

NEW
NORMALLY OPEN VALVE
3/4" AND 1" MP
CONNECTIONS



1000 BAR **PILOTED SOLENOID** **VALVES NC & NO**

- Ultra-compact design
- Best-in-class customer value
- Low weight
- Low electrical power consumption



Nova Swiss is proud member of
Hydrogen Europe association.

The Evolution of Technology

ENTER THE POST CARBON ERA

Like evolution, research and development is a continuous process of change, adaption and pursue for new approaches. Nova Swiss has developed high expertise and performed intensive in-house research in material research to mitigate and minimise embrittlement of high-pressure components in contact with hydrogen, being the market leader in this segment.

Therefore products and services from Nova Swiss are highly developed and extremely reliable.

Nova Swiss manufactures components for hydrogen from 350 bar (5'075 psi) up to 1'380 bar (20'000 psi).

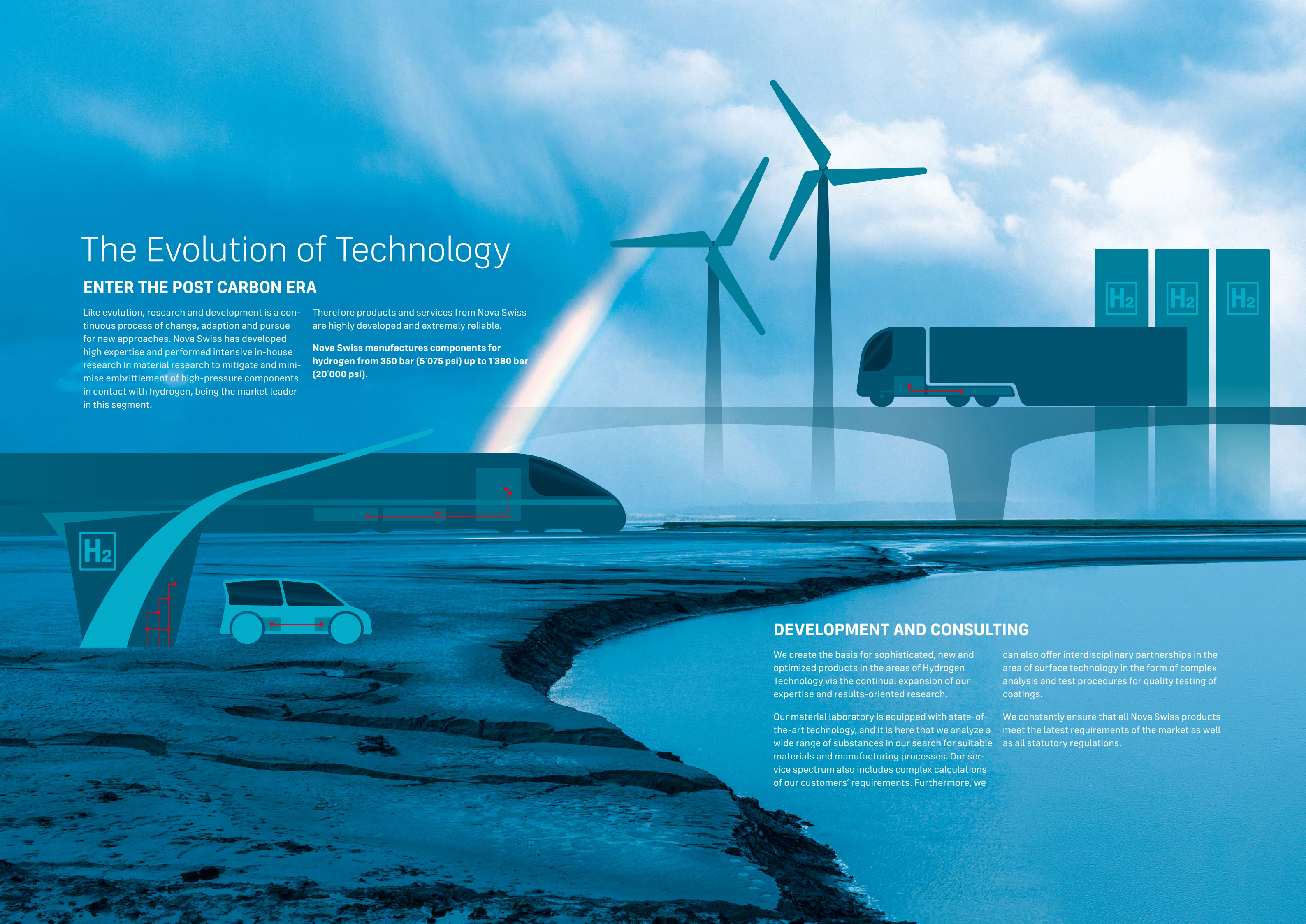
DEVELOPMENT AND CONSULTING

We create the basis for sophisticated, new and optimized products in the areas of Hydrogen Technology 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.



Applications

POST CARBON TECH

- H₂ filling stations
- Renewable Energy
- Alternative Fluids
- Automotive (Trucks, Buses, Cars)
- Transportation (Trains, Ships)




RESEARCH & DEVELOPMENT

- Leak testing systems
- Burst Testing systems
- Fatigue testing systems



Other Nova Swiss H₂-Products







| | MANUAL NEEDLE VALVES | ACTUATED NEEDLE VALVES | SOLENOID VALVES |
|------------------------------------|--|--|--|
| FLOW Kv [m³/h] | up to 4.5 | up to 4.5 | up to 0.6 |
| MOBILITY AND TRANSPORTATION | ✓ | ✓ | ✓ |
| FILLING STATIONS | ✓ | ✓ | ✓ |
| RESEARCH AND DEVELOPMENT | ✓ | ✓ | ✓ |
| INDUSTRY | ✓ | ✓ | ✓ |
| | Manual valves are available in different body patterns with connections from ¼" up to 1" MPCT and MAWP 1'380 bar (20'000 psi). All valves allow bi-directional flow, have two-piece stem configuration and are available also for extreme temperature applications. | All manual valves are available with normally open (ATC) or normally close (ATO) actuation allowing remote