

lean **key solutions**
engineering & manufacturing

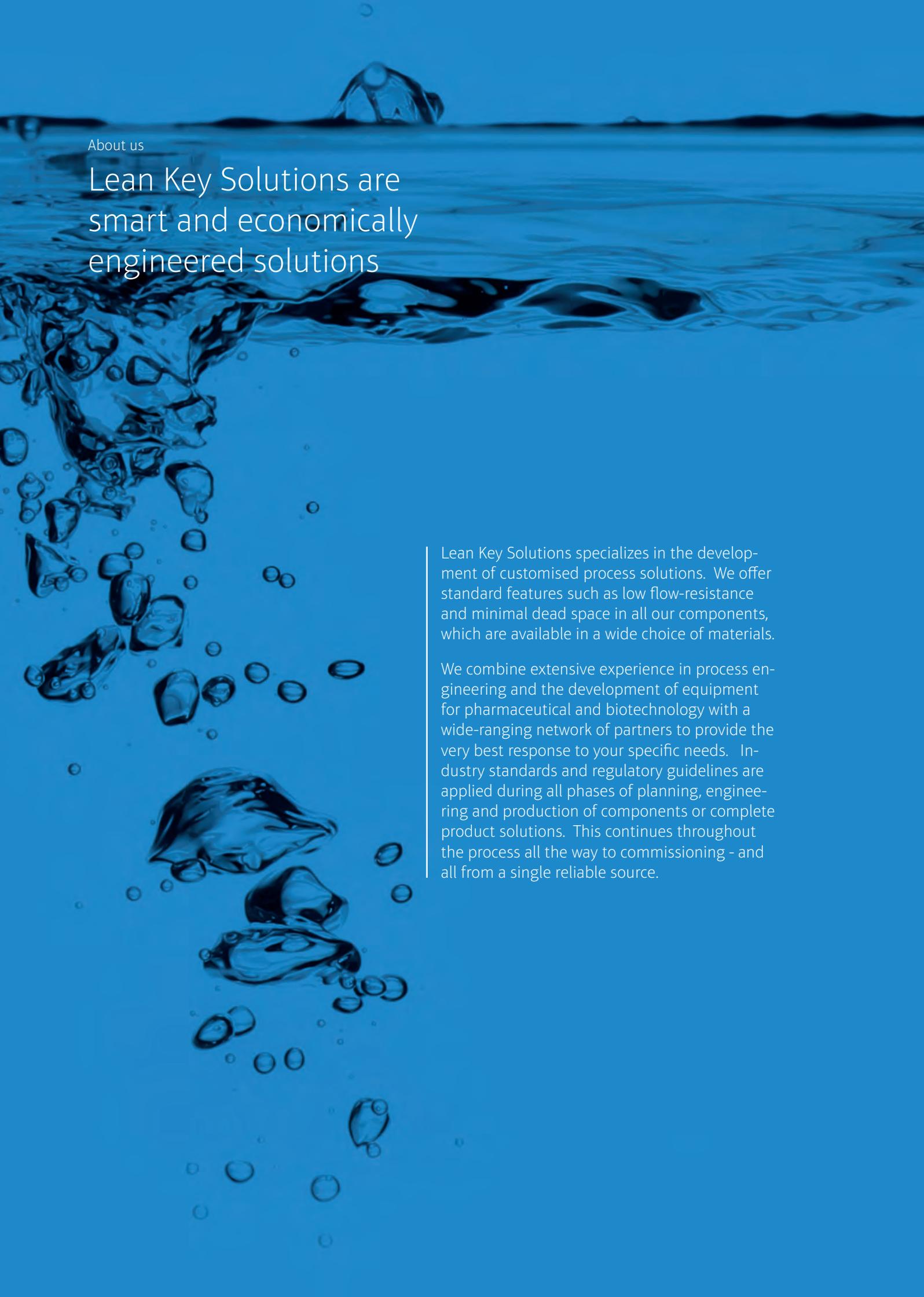


Optimised solutions for fluid handling

Tailor-made, professional and cost-effective



In the demanding field of process technology, a compromise is a costly exercise rather than a long term solution. At LKS we focus entirely on your requirements and work closely with you in order to develop a tailor-made and cost-effective solution. Should you so wish, we can be your full service provider. We manage the entire development process, manufacture the product, deliver a turnkey solution and take care of the installation and commissioning.



