

The logo for ENAF, consisting of the letters 'ENAF' in a stylized, blue, blocky font. The 'E' and 'A' are connected, and the 'F' has a unique shape with a horizontal bar.

*wir bewegen Zukunft*

# HYDROGEN IN AUTOMATION

Solutions for Fuel Cell and Electrolyzer



UP TO  
**70.000**  
STACKS PER YEAR

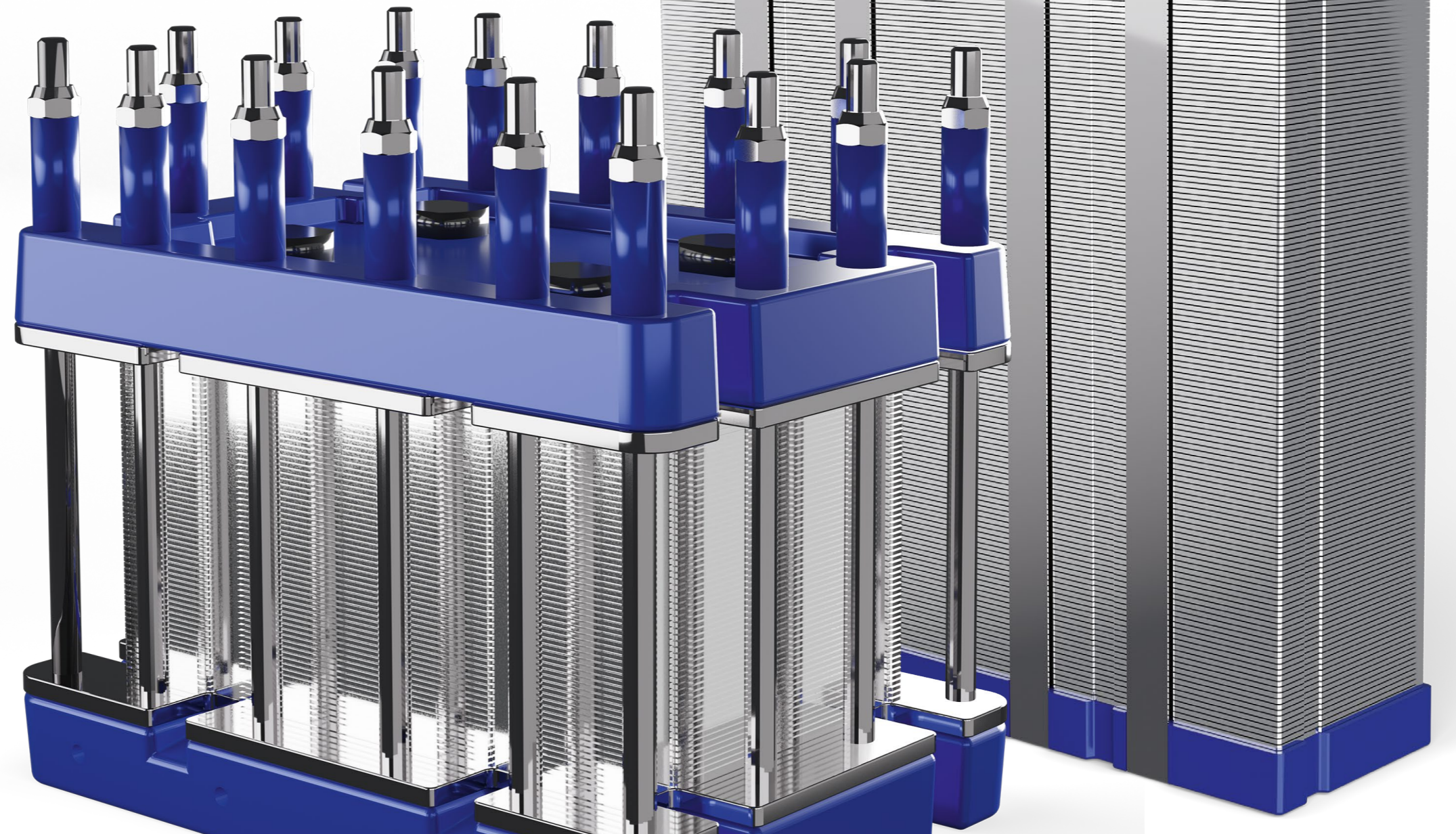
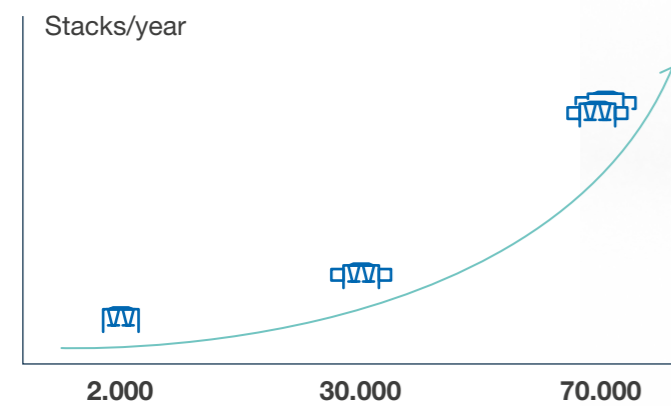