control and actuation. Actuators can be equipped with proximity and micro-switches. All valves allow bi-directional flow. | Solenoid valves incorporate highest quality and the smallest possible footprint and weight (max. 1.5 kg). SP-valve with 5.2 mm orifice has ¾" MPCT, SD-valve with 0.35 mm orifice has ¼" MPCT connection, both are normally closed and capable of MAWP of 1000 bar (14500 psi). SD valve allows bi-directional flow. |
| | Learn more: novaswiss.com/mnv  | Learn more: novaswiss.com/anv  | Learn more: novaswiss.com/sv  |

FITTINGS, ADAPTERS AND TUBING

Wide range from ¼" up to 1" MP tube O.D. with 1'380 bar (20'000 psi) MAWP, allow safe connection of all high-pressure components and have a leak free H₂ circuit.



| | CHECK VALVES | SAFETY VALVES | COMPRESSORS | ACCESSORIES |
|------------------------------------|---|---|--|--|
| FLOW Kv [m³/h] | up to 1.47 | N/A | N/A | N/A |
| MOBILITY AND TRANSPORTATION | ✓ | ✓ | ✓ | ✓ 3 4 |
| FILLING STATIONS | ✓ | ✓ | ✓ | ✓ 1 2 3 4 5 6 |
| RESEARCH AND DEVELOPMENT | ✓ | ✓ | ✓ | ✓ 1 2 3 4 5 6 |
| INDUSTRY | ✓ | ✓ | ✓ | ✓ 1 2 3 4 5 6 |
| | Check valves are available with connections from ¼" up to 1" MPCT and MAWP 1'380 bar (20'000 psi). All valves are with semi-soft seat guaranteeing leak tight service. | CE marked Safety valves protect the circuit and operators vs. over-pressurisation. High-pressure process connection is ¼" HPCT and bleed connection is ¼" NPTF, MAWP is available up to 2'000 bar (29'000 psi). | Diaphragm Compressors with low operational cost and ease of maintenance are supplied as bare compressors or as units ready for use either with asynchronous- or servo motor drive. They are capable of pressurizing and maintaining the process gas clean from 20 bar up to MAWP of 3'000 bar (43'500 psi) with flow up to 4'800 NL/h at 1'000 bar (14'500 psi). | <ol style="list-style-type: none"> Flexible hoses Gas boosters Pressure regulators Gauges Pressure transducers Temperature transducers |
| | Learn more: novaswiss.com/cv  | Learn more: novaswiss.com/sfv  | Learn more: novaswiss.com/cp  | Learn more: novaswiss.com  |