About us

Lean Key Solutions are smart and economically engineered solutions

Lean Key Solutions specializes in the development of customised process solutions. We offer standard features such as low flow-resistance and minimal dead space in all our components, which are available in a wide choice of materials.

We combine extensive experience in process engineering and the development of equipment for pharmaceutical and biotechnology with a wide-ranging network of partners to provide the very best response to your specific needs. Industry standards and regulatory guidelines are applied during all phases of planning, engineering and production of components or complete product solutions. This continues throughout the process all the way to commissioning - and all from a single reliable source.

Service Offering

Our core competencies support the complete development process

ENGINEERING

New Developments

- Planning Phase
- Concept Phase
- Design
- Development
- Market Launch

Reengineering

- Simulations and Calculations
- Product Development
- Enhanced Functionality

Special Solutions

- Remodelling and Development
- Specialized Components
- Customized Interfaces

3D-CAD Construction

- Manufacturing Drawings
- Process Schematics
- Complete 3D Plant Models

SERVICES

Calculations and Simulations

- Stress Analysis
- Tank Calculations
- Fatigue Analysis
- Flow Simulations
- Dimensioning

Consulting

- Components and Systems
- Engineering
- Manufacturing
- Specification
- Documentation
- Feasibility Studies
- cGMP Consulting

