INNOMOTICS

Supporting Green Hydrogen Production.

Innomotics PR150 – Thyristor-based rectifier series for green hydrogen production with power ratings from 5 to 16 MW

Sustaining green hydrogen production through electrolysis.

In the electrolysis process, the production of hydrogen or other materials is closely tied to the amount of Direct Current (DC) supplied. Therefore, it is crucial to have access to a reliable and efficient DC power supply system. Rectifiers play a key role as they transform the Alternating Current (AC) provided by the electrical grid to the Direct Current (DC) required by the electrolysis process.

Your investments.

When making an investment in green hydrogen solutions, it is important to consider factors such as:

Additionally, the longevity of the system should be considered to ensure that it can be relied on for up to 30 years, even in challenging environmental conditions and infra-structure. The ability of the system to perform under these conditions is a true test of its "best-in-class availability".

Requirements in green hydrogen solutions

High efficiency, availability, reliability in operation, and cost effectiveness

Fast diagnosis of system conditions, minimal planned downtimes, and premium service

Fast installation and commissioning

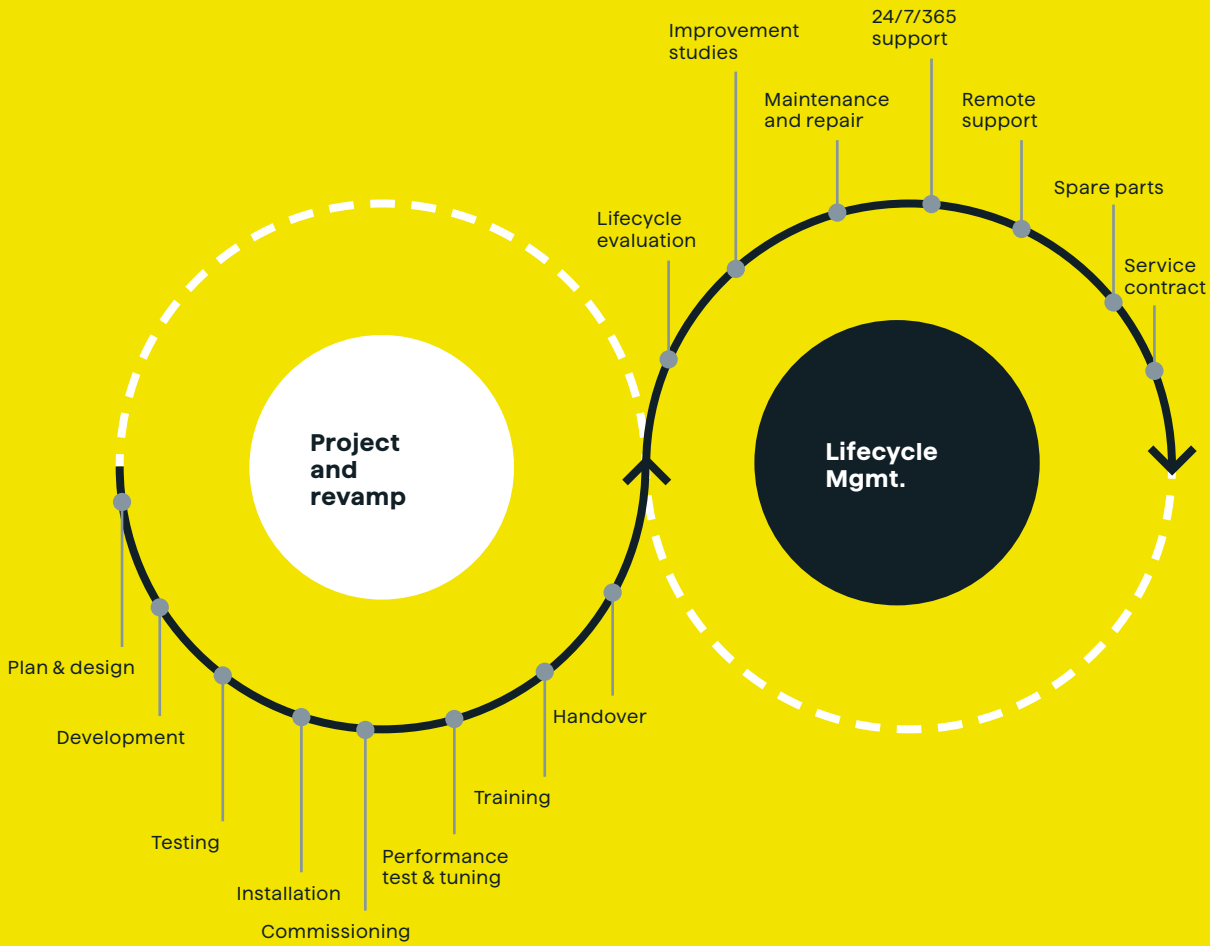
Maximum safety for both staff and equipment