## Assembly lines for the future: Powerd by VAF

Our assembly lines for fuel cells and electrolyzers offer flexible application from pilot lines through to highly automated systems. They were developed with simplicity and scalability in mind.

The individual lines are developed and built by our experts to meet the customer's requirements.

VAF assembly lines are an ideal solution for manufacturing fuel cells and electrolyzers. They offer a great deal of flexibility at high speed and can be flexibly scaled. We are thus able to map the entire process chain quickly, cost-effectively and reliably.

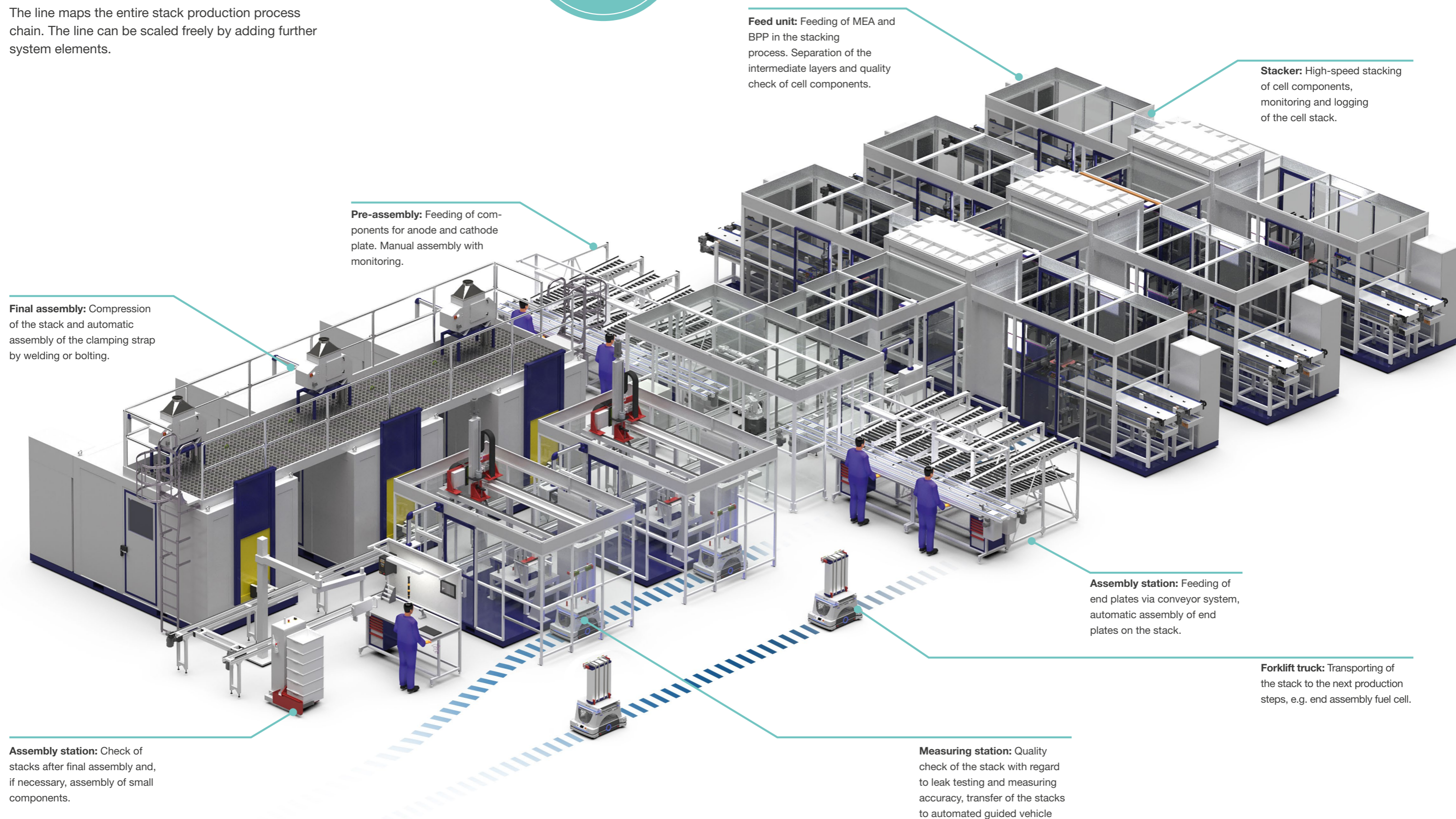




## High volume production for fuel cell stacks

The line maps the entire stack production process chain. The line can be scaled freely by adding further system elements.

End assembly  
production line  
fuel cell  
Contact us!



