

the trend turns **green**
hydrogen technology – for a CO₂-neutral future



Overview
Michael Weber

FEST Group

70 years of change & development

- Individual solutions for all demands of industrial **process automation, electric, IT & energy**
- **Hydrogen Solutions:** electrolysis, storage, refueling
- **300 employees** in Germany, Austria, Russia, China and India (incl. ventures)
- Over **50 years of industrial experience** in national and international projects
- **Cooperation with international clients** and partners as well as associations and universities



Schmidt-Kranz-Group

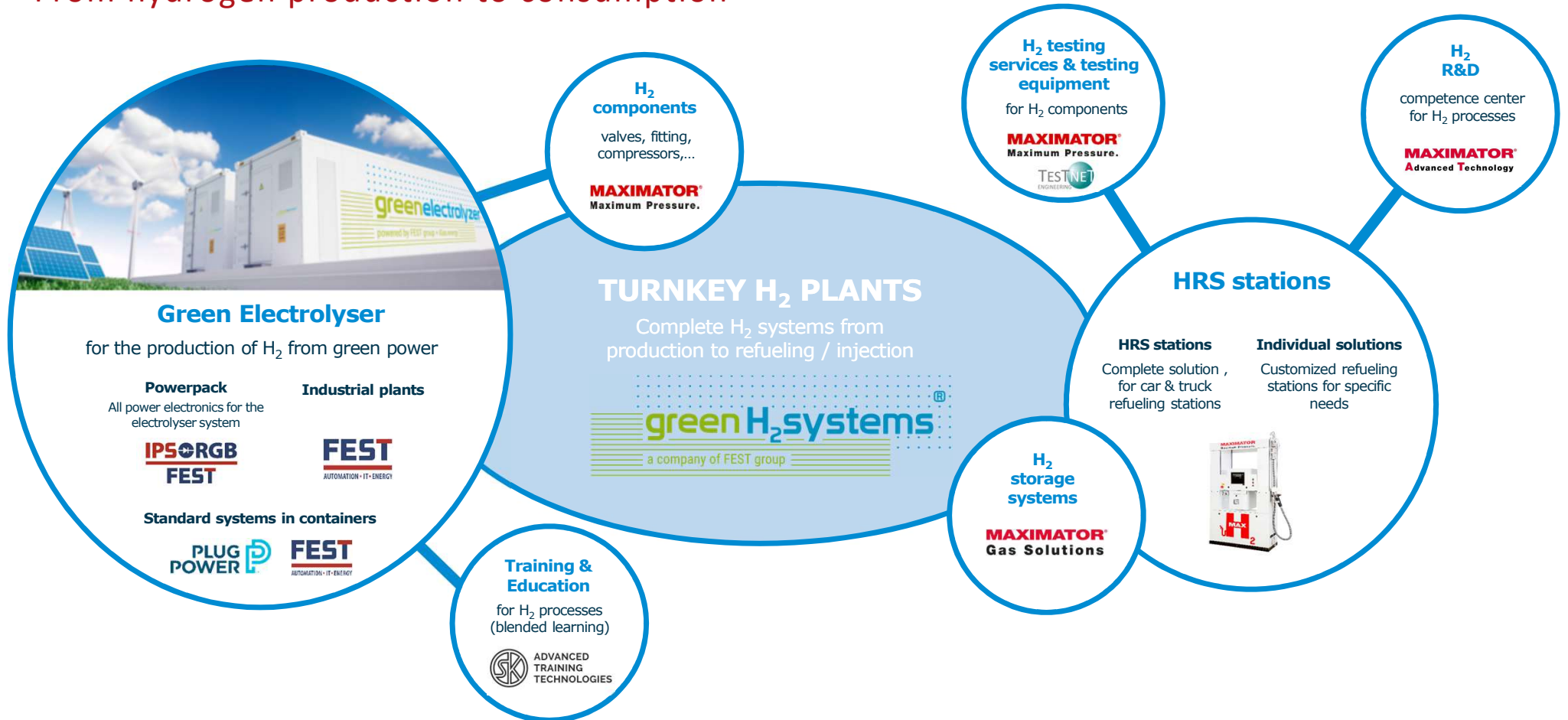
Organization



As member of the **Schmidt-Kranz Group**, FEST delivers engineering, integrated solutions and services in close cooperation with other group members.