Optimal customized system design with maximum standardization for high-quality components

The least possible grid distortion

Long-term upgradability, spare parts availability, and strong technical support

Operational challenges



With decentralized and renewable power on the rise, grid operators, as well as industrial clients, are facing new challenges. Power major consumers must comply with stricter regulations regarding the power quality of their rectifier systems. At the same time, it is essential to reduce the ecological footprint of industrial processes and respect the carbon dioxide balance.

Innomotics PR150.

Single 6-pulse rectifier

6-pulse rectifier, dual hard

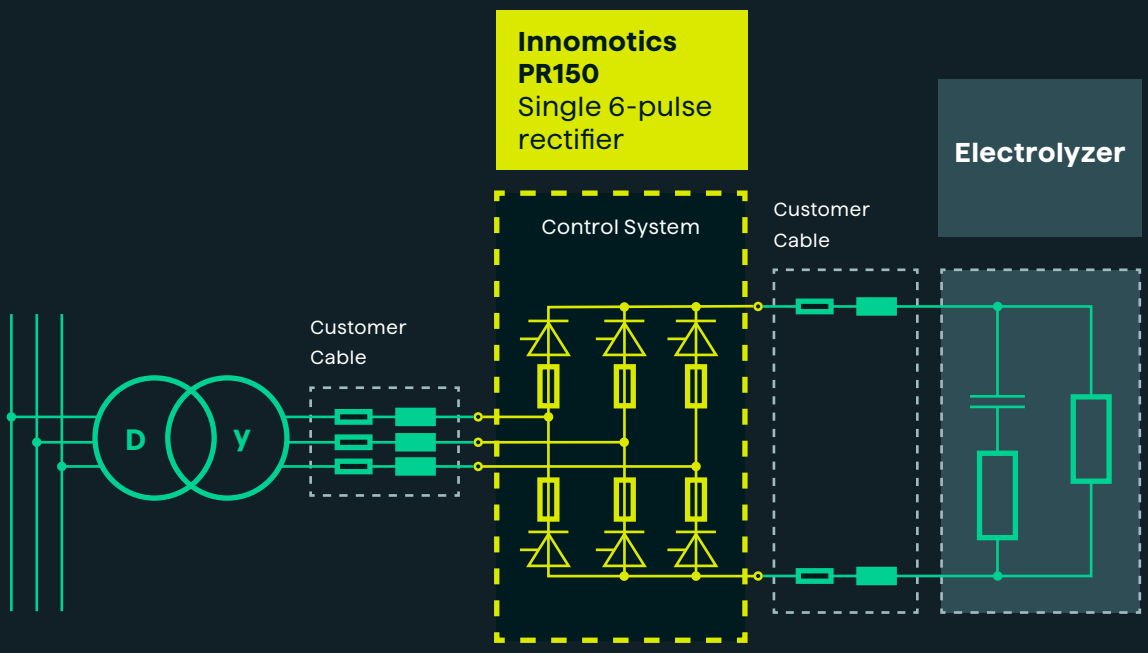
Main features	
Highest efficiency	Up to 99%
High reliability	Rugged thyristor technology and less components
Compact design	Power unit with integrated control (no additional control cabinet necessary)
Air cooled power section	Few cooling components, no leakages
Proven standard components	All components from SINAMICS product family
Easy commissioning and service	Engineering tool STARTER allows easy parameterization, signal traces…
Almost maintenance free	Supporting highest availability of your production

