

# Piel

by  
**McPhy**

**DESIGNER AND MANUFACTURER**

**OF HYDROGEN AND OXYGEN  
GAS GENERATORS**

**FOR LIGHT MANUFACTURING**





Driving clean energy forward

In the framework of the energy transition, and as a leading supplier of hydrogen production and distribution equipment, McPhy contributes to the deployment of zero-carbon hydrogen throughout the world.

Thanks to its wide range of equipment and services dedicated to the industry, mobility and energy markets, McPhy provides turnkey solutions to its clients adapted to their applications in industrial raw material supply, mobility solutions or renewable energy surplus storage and valorization.

As a designer, manufacturer and integrator of hydrogen equipment since 2008, McPhy has three development, engineering and production sites based in Europe (France, Italy, Germany).

McPhy Italia, a member of the McPhy Group, is a unique center specialized in the design, manufacturing and maintenance of a wide range of Piel and McLyzer electrolyzers.

The company's international subsidiaries ensure a global sales coverage of McPhy's innovative hydrogen solutions.



**PRODUCTION CAPACITY: UP TO 300 MW PER YEAR**

### McPhy ITALIA : IN SAN MINIATO, OUR CENTER OF EXPERTISE FOR ELECTROLYZERS

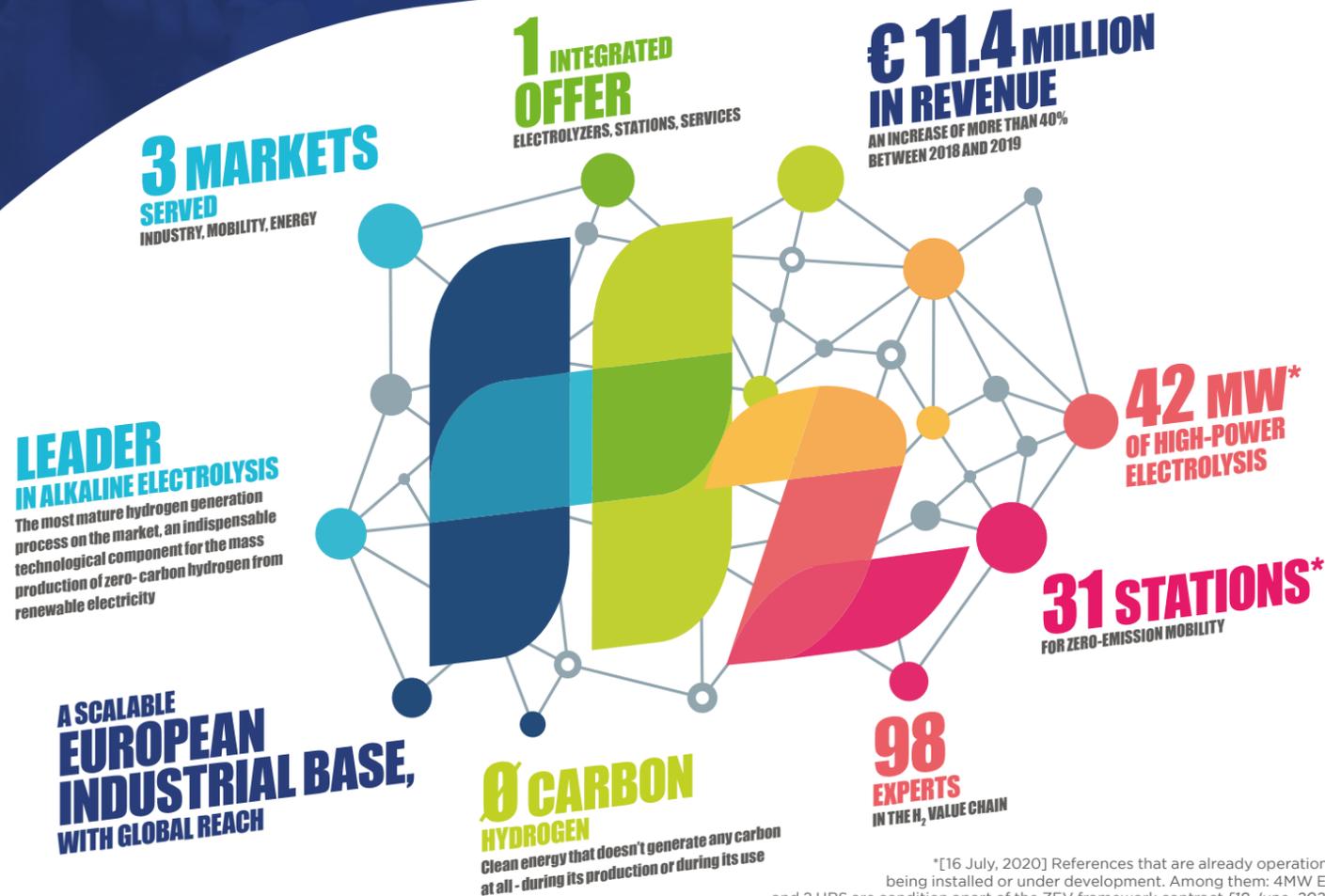
McPhy Italia, a member of the McPhy Group, is a unique center specialized in the design, manufacturing and maintenance of a wide range of electrolyzers. From machines for the precision industry of the Piel range, for which it is the exclusive designer and manufacturer, to McLyzer electrolyzers and to large multi-MW industrial platforms, our hydrogen production equipment covers a wide range of industrial applications.