Our products

From hydrogen production to consumption



PEM electrolyzers

Turnkey systems up to 50 MW

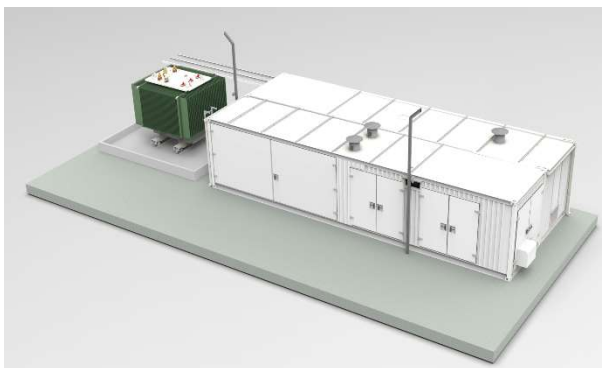
incl. power supply, water treatment, hydrogen purification, cooling & controls



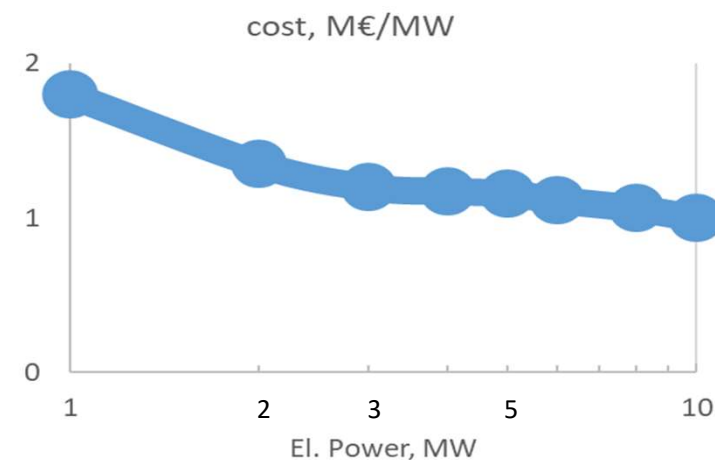
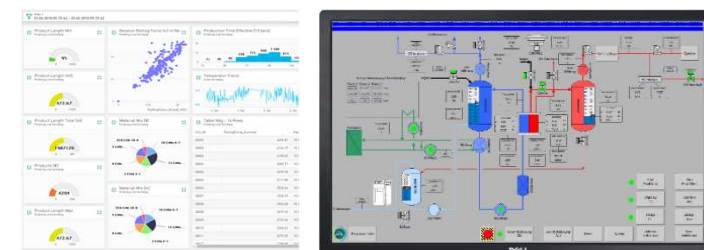
Standard systems		gEL 200	gEL 400	gEL 600	gEL 800	gEL 1000
AC-Power (all-in)		1 MW	2 MW	3 MW	4 MW	5 MW
Flow rate	Nm ³ /h	200	400	600	800	1000
	kg/h	18	36	54	72	90
Containers		2 x 40' #	2 x 40' #	2 x 40'	2 x 40' + Transformer	

smaller container sizes on special request

Larger systems build with multiples of gEL 600, 800 or 1000
Building solutions for 20 MW and more



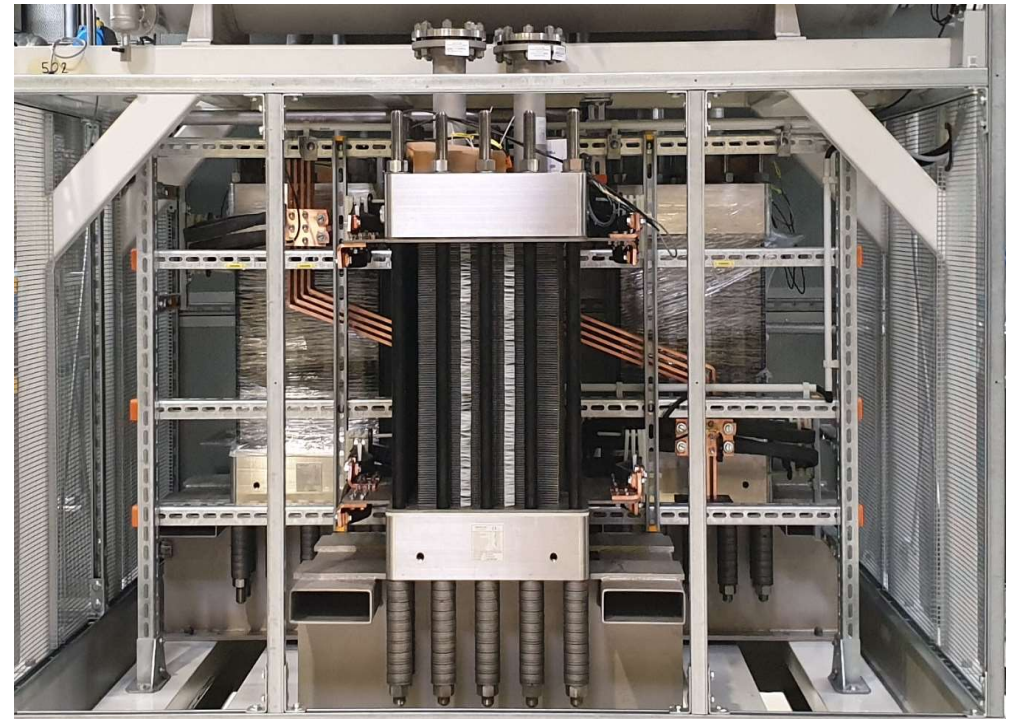
Cloud-based data access & multi-level HMI controls