Technical features	
Single 6-pulse thyristor rectifier	Current up to 5500 A DC
Double 6-pulse thyristor rectifier	Current up to 11000 A DC
12-pulse / 24-pulse thyristor rectifier	Connection of several electrolyzers to a star / delta transformer
Wide voltage range	0V…1010V…2140 V DC
Air cooling	Main fan on top of cabinet
Medium Voltage version	For voltages >1000 V AC / 1500 V DC (IEC 62477)
Surge protection device	Surge protection outside rectifier

Configurations.

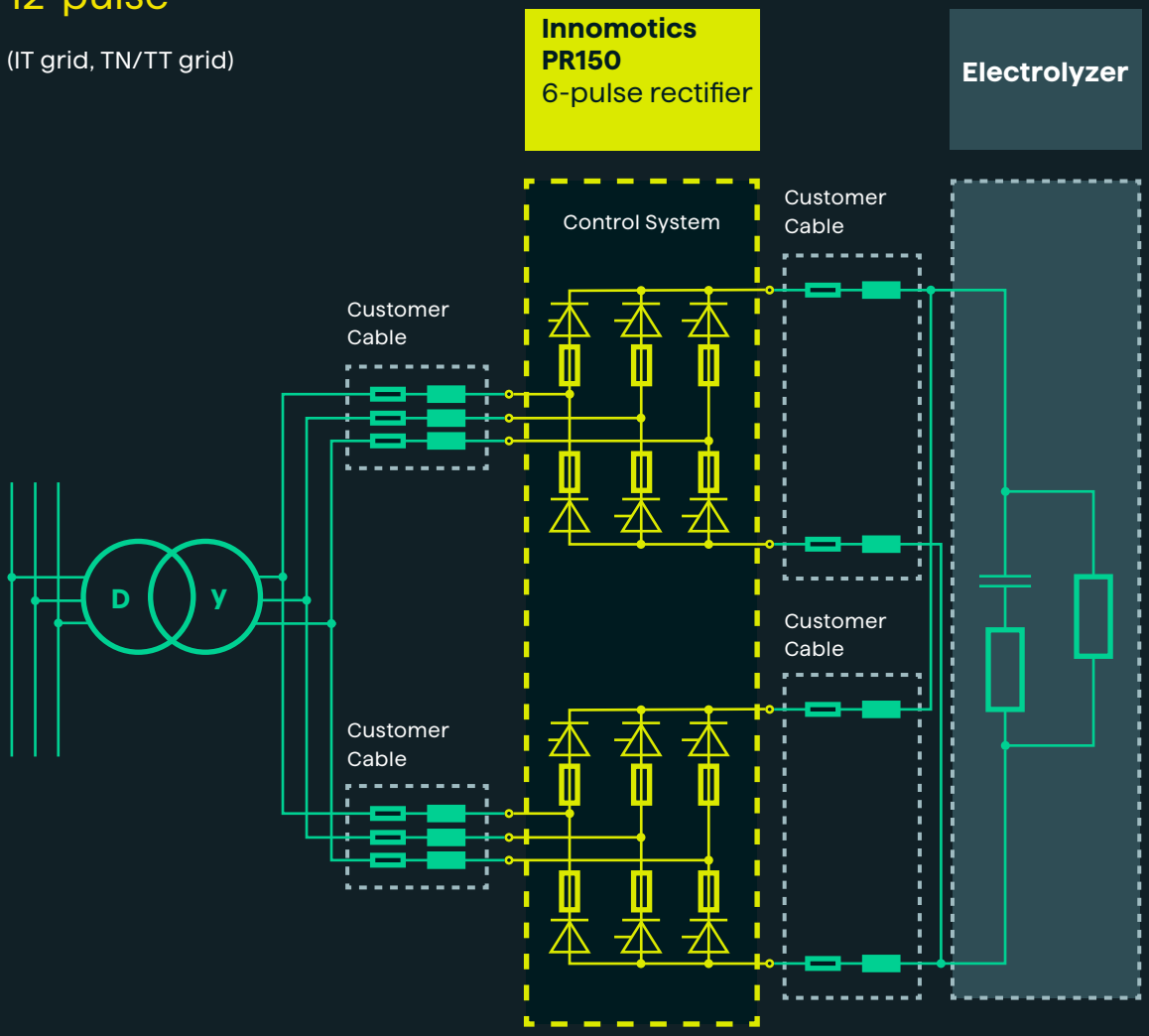
6-pulse

(IT grid, TN/TT grid)