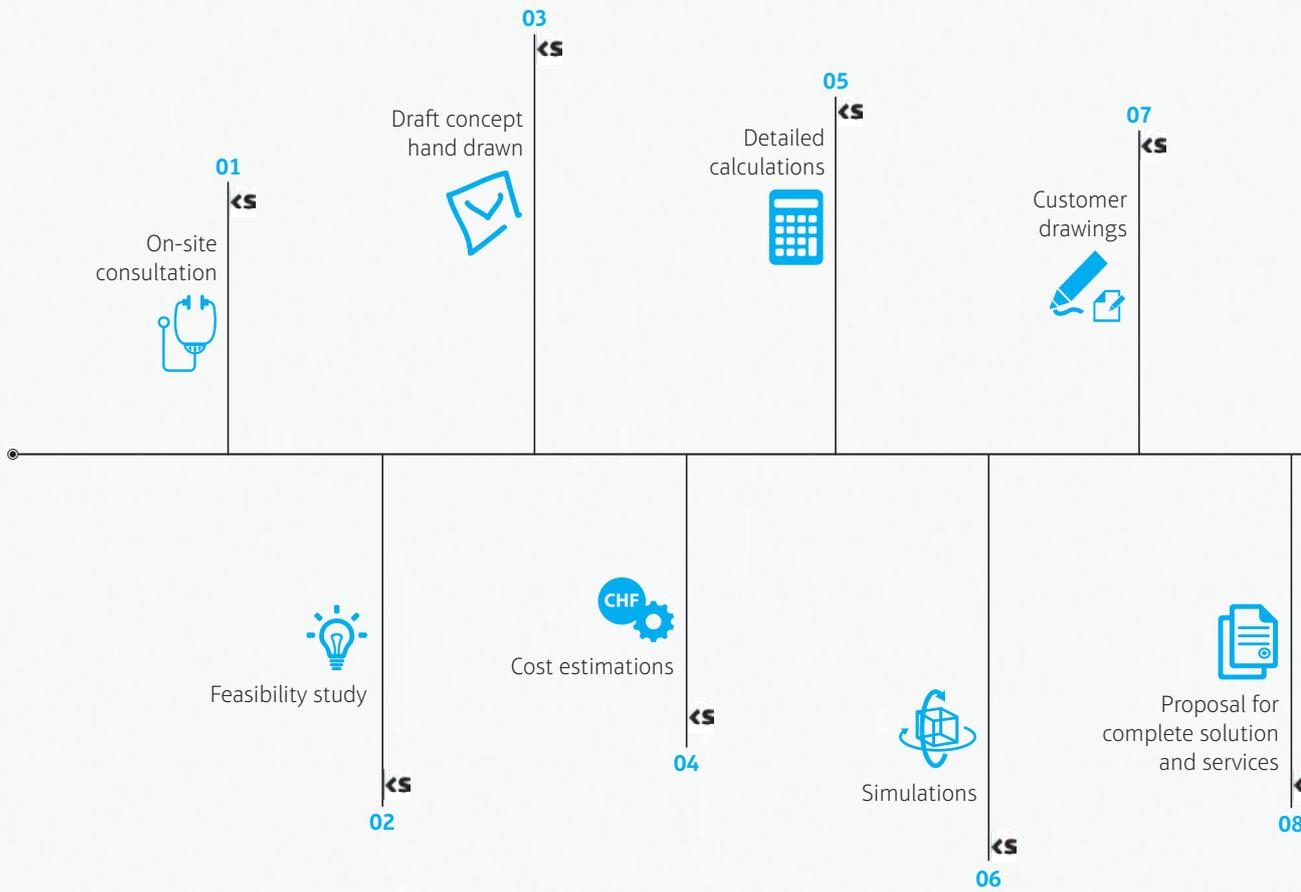
Analysis

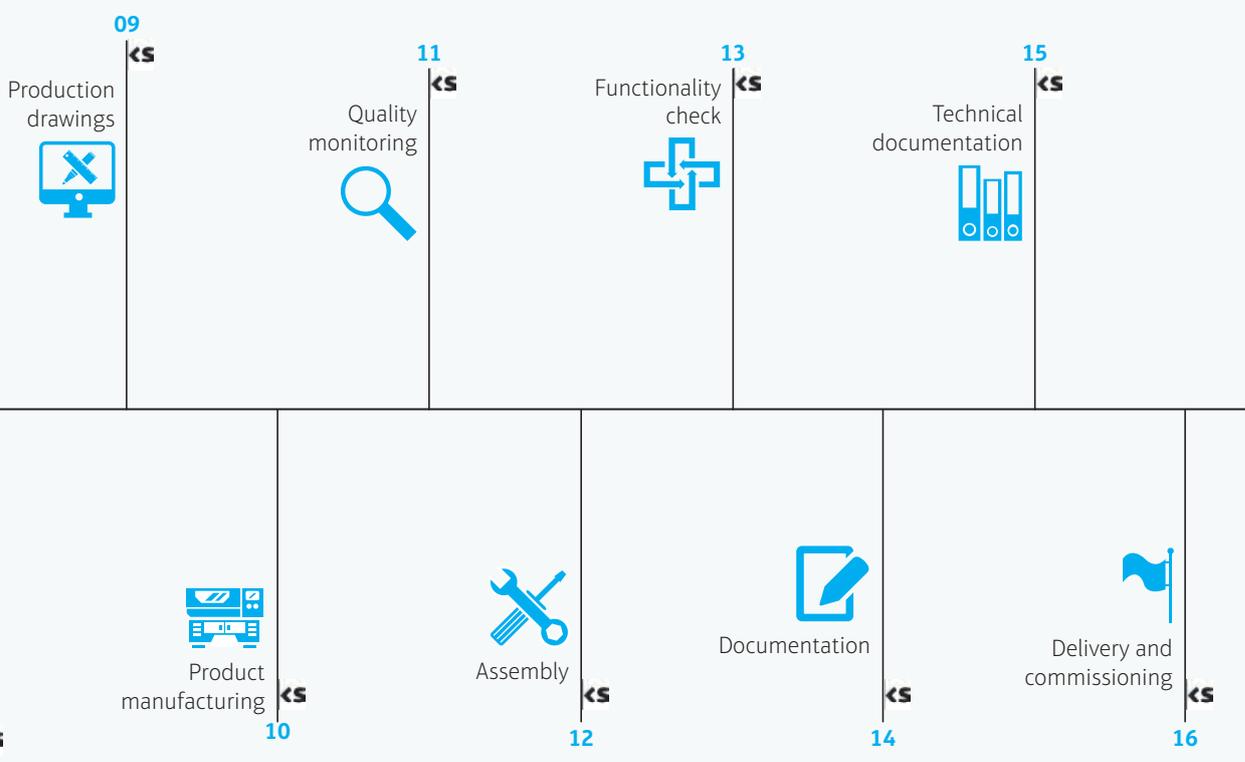
- Cost Benefits Analysis
- Optimization
- Problem Solving
- Sterility and Cleanability



Development Process

Our process is tested and proven to guarantee a successful collaboration with you