Feeding of MEA/BPP

Stacking

End plate assembly

Compression

Assembly of clamping strap

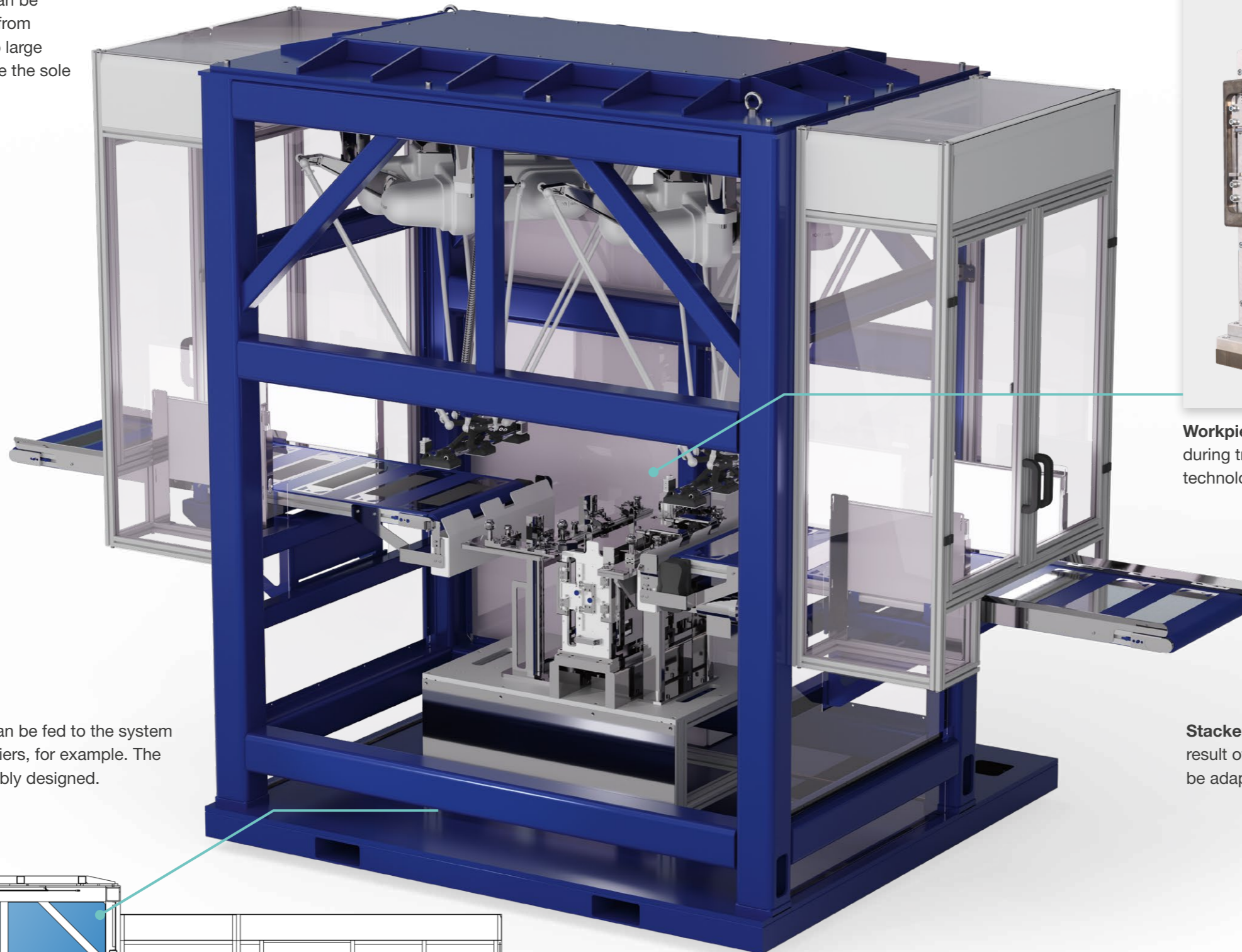
Leak testing & measuring

Unloading



## Fuel cells for e-mobility: High speed Stacking by VAF

Thanks to the modular construction of the stacker, everything can be mapped, from small scale (from 2,000 units/year) through to large scale. Your requirements are the sole limiting factor.

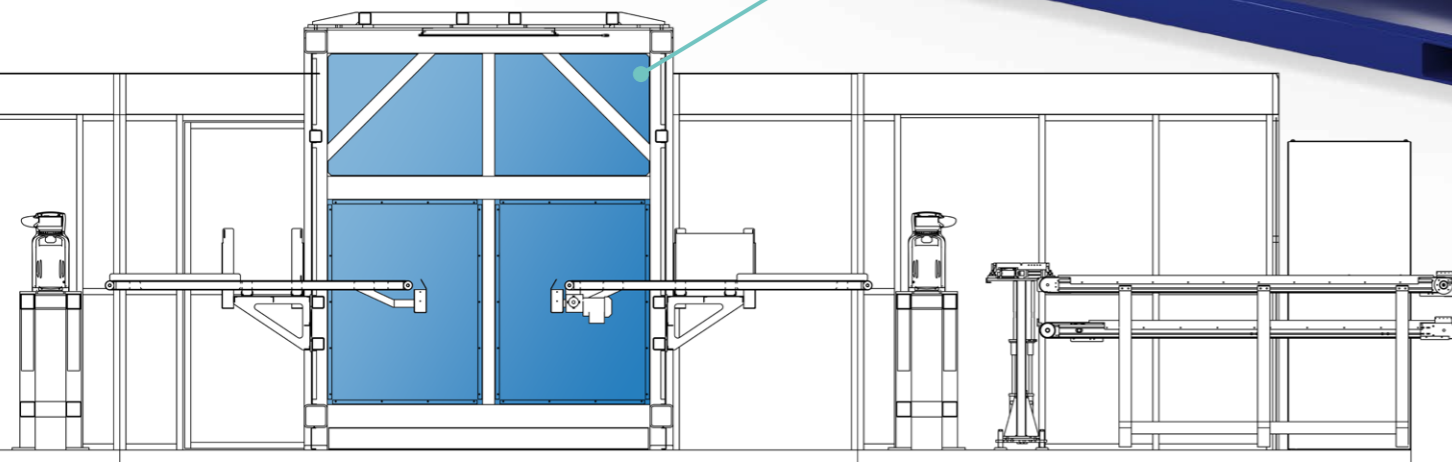


**Feed unit:** MEA and BPP can be fed to the system by means of small load carriers, for example. The loading method can be flexibly designed.



**Workpiece carrier:** The stack retains its tolerances during transport thanks to the workpiece carrier control technology.

**Stacker:** The pick and place process is quicker as a result of integrated valve technology. The grippers can be adapted to different stack designs.





## High automation for Hy technology: individual solutions for **electrolyzers**

The assembly line concept was developed with a scalable and modular design in mind. We are thus able to project the desired quantity while making optimal use of the available space.

Thanks to the high level of automation, a high output is achieved with the line concept.

Flexibility  
Process reliability  
Trusted

**Stacking system:** Feeding the cell components. Automatic stacking and stack formation with simultaneous check of stacking accuracy and traceability of parts.

