

# QUALITY

PEOPLE - SYSTEM - PRODUCT - ENVIRONMENT

Quality assurance through in-house design, production and assembly, commissioning, qualification and validation

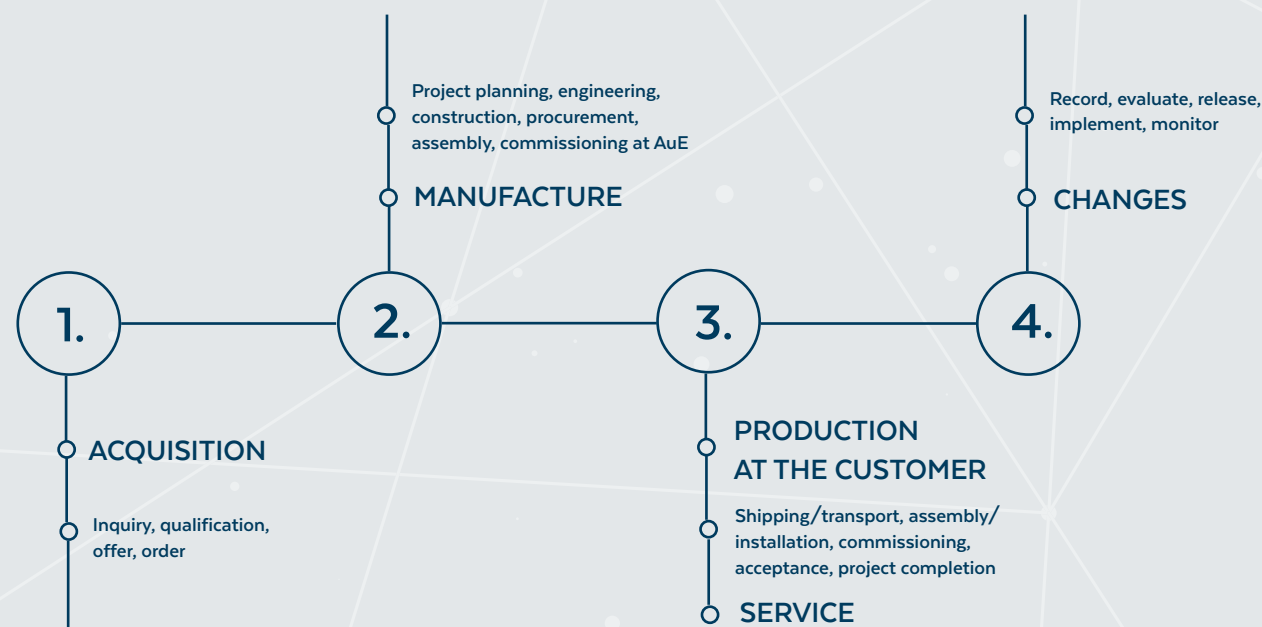
#### Our standards:

- Quality management according to DIN EN ISO 9001:2015
- Environmental management according to DIN EN ISO 14001:2015
- Automotive guideline VDA 6.4:2017

#### Your advantages:

- CE, safety approval, risk assessment
- Line and machine design incl. simulation
- MES - Manufacturing Executing System
- Human-machine interface management as well as machine-machine
- Machine control incl. system-supported error analysis
- Statistical evaluations of production data
- Interface management to third-party systems e.g. in testing technology