Benefits

Leading companies rely on the knowledge and competencies of LKS

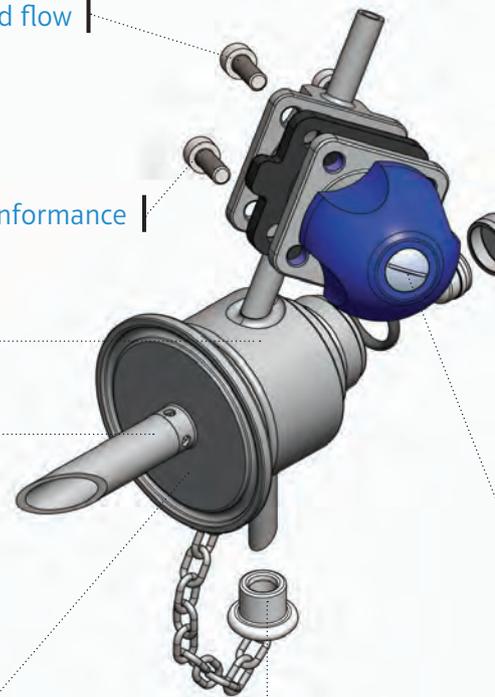
Traceability

Selected references

Givaudan Schweiz AG
cape7 engineering services GmbH
Premex Solutions GmbH
Novartis Pharma AG
Baxalta Manufacturing sarl
SR-Technics Switzerland Ltd.
Zimmer Biomet
Further references on request

Business areas

Pharma
Chemistry
Biotech
Food
Machine and plant construction
Special machines



Excellent fluid dynamics

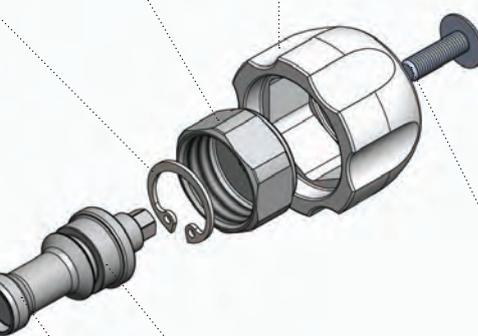
Optimized flow

cGMP- and EHEDG-conformance

Reduced cleaning time

Innovative hygienic design

ty |



Certification of components

- Material certification acc. EN 10204
- Ferrite content
- Surface quality
- Electro-polishing certification
- Endoscopic
- Dye penetration / X-ray examination
- Pressure test protocol
- Weld certification

| Cost-effective choice of materials

Certificates for elastomer sealings

- FDA
- USP Class VI (121°C)
- REACH / RoHS
- Sanitary 3A
- ADI-Free

| Reduced pumping demands

Advantages

- Improved energy efficiency
- Reduced cleaning costs
- Less cleaning time
- Low maintenance costs



A dynamic splash of water against a blue background, with numerous bubbles and droplets scattered throughout the scene.