PEM electrolyzers

Advantages

- High purity and pressure
 - > 99.999 Vol% (5.0), ISO 14687-2019
 - 37 bar
- High system efficiency
 - > 70%_{HHV} @ 100% nom. capacity (all-in)
 - > 77%_{HHV} @ 50% nom. capacity
 - > 80%_{HHV} @ best point
- High flexibility
 - control range 10 - 100%
 - Start-up ~ 15 min, load change 1 s
- Long life
 - stack > 80,000 hrs
 - system > 25 yrs
- High availability. 97% due to
 - high-end in-house power-supply & process controls**
 - and easy maintenance access



PEM electrolyzers

IPS AC/DC Power Boxes

- Turn Key AC/DC Systems
- MV / LV rating
- 98% efficiency
- Indoor & Outdoor Design
- Environment adaptable
- Global supply & Services
- 40y industrial experience



Our latest project

InfraServ project (5 MW)

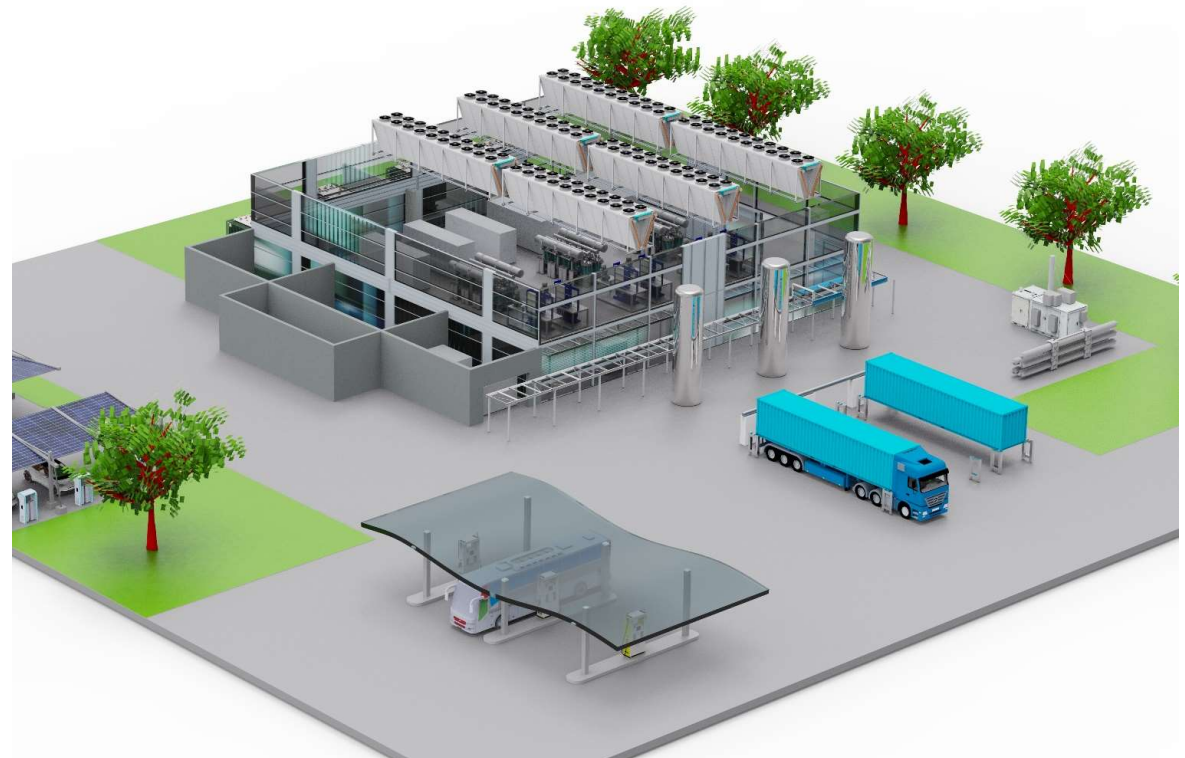


Project InfraServ 2x 2.5 MW – going operational 4/2022

Ready for scale up

30 MW electrolyser plant & refueling station

- Electrolyzer **3x 10 MW** (6.000 Nm³/h)
- Building with water purification, H₂/O₂ processing, heat processing, control system, redundancy concept
- H₂ storages (middle & high pressure)
- Car / truck refueling station (350/700 bar)
- Trailer filling station (max. 500 bar)
- Full EPC contracting & responsibility



Plant design for 30 MW electrolyzer & refueling station

Our partners & contact

MAXIMATOR®
Maximum Pressure.



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FEST



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