## PROJECT PROCESS

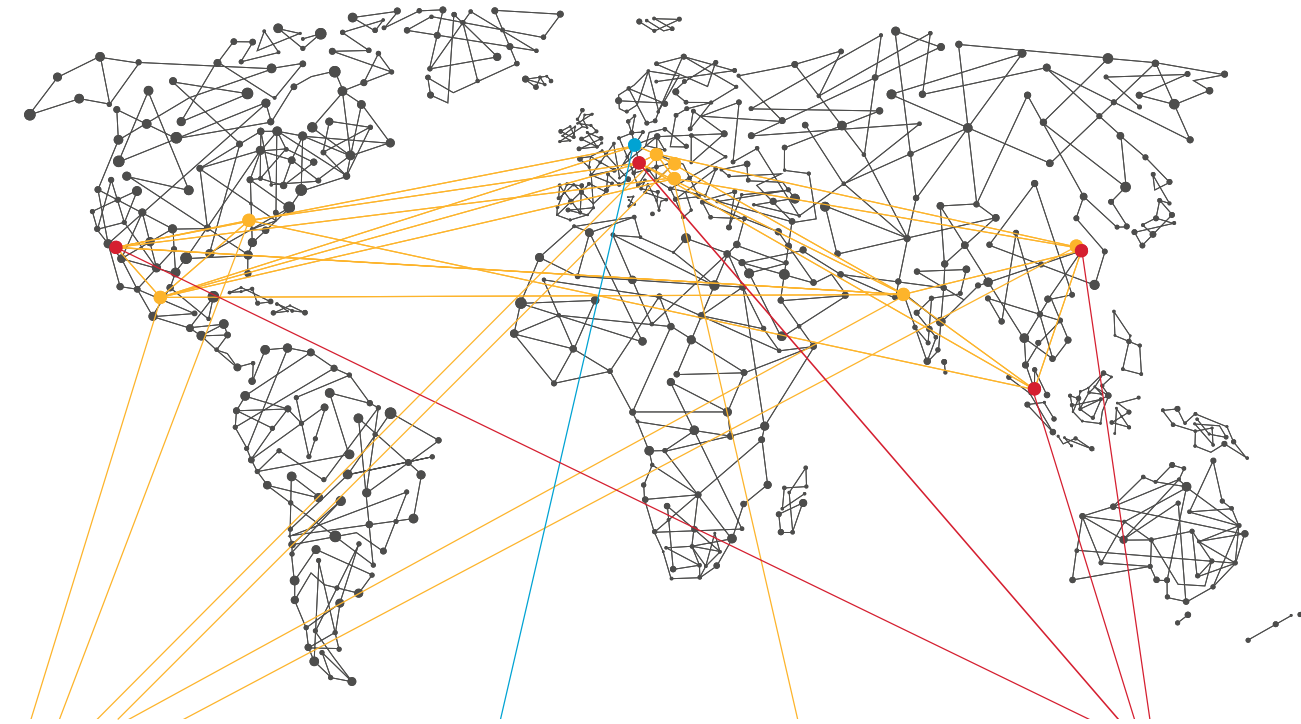


## POWERFUL SYNERGIES: “MEMBER OF STRAMA GROUP”

**Strama-MPS** develops special-purpose machinery, equipment and complete solutions for the production, assembly and testing of complex technical components and products. International technology groups appreciate our engineering expertise, the experience and the certainty: We lead your project to success.

**AuE Kassel** has acquired in recent years an excellent reputation with assembly lines for axles and chassis components in the passenger car and commercial vehicle sector. With its axle alignment systems, AuE has long been the world market leader.

For more than 40 years, **F & K DELVOTEC** is the worldwide innovation leader for wire and laser bonders. Technology and quality convince our customers from the industry and the research institutes.



GERMANY, Straubing  
HUNGARY, Budapest  
CHINA, Taicang  
USA, Duncan  
MEXICO, Puebla  
INDIA, Nashik



GERMANY, Kassel



CROATIA, Cerna  
Gradište  
GERMANY, Osterhofen



GERMANY, Ottobrunn  
USA, Foothill Ranch  
CHINA, Taicang  
SINGAPORE

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WE SIMPLY MAKE IT WORK.