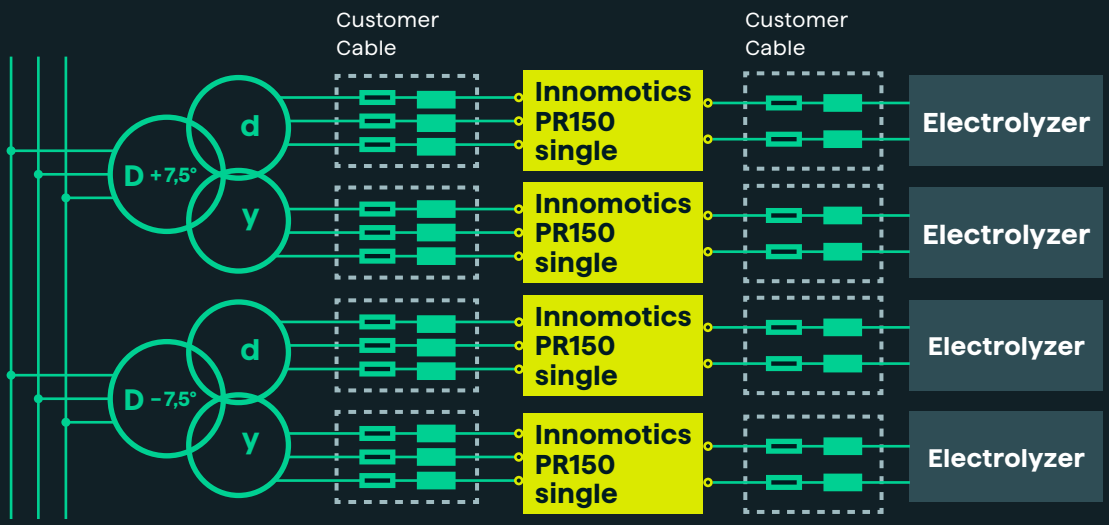


12-pulse

(IT grid, TN/TT grid)



24-pulse



Technical data.

Standards and directives

	Standard
Standard	IEC 62477-1 (if supply voltage <= 1000 VAC) IEC 62477-2 (if supply voltage > 1000 VAC) IEC 60146-1-1 IEC 61600 (EMC) IEEE 519 (Harmonic currents) Relevant CSA standards, other standards (UL, CSA, UKCA etc.) available on request
EU – directives	EU Machine directive 2006/42/EG EU EMC directive 2014/30/EU
CE – marking	According to EU low voltage directive (if supply voltage <= 1000 VAC)
Ambient conditions	IEC 60721-3-1/2/3