**Workpiece carrier transfer:** Transfer to conveyor belt via industrial truck.

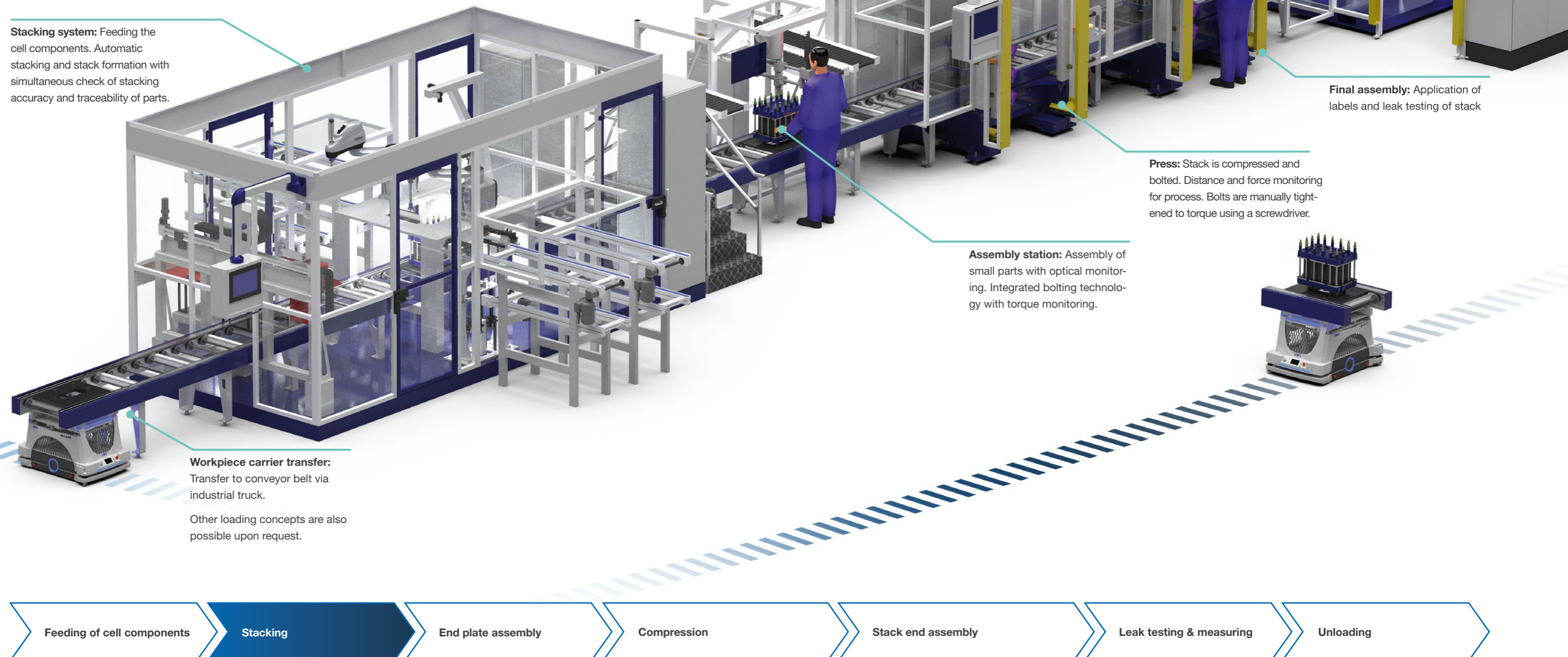
Other loading concepts are also possible upon request.

**Stack transfer:** Transfer of stack to automated guided vehicle via the gantry and start of next work steps.

**Final assembly:** Application of labels and leak testing of stack

**Press:** Stack is compressed and bolted. Distance and force monitoring for process. Bolts are manually tightened to torque using a screwdriver.

**Assembly station:** Assembly of small parts with optical monitoring. Integrated bolting technology with torque monitoring.