Key Benefits

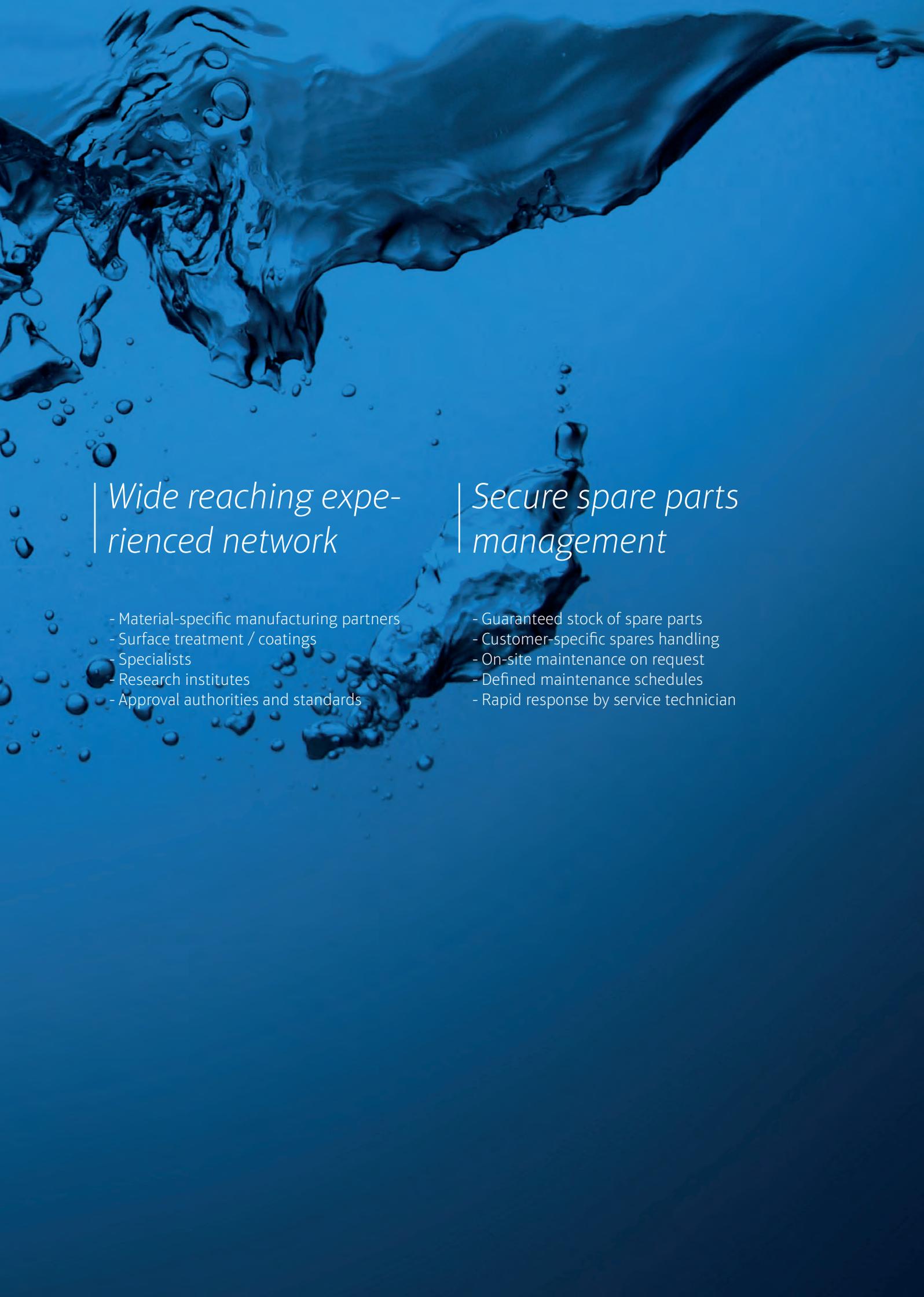
Numerous advantages,
four compelling arguments,
a commitment

| *Individually tailored
solutions*

- Implementation without compromise
- Process engineering requirements included
- Free choice of subcontractors
- Out of the box, independent approach
- Operations and maintenance-friendly

| *From engineering to
finished product*

- Development using the latest technologies
- Close interaction with production partners
- Production supervision and monitoring
- Quality and function testing
- Delivery and commissioning



Wide reaching experienced network

- Material-specific manufacturing partners
- Surface treatment / coatings
- Specialists
- Research institutes
- Approval authorities and standards

Secure spare parts management

- Guaranteed stock of spare parts
- Customer-specific spares handling
- On-site maintenance on request
- Defined maintenance schedules
- Rapid response by service technician



Mobile tank

Description	5 Litre capacity with nitrogen blanketing, various connections and sight glass
Material	1.4435 BN2
Seals	PTFE (FDA / USP Class VI)



Dosing and control valve

Description	Small dosing 0.8 / 1.6 l / mi, integrated diaphragm valve for SIP / CIP process
Material	1.4435 BN2
Seals	EPDM (FDA / USP Class VI)



Loop drain valve

Description	Manual drain valve for pressures up to 16 bar with temperature compensated handwheel
Material	1.4435 BN2
Seals	PTFE (FDA / USP Class VI)



Sampling system

Description	For highly toxic and pressure sensitive media; can be fully autoclaved
Material	1.4435 BN 2
Seals	FKM (FDA)



Sampling and harvest valve

Description	Equipped with primary and secondary fluid circuits (identified by the colored actuators), suitable for SIP / CIP
Material	1.4435 BN2
Seals	EPDM (FDA / USP Class VI)



Ball valve solution

Description	Made of Hastelloy for use with aggressive media; equipped with sight glass and nitrogen purge connection
Material	2.4602, Borosilicate glass
Seals	PTFE (FDA)



3-way high pressure ball valve

Description	Non-metallic media contact surfaces, pressure 25 bar at 200°C
Material	PFA (FDA)
Seals	FFKM (FDA / USP Class VI)



3/4-way sampling valve

Description	Bypass valve with hose connection, side sampling port
Material	1.4435 BN2
Seals	EPDM (FDA / USP Class VI)

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