As a result of over thirty years of experience in technical gases applied to metallurgy and welding for the manufacturing industry, our Piel hydrogen solutions have a proven track record and are recognized by more than 3,000 installations worldwide.

We design, manufacture and install hydrogen solutions that are adapted to your needs and requirements. Our vision is pragmatic: it's about applying our experience and expertise toward your productivity, energy efficiency and economic performance.

## PREMIER INDUSTRIAL INFRASTRUCTURE

- Design office, manufacturing and testing areas, customer service
- A production site of over 4,000 m<sup>2</sup>, expandible up to 2 times
- Production capacity of 100 MW per year, expandible up to 3 times
- At the heart of an Italian intermodal hub, with direct connections with the rest of Europe
- 30 employees\*
- ISO 9001 certified since 2015



\*[16 July, 2020] References that are already operational, being installed or under development. Among them: 4MW ELY and 2 HRS are condition apart of the ZEV framework contract [18 June, 2020].

\*As of 2019.12.31

## MORE THAN A MANUFACTURER

An experienced team, specialized technicians and widespread assistance centers: McPhy offers a complete energy consultancy package to satisfy all customer requests through cost/benefit analysis - thus guaranteeing a significant economic return.



# Piel

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Already used as feedstock in the industry for more than 100 years, hydrogen has since seen its development accelerated. By producing their zero-carbon hydrogen on site, using electrolysis from renewable electricity, industrial companies are entering a new low-carbon era.

Our Piel product line comes from decade-long experience in the gold smithery sector, in precious metal treatment and in metallurgy, and covers a broad spectrum of applications from welding and brazing to the fashion industry.

Qualified and brand of choice for several industrial companies, our Piel hydrogen and oxygen generators are an ideal solution for light manufacturing. They integrate perfectly into industrial systems, whatever their size or business sector.

