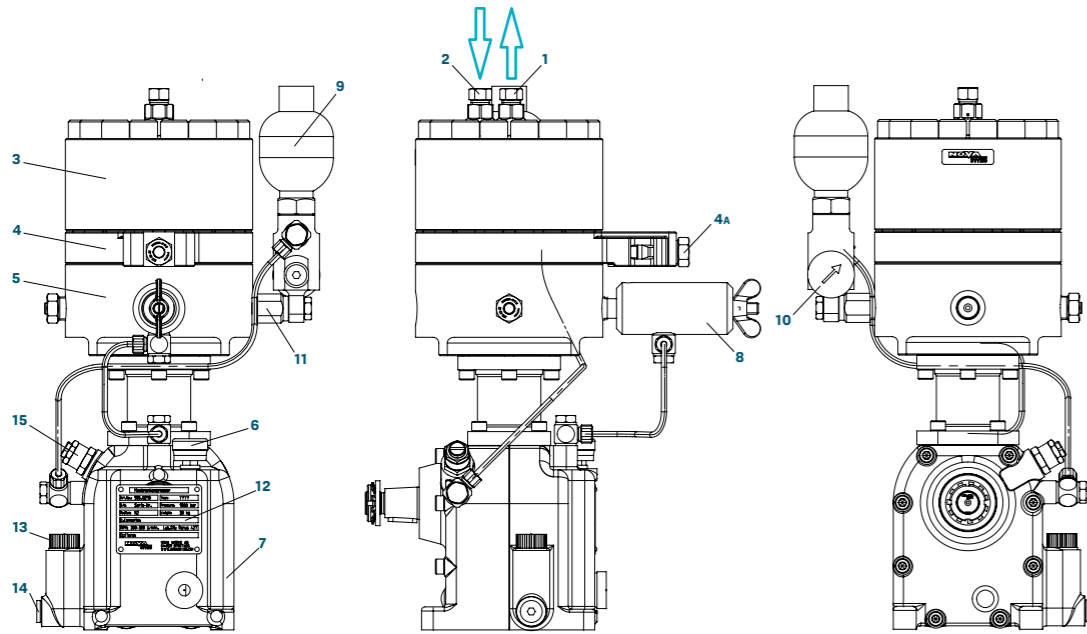
3'000 bar, max. 900 NL/h



Suction pressure

- P₀₄ = 200 bar
- P₀₃ = 100 bar
- P₀₂ = 50 bar
- P₀₁ = 20 bar

Parts and options



PARTS			
1	Gas delivery valve	8	Oil safety valve
2	Gas inlet valve	9	Membrane accumulator
3	Head	10	Oil pressure gauge
4	Diaphragm rupture indicator	11	Oil suction valve
4a	Pin	12	Type plate
5	Head base	13	Oil dip stick/ oil filler
6	Air filter	14	Oil drain screw
7	Crank drive	15	Oil regulation valve

- available option
- not available

BARE COMPRESSOR			COMPRESSOR UNITS		
For inert gases: N₂, CO₂, Ar etc.					
555.0218	555.0228-001	1'000 bar, with gear drive	●	●	●
555.0218	555.0228-003	1'000 bar, with servo drive	●	●	●
555.0221	555.0229-001	3'000 bar, with gear drive	●	●	●
For Hydrogen					
555.0218-1	555.0230-001	1'000 bar, with gear drive	●	●	●
555.0221-1	555.0231-001	3'000 bar, with gear drive	●	●	●
555.0218-1	555.0230-003	1'000 bar, with servo drive	●	●	●
555.0221-1	555.0231-003	3'000 bar, with servo drive	●	●	●

OPTIONS FOR UNITS		
552.0166	Head turn 45°	●
552.0169	3.1 Cert	●
552.016	Special Oil for Hydrogen	●

Applications

STANDARD SYSTEMS

- Gas metering units
- Gas filling benches
- Ultrapure gas systems
- Pressure test units
- Pressure supply units
- Laboratory and Research
- Gas leakage detection



Gas metering unit
Nitrogen, Argon, CO₂, 70 bar - 1'500 bar



High pressure supply system
Argon, 6'000 bar

CUSTOMIZED SYSTEMS

For our demanding customers we also offer complex customer-specific compressor system solutions.



Customized test benches
1'000 bar - 10'000 bar



High-pressure technology in three variations

STANDARD

Standard valves, fittings, adapters and pipes for the pressure range up to 60 kpsi (4'000 bar).

BUSINESS

High pressure operating systems like Compressors, Gas dosing systems, Hand pumps and Pressure supply units. Supporting pressures up to 145'000 psi (10'000 bar) and gases like hydrogen, nitrogen, carbon dioxide, helium or argon.

EXCLUSIVE

Nova Swiss offers customized high pressure technology applications. Their distinguishing features are; mature product development and design, high precision, made-to-fit connection geometries and simple to use. The high pressure components have proven their service worthiness even under harshest conditions and high physical strain.

DEVELOPMENT AND CONSULTING

We create the basis for sophisticated, new and optimized products in the areas of High-Pressure Technology and Engine Components via the continual expansion of our expertise and results-oriented research.

Our material laboratory is equipped with state-of-the-art technology, and it is here that we analyze a wide range of substances in our search for suitable materials and manufacturing processes. Our service spectrum also includes complex calculations of our customers' requirements. Furthermore, we can also offer interdisciplinary partnerships in the area of surface technology in the form of complex analysis and test procedures for quality testing of coatings.

We constantly ensure that all Nova Swiss products meet the latest requirements of the market as well as all statutory regulations.

Our products and services

- New product development
- Optimizations
- Calculations and simulations
- Analyses and tests of materials and coatings

THE FIRST ELEMENT

Hydrogen was the first element that ever formed. It was the substance that kindled the fire in the stars. On the Earth, the oceans are the largest water resource with a volume of around **1.338.000.000 km³**. The sea was also the place where life first began. Water is life and life is progress.

THE EVOLUTION OF TECHNOLOGY

Like evolution, research and development is a continuous process of change. Adapting to current situations, pursuing new approaches and looking at other sectors – this is how a company can make itself future-proof. Products and services from Nova Swiss are highly developed and extremely reliable. Our most important strength is our adaptability. Technologies come and go. However, Nova Swiss has always succeeded in leaving the obsolete behind and integrating new products into the company while maintaining our customary high quality standards.

The future belongs to you

Our pioneering spirit makes Nova Swiss your ideal development partner. For what is and what will be. This is how a workshop business that produced cylinders and crankshafts was able to transform itself into a diversified company with a focus on cutting-edge technology. Join us on our journey into the future.

WHAT MAKES YOU SUPER IS NOVA

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