



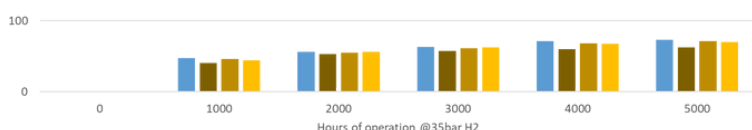
HEF supports the development and industrialization of electrolytic solutions, by reducing dependence on precious metals and by optimizing performance.

| PVD coating solutions that offer both productivity and cost optimization

The PVD-PECVD technology developed by HEF makes it possible to reduce the quantity of precious metals that are used without compromising the performance of these precious metals. Our vertical integration model positions us as a strategic partner. We offer economically competitive solutions and innovations for future generations of hydrogen systems

	Certess ELEC EA	Certess ELEC EP
Separator Plate / PTL material	Titanium	Titanium
Interface Contact Resistance after treatment	<1 mΩ.cm ²	<1 mΩ.cm ²
Coating Thickness	20 - 200 nm	20 - 200 nm

Influence of Pt thickness on ICR over time



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Ultra-fast lasers can be used for functionalization as well as surface texturing. They can also overcome the challenges associated with the materials of all electrolysis technologies.

| State-of-the-art industrial equipment

HEF's industrialisation teams have developed an automated, in-line, high-output, processing machine based on our validated coating process. This robust, high-performance machine is designed to meet the challenges of hydrogen production, and at the same time optimise costs and materials.

Our first plant was commissioned in France in response to our customers' increasing requirements for coatings applied on hydrogen equipment.



Performance

Coatings developed by HEF guarantee electrical conductivity, corrosion resistance and durability of the parts in the vicinity of these coatings.



Environment

HEF lessens the environmental footprint of systems by reducing the use of precious metals, and by offering alternative solutions in their place.



Economically competitive

A hydrogen coating machine, developed in-house, combines high productivity and economic competitiveness



Customised solutions

For 5 years, the HEF R&D organisation has been committed to offering its partners unique, made-to-measure solutions.