# HYDROGEN SOLUTIONS

Automation for the  
HYDROGEN TYPE IV  
pressure vessel production

FOR MAXIMUM  
QUALITY AND  
SAFETY





# HYDROGEN SOLUTIONS

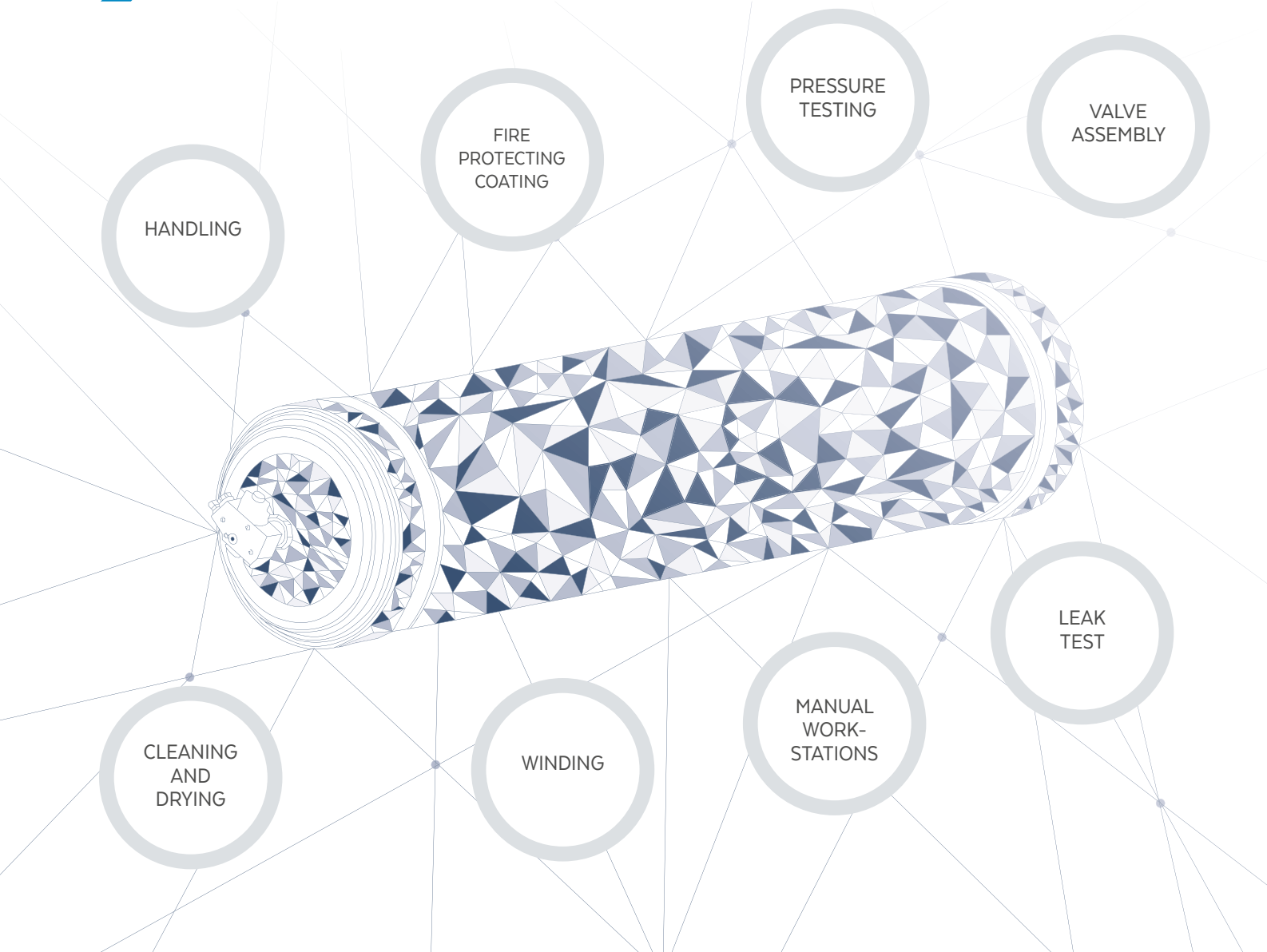
QUALITY. INNOVATION. TEAM SPIRIT.

Your partner from concept consulting to the production-ready system

As a company, we have set ourselves the goal of being a strategically competent partner for the use of hydrogen technology. This idea gave rise to the Hydrogen Solutions division, in which we work together with our customers to develop solutions for their products – from manual assembly to fully automated production lines.

Our team of experts has experience in the final assembly of TYPE4 pressure vessels and are committed to developing innovative solutions that meet our customers' requirements. We understand the challenges that companies face in hydrogen technology, and are committed to helping them achieve their goals.