CUSTOMIZED SOLUTIONS

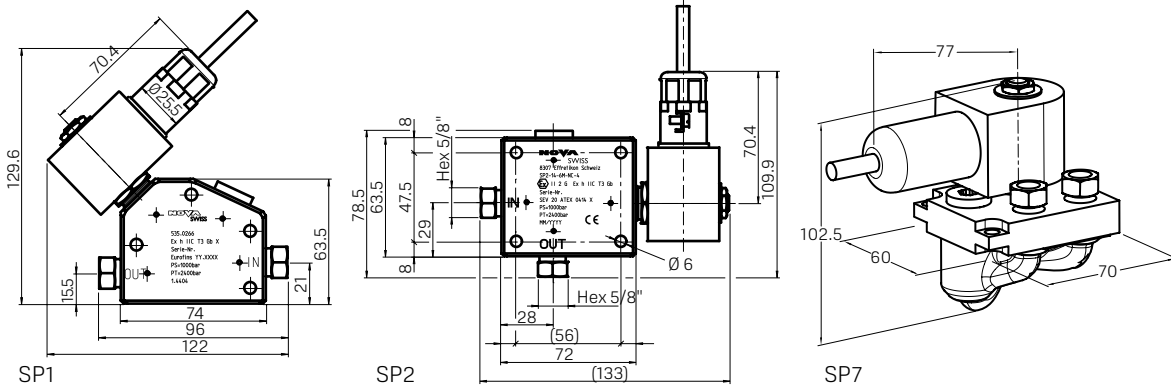
Contact Nova Swiss for customized products and solutions.

SP – Piloted Valves for H₂-Applications

The ultra-compact and extremely light Nova Swiss solenoid valve NC is designed for hydrogen and inert gases applications for an operating pressure of up to 1'000 bar. Your applications can now be realised even more cost-efficiently thanks to its

minimal dimensions. The piloted 2-way on/off valve, manufactured from stainless steel, is monostable (normally closed or open). It features a flow coefficient KV = 0.6 m³/h.

| VALVE DATA | NC | NO |
|------------------------------|--|------------------------|
| Stable state | Valve currentless closed (safety function) | Valve currentless open |
| Operating pressure | 10 – 1'000 bar | |
| Test pressure | > 1'500 bar | |
| Burst pressure | > 2'400 bar | |
| Differential pressure | min. 10 bar | |
| Gaseous medium | H ₂ , CO ₂ , N ₂ , He, Ne, Ar, Kr, Xe | |
| Medium temperature | -40 °C ... +80 °C | |
| Ambient temperature | -40 °C ... +80 °C | |
| Flow coefficient (KV) | 0.6 m ³ /h (6M version) | |
| Nominal width | 5.2 mm | |
| Switching time | < 0.5 sec | |
| Flow direction | uni-directional | |
| HP connection | NOVA 6M (Tube 3/8", 9/16-18UNF) | |
| Weight | < 1.5 kg | |
| Life span | 10 years or 100'000 cycles | |
| Electrical data | | |
| Power supply | 24 VDC (or PWM, other options upon request) | |
| Power consumption | 14 W | |
| IP code | IP 67 | |



| VALVE CODING | | | | | |
|--------------|---|--------------------------------|--|--|--|
| Series | Flow path | Pressure | Connection | Actuation | Options |
| SP | | 14 | | | |
| | 1 = 2-way straight 2 = 2-way angle 7 = 2-way straight 3D ¹ | 14 = 1'000 bar (14'500 psi) | 6M = 3/8" MPCT 12M = 3/4" MPCT 16M = 1" MPCT | NC = Normally closed NO = Normally open | = Std. 4 = Atex ^{2*} U = UL ^{3*} |

¹ Available only with 6M connections

² Solenoid coil; Atex Ex II 2G Ex mb IIC T3. Valve – Ex II 2G Ex h IIC T3 Gb*

³ Solenoid coil and valve according UL*

*Certification in progress

Contact Nova Swiss for customized solutions.