Electrical data

		Low voltage device	Medium voltage device
Max. rated grid voltage *	[V]	1000	1500
Max. rated DC voltage *	[V]	approx. 1200	2140
Max. rated DC current [1]/*	[A]	5500 (single) 11000 (double)	4000 (single) 5800 (double)
Grid frequency	[Hz]	50 / 60	50 / 60
Maximum grid short circuit current	[kA]	70	50
Efficiency	[%]	99	99

Mechanical and thermal data

		Single	Double
Cabinet height	[mm]	2300 + 360 (fan)	2300 + 375 (fan)
Cabinet width	[mm]	900	1800
Cabinet depth	[mm]	1250	1250
Weight	[kg]	1000	2000
Air flow	[m^3/s]	1,6	3,2
Max. losses	[kW]	25	50
Maximum altitude (>1000 m: current derating)	[m]	2000	2000

1 The maximal achievable current depends on the realized voltage level (thyristor type)
* Other on request

Environmental conditions

	Storage	Transport	Operation
Climatic ambient conditions			
Ambient temperature	−25 … +70 °C	−25 … +70 °C	5 … +40 °C
Relative humidity	5 … 95% (only slight condensation permitted; converter must be completely dry before commissioning)	5 … 95% (only slight condensation permitted; converter must be completely dry before commissioning)	5 … 85% (condensation not permissible)
Other climatic conditions in accordance with Class	1K22 acc. to IEC 60721-3-1 (icing not permissible)	2K11 acc. to IEC 60721-3-2	3K22 acc. to IEC 60721-3-3
Degree of pollution	2 without conductive pollution acc. to IEC 61800-5-1	2 without conductive pollution acc. to IEC 61800-5-1	2 without conductive pollution acc. to IEC 61800-5-1
Mechanical environmental conditions			
In accordance with Class (increased strength for marine use)	1M11 acc. to IEC 60721-3-1	2M4 acc. to IEC 60721-3-2	3M11 acc. to IEC 60721-3-3
Other environmental conditions			
Biological environmental conditions in accordance with Class	1B1 acc. to IEC 60721-3-1	2B1 acc. to IEC 60721-3-2	3B1 acc. to IEC 60721-3-3 (without harmful flora)
Chemically active substances in accordance with Class	1C1 acc. to IEC 60721-3-1	2C1 acc. to IEC 60721-3-2	3C1 acc. to IEC 60721-3-3:1994 (no occurrence of salt mist)
Mechanically active substances in accordance with Class	1S11 acc. to IEC 60721-3-1	2S1 acc. to IEC 60721-3-2	3S6 acc. to IEC 60721-3-3

Our service offerings include

Innomotics Remote Services via telephone or Internet/VPN

On-site services in case of emergency

Planned services during scheduled maintenance phases

Service contracts

- Highest Efficiency of >98%
- Best in Class **Uptime >99.5%**
- **Simple Integration of Control System** based on Siemens Components (S7/PCS7//IA, same for rectifier and electrolyzer)
- Fast response by **Local Rectifier Service**
- Team **based in Nordics**
- **Proven technology**
- Experienced Certified Project Management
- Executive Sponsor Concept

800+
Innomotics SL 150

INNOMOTICS

Redefining reliable motion for a better tomorrow

Innomotics GmbH is a globally leading supplier of electric motor and large drive systems which unites the power of deep engineering expertise and leading innovation in electrical solutions across industries and regions. With its trusted legacy of more than 150 years of engineering expertise, the company has been the backbone of reliable motion for industries and infrastructure worldwide. By combining the company's most efficient products and proven expertise with ground-breaking innovation, Innomotics is persistently scaling up industrial efficiency, electrification, sustainability, decarbonization and digitalization for its customers.

Innomotics has its operational headquarters in Nuremberg, Germany, and is a wholly owned subsidiary of Siemens AG. The company employs about 15,000 people worldwide. With 16 factories and a comprehensive sales and service setup in 49 countries, Innomotics operates a well-balanced global footprint across regions and industries in a resilient and growing market.

Further information is available at **innomotics.com**.

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