Feeding of cell components

Stacking

End plate assembly

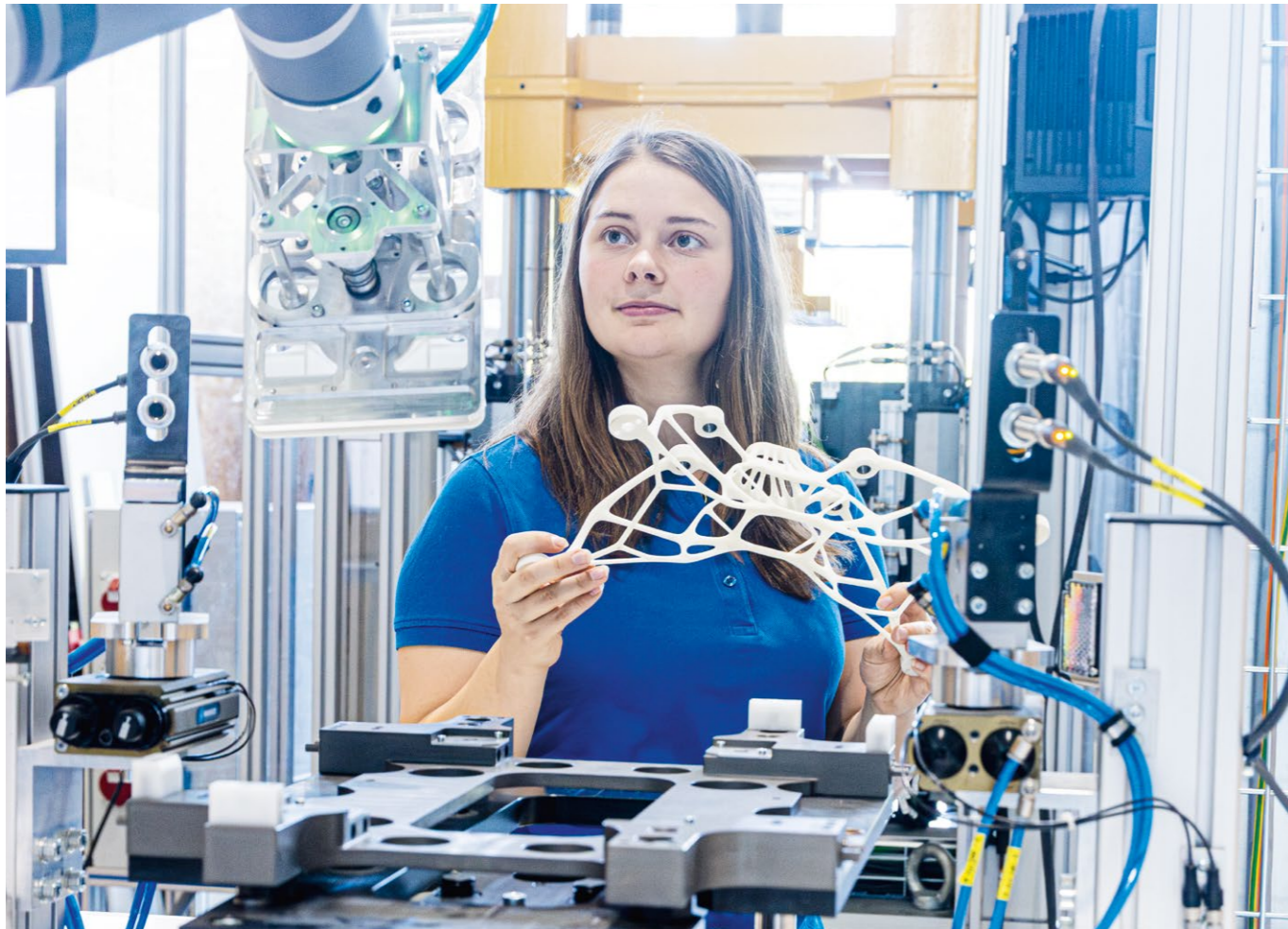
Compression

Stack end assembly

Leak testing & measuring

Unloading





Our technical center has more than 700 m<sup>2</sup> at its disposal

## Our technical center

At our technical center, we support our customers in the qualification of the stacking process with gripper development as well as feasibility testing and comprehensive documentation reports. This enables us to optimize processes in terms of quality and cost-effectiveness.

### Possibilities and service

- Process development and optimization
- Stacking tests
- Prototype testing

### Laboratory equipment

- Fuel cell stacker
- Electrolyzer stacker
- Press
- Quality inspection tools



## Who is VAF?

As a strong partner of internationally active automobile manufacturers, we specialize in the construction of complete assembly lines for the automatic production of classic components such as transmissions, chassis, and axles.

We are playing a pioneering role in automated component production for the car of the future. In a very short time, our team develops equipment, not only for the highly efficient production of fuel cell and electrolyzer stacks but also for batteries and electric motors. Several funding projects in new vehicle drives underscore the company's innovative strength.

With more than 450 employees and a production and assembly area of 21,000 m<sup>2</sup> supported by powerful in-house manufacturing, we are your innovative partner for automation solutions "Made in Baden-Württemberg".



Interested? Contact us!

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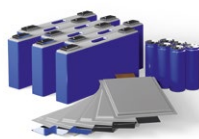
### OUR PORTFOLIO FOR E-MOBILITY

#### ELECTRIC MOTOR



Stator and rotor assembly  
Dip impregnation  
Trickle impregnation

#### BATTERY



Cylindrical cell  
Pouch cell  
Prismatic cell

#### HYDROGEN



Fuel cell  
Electrolyzer