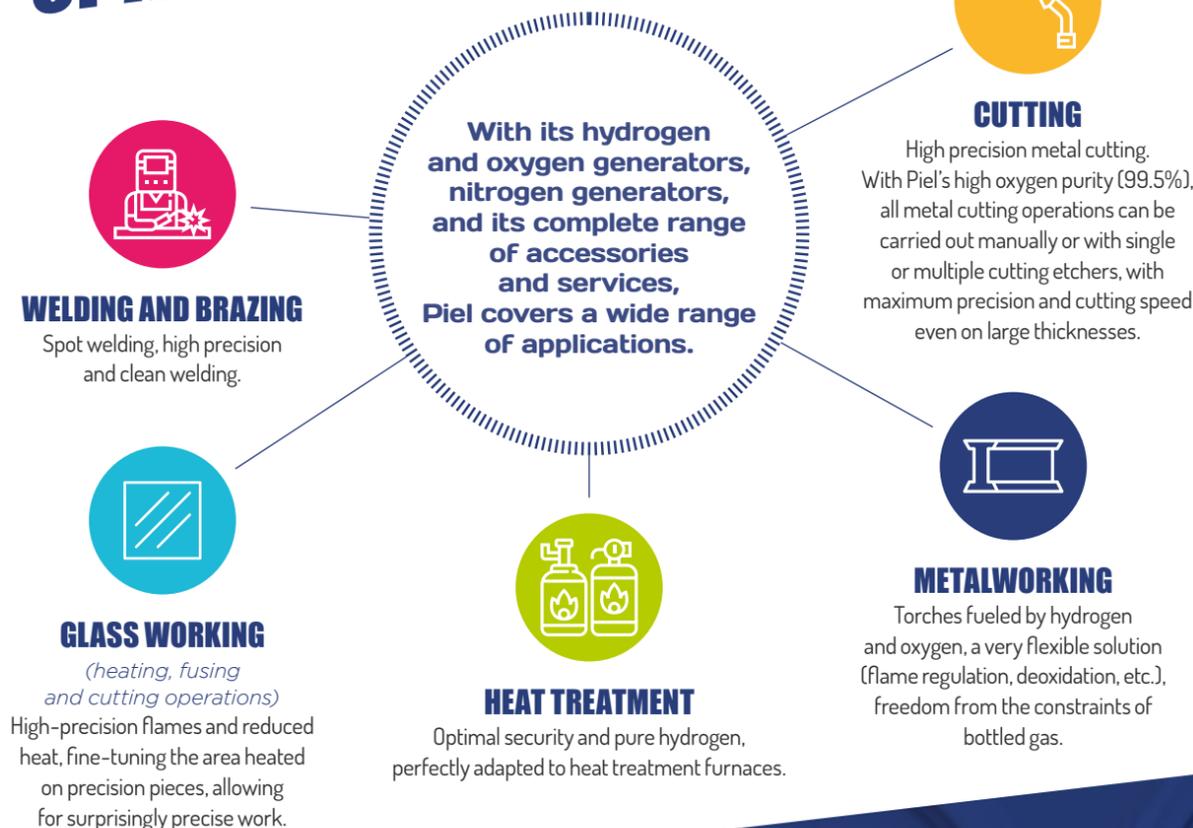
## A PROVEN TRACK RECORD OF 3,000 INSTALLATIONS WORLDWIDE

Our customers are choosing to produce hydrogen that is: on-site, on-demand, and according to their specifications. They say farewell to the constraints of traditional storage systems (compressed gas cylinders: hydrogen, oxygen, acetylene, propane) and achieve better and verifiable results in terms of:

- 🕒 Security of supply and energy independence (freedom from logistic constraints),
- 🕒 Productivity,
- 🕒 Cost control,
- 🕒 Reliability and continuity of service,
- 🕒 Drastic reduction of their CO<sub>2</sub> footprint and air pollution,
- 🕒 On-site production in the best conditions of quality and safety.

**MCPHY**  
SUPPLIES INDUSTRIAL COMPANIES WITH ZERO CARBON HYDROGEN.  
RECONCILING PRODUCTIVITY, COMPETITIVENESS AND SOCIAL RESPONSIBILITY

## QUALIFIED AND BRAND OF CHOICE FOR SEVERAL INDUSTRIAL COMPANIES, PIEL COVERS A WIDE RANGE OF APPLICATIONS



## ALL INDUSTRIAL SECTORS ARE CONCERNED

- 🕒 **Jewelry, gold smithery** and silverware.
- 🕒 **Glass** industry.
- 🕒 **Optical instruments:** induction welding used for the optical instruments can be performed by protecting the welding zone with an inert atmosphere made up of a mixture with hydrogen. This way eliminates the use of liquid deoxidizers, and the subsequent pickling.
- 🕒 **Meteorology:** hydrogen produced on-site used to fill radiosonde balloons for meteorological institutes.
- 🕒 **Electronics** industry.
- 🕒 **Agri-food** industry.
- 🕒 **Treatment of metals:** the ideal equipment for feeding furnaces for the treatment of metals in a controlled atmosphere (gold, silver, steel, etc.). The utmost hydrogen purity (up to 99.999%) and its safety in the production process makes it a preferable solution over the traditional systems.

## HOW DOES IT WORK?

Alkaline electrolysis, also called electrolysis, is a process used to produce hydrogen from electricity and water through an electrochemical reaction:  
 $2H_2O + \text{Energy} = 2H_2 + O_2$   
**Water + Electricity → Hydrogen + Oxygen**

Piel generators produce hydrogen and oxygen, released separately from the electrolytic cell, through electrolysis of demineralized water. The gases are then cooled, dehumidified and made available for use at the two respective outlet valves.

# FULL RANGE OF SMALL-SIZED HYDROGEN AND OXYGEN GAS GENERATORS

**AN IDEAL SOLUTION FOR LIGHT MANUFACTURING**

From 0.4 to 10 Nm<sup>3</sup>/h at 1 to 8 bar: our proven design solutions, whose reliability has made our product a worldwide success, are perfectly in line with the requirements of light industry.

SERIES	Pressure (barg)	H <sub>2</sub> Flow range (Nm <sup>3</sup> /h)	O <sub>2</sub> Flow range (Nm <sup>3</sup> /h)	Electrical power range at nominal rate (kW)
Baby	1	0.4	0.2	3
P	1 to 2.5	1 to 1.6	0.5 to 0.8	6 to 9
M	1 to 2.5	2.4 to 4.4	1.2 to 2.2	14 to 26
H	4 to 8	3 to 10	1.5 to 5	18 to 60

All of our products are CE marked, in full compliance with European Union directives [machine, low voltage, electromagnetic compatibility, pressure equipment directive].