## AREAS OF APPLICATION



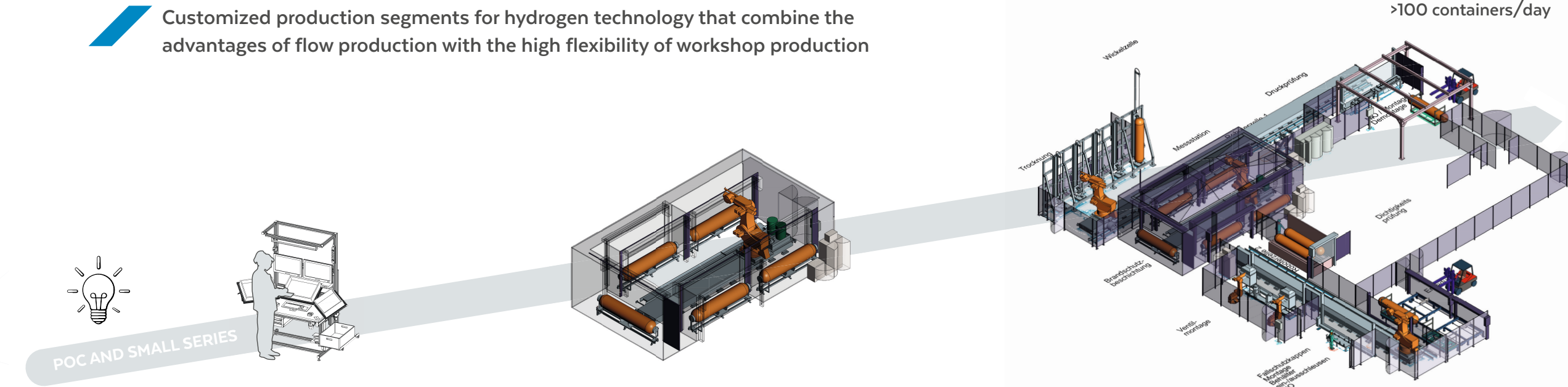
# OUR SERVICES

SYSTEM ENGINEERING, PROJECT MANAGEMENT, CONSTRUCTION, INSTALLATION, COMMISSIONING, SERVICE, OPTIMIZATION

In the field of TYPE4 pressure vessel production, we are your system partner and general contractor for the integration of existing and new systems, including the coordination of all suppliers and project participants.

Our services include consulting, planning and implementation of projects in the field of hydrogen technology. Together with our customers, we develop customized solutions that are tailored to their individual needs.

Customized production segments for hydrogen technology that combine the advantages of flow production with the high flexibility of workshop production



TEST SETUP	MANUAL ASSEMBLY	SEMI-AUTOMATIC ASSEMBLY	FULLY AUTOMATIC ASSEMBLY	SMART MANUFACTURING & SMART SERVICES
<ul style="list-style-type: none"><li>Implementation of proof of concepts (PoC)</li><li>Analysis of the automation capability of customer products (DfM/ DfA)</li><li>Engineering and assembly of test setups</li><li>Supporting the customer with ramp-up scenarios</li></ul>	<ul style="list-style-type: none"><li>Drive via servo-electrics/pneumatics</li><li>Realization of machine solutions with high diversity of variants</li><li>Combination of stations with different degrees of automation</li><li>Development of machine concepts with the possibility of scaling</li></ul>	<ul style="list-style-type: none"><li>Drive via servo-electrics/pneumatics</li><li>Realization of machine solutions with high diversity of variants</li><li>Combination of stations with different degrees of automation</li><li>Development of machine concepts with the possibility of scaling</li></ul>	<ul style="list-style-type: none"><li>Hololens glasses provide a virtual tour of the plant and digital twin (Digital Twin)</li><li>Reduction of costs and personnel expenses for maintenance and servicing through <b>predictive maintenance</b></li><li><b>Smart services</b></li><li>Data recording and transfer using sensors and chips (<b>edge computing</b>) on containers and in the system</li><li>Data collection and evaluation for analysis and optimization</li><li><b>Traceability</b></li><li><b>Overall equipment effectiveness</b></li><li><b>Energy monitoring</b></li></ul>	

From conception to commissioning, we accompany you every step of the way and ensure that your products meet the highest quality standards.

In the final phase of the projects (hypercare) and also during series production, we offer you comprehensive services so that you can concentrate on your core competencies.

If you are looking for a reliable and competent hydrogen system partner with a global presence, you've come to the right place.

Thanks to our strong business ecosystem and established presence in the industry, we are happy to take on your challenges in a very dynamic environment.

## PROCESS COMPETENCIES

- Component feeding
- Vibratory conveyor
- Linear transfer systems
- Palletizer

- Gripping and positioning
- Pressing in
- Winding
- Dosing and dispensing
- Bonding and curing
- Ultrasonic welding

- Optical testing and measuring
- Tactile testing
- Leak testing
- Force and displacement measurement
- Image processing

- Labeling
- Printing
- Labeling (inkjet, laser, pad printing)
- DMC reading
- Ejecting NiO