**FULL RANGE OF OPTIONS** • Purification • Demineralization • Monitoring and control • Cooling / Pre-cooling system • Accessories for brazing - welding - heat treatment

## PIEL NEW GENERATION

- Engineered to cover a **wide range of applications**
- "Plug and play" technology**, producing 24h, on-demand, according to your requirements
- Remote monitoring** and diagnostic-ready
- Ultra-modern design**, PLC touch screens, precise and timely process monitoring, simple and intuitive diagnostics, and fast and cost-effective maintenance
- A new layout for easier maintenance**, decreasing downtime for our customers
- Best materials selected, for **advanced reliability**
- Updated sensors, for **optimized control**
- New control and power unit with proven **high-quality components**
- Wide selection of options** available on demand
- Safety further improved**
- Option to **customize the color of your generator**

## KEY FEATURES OF OUR PIEL SMALL-SIZED ELECTROLYZERS

- Alkaline electrolysis:** the most mature and robust technology on the market.
- Fully integrated turnkey system.**
- Remote supervision** and maintenance.
- COST CONTROL**
  - Low cost of the gases:** approximately 5.5 kWh are required to produce 1 Nm<sup>3</sup> of gas - considerable savings.
  - 20% savings on brazing allows for a higher working speed (+ 15-25%) for the specific characteristics of the hydrogen and oxygen.
- Zero-carbon energy:** the combustion of hydrogen with oxygen does not produce residual products. Total absence of smoke pollution. Operators do not need cumbersome breathing masks, and it is not necessary to install extensive purifying systems.
- Separated gas generation** gives you the option of adjusting the flame: neutral, oxidizing, reducing, in addition to the option to use the hydrogen and oxygen separately.
- Convenience / Autonomous units:** can be transported anywhere for the production of hydrogen and oxygen. With its four pivoting wheels, the machine is easy to move to where you need it to go.
- Safety:** the gas is produced at actual point of use and there is no compressed gas volume. Piel equipment does not require any authorizations from Health Authorities or Fire Brigades.
- All of our products are CE marked, in full compliance with European Union directives [machine, low voltage, electromagnetic compatibility, pressure equipment directive].

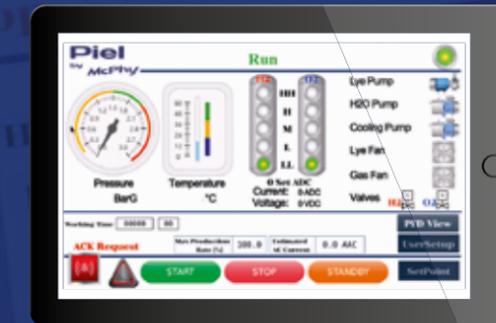
## WITH THE PIEL NEW GENERATION: WELCOME TO INDUSTRY 4.0

The industry's digital shift is a strategic move towards smarter, automated manufacturing processes that are more connected, more flexible and more efficient.

Thanks to the smart sensors integrated into the new Piel line, your pool of equipment is digitally connected, and our programmable logic controllers (PLC) collect, process and share real-time data, before, in a fully automated way, (re)defining your operating process towards increased productivity.

**INDUSTRY 4.0**

**DIGITAL: OUR REMOTE SUPERVISION AND ASSISTANCE MODULE**



With our remote assistance module installed on your Piel generator(s), the sensors ensure real-time data collection and provide all the insights you need to help your operators increase their operational efficiency,

Thanks to its wireless connectivity, the Piel generator can - anytime, anywhere, and fully autonomously - transmit its data and self-analysis so that our teams can work quickly and remotely on a diagnosis, intervene on the programming or arrange for any on-site maintenance operations.

Our digital solution is environmentally friendly. It shortens your lead times and gives you more flexibility, drastically increasing the efficiency and profitability of your hydrogen system.

# McPhy

Driving  
clean energy  
forward

*McPhy - a pioneer of hydrogen solutions in the service  
of the energy revolution - has made a name for itself among the world  
leaders in zero-carbon hydrogen production.*

**We invite you to discover our range of small-sized hydrogen and oxygen  
Piel gas generators, specifically designed for light manufacturing.**

*From 0.4 to 10 Nm<sup>3</sup>/h at 1 to 8 bar: we design, manufacture and install hydrogen solutions that cover  
a broad spectrum of applications from welding and brazing to the fashion industry or meteorology.*

*To find out more about the McPhy Group, visit our website*

**[mcphey.com](https://mcphey.com)**



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