



Lödige Coating System LC

Coating Applications



The following products can be processed with a suitable coating drum design:

- Tablets of all shapes
- Mini tablets
- Sugar coated tablets
- Capsules
- Pellets
- Larger granules
- Other formed items, e.g. for medical technology
- Catalysts

Lödige Coaters have been a success in film and sugar coating processes for various products since 1980.

Coating technology has experienced an extremely rapid development. More and more rapid processes in combination with low spraying losses, easier handling and more effective cleaning are required in fully automatic systems. Lödige Coaters LC comply exactly with these requirements.



The Lödige Coater provides the following advantages:

- Film and sugar coating with a very gentle product movement
- High variability of working volume (20-100 %) without having to change the coating drum
- Optimal air routing
- Explosion proof design on request
- Individual, customised systems



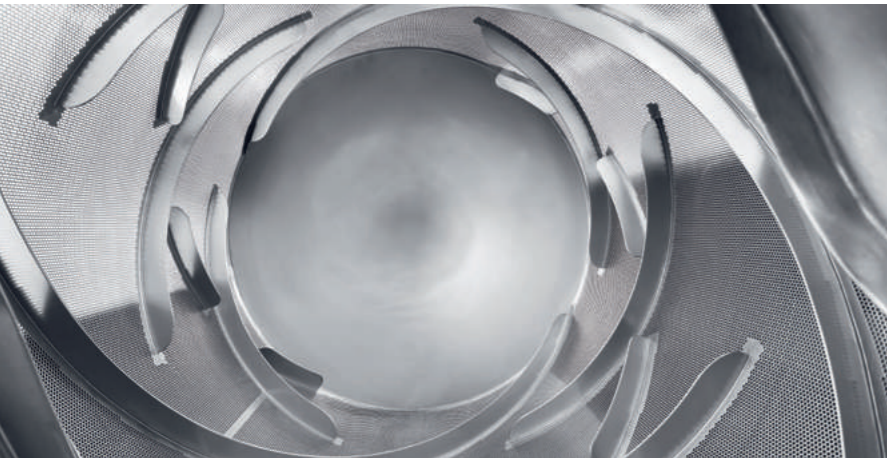
LC Sizes

Type	Batch size in kg*	Min. - Max. working volume in l
LC Lab	0,45 - 5,3	0,6 - 6
LC 50	5 - 20	6,5 - 26
LC 70	15 - 55	17,5 - 70
LC 100	50 - 200	65 - 260
LC 130	90 - 400	130 - 520
LC 150	150 - 600	200 - 800
LC 160	190 - 750	250 - 1000
LC 180	240 - 1000	320 - 1300

* (at a product density of 0.75 kg/l)

The Lödige Coating System LC

Due to maximised air volume and nozzle quantity and exceptionally effective product mixing, the Lödige Coating System LC permits extremely fast coating processes while maintaining excellent tablet quality and ideal coating homogeneity.



Drum geometry

The coating drum's length/diameter ratio of 1:1 permits:

- a compact design,
- a large spray area and therefore a high number of nozzles,
- quick mixing of the tablets, both horizontally and vertically,
- thorough, quick cleaning with cleaning nozzles.

Mixing elements

Lödige has developed new, extremely effective mixing elements for the Lödige Coater LC based on over 70 years of experience in the mixing technology.

The mixing elements have a reduced height and are easy to clean. They permit a high filling level variability of approx. 20-100 % of the working volume without coating drum replacement while simultaneously ensuring a very gentle product movement.

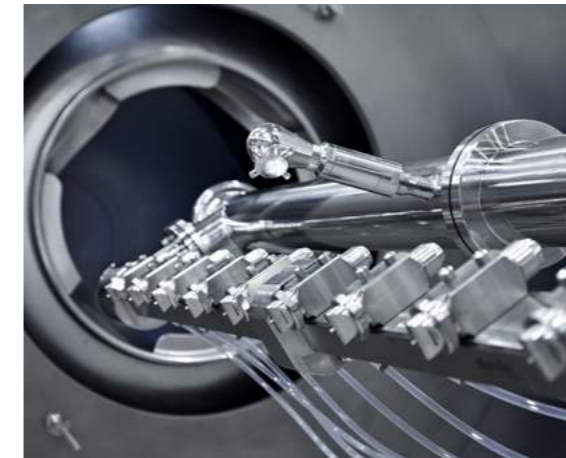
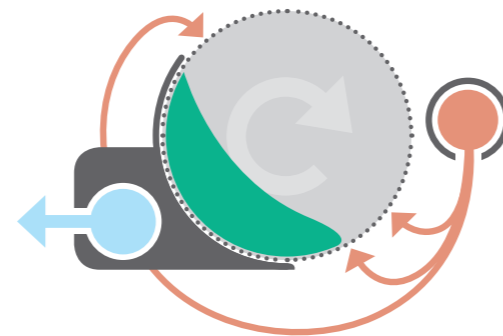
If requested, mixing elements suitable for both film and sugar coating processes can be installed.

During reverse running of the coater drum, all tablets are discharged completely and quickly through the discharge opening on the coater front door, using special discharge elements. Additional discharge aids are not required.

Air routing

The supply air is routed through an air distributor pipe. This ensures a mostly turbulence-free flow of large drying air volumes into the coating drum at low inflow speeds. The supply air is evenly distributed across the entire drum length.

The result is a very high drying efficiency. Spraying losses and the resulting cleaning work are minimised, making larger production campaigns possible.



Nozzle arm

The specially developed nozzle arm is adjustable on two pivot axes (optionally motor-driven). With this mechanism, nozzles can be adjusted in an extremely wide range to make full use of the filling level variability of 20-100 %. This permits production of various batch sizes without drum changes.

The number of nozzles is maximised for the coater in question and guarantees an ideal spray pattern. Coating solution is evenly applied to the entire spray area.

The nozzle type - just like the pump system - is selected in accordance with the application. In addition to ABC airborne nozzles, airless nozzles can also be used.

Depending on the pump version, fluids can be transported to the nozzles through one line or through one line per nozzle.

Circulation of the coating solution through a return line with a valve is possible, if requested.

As an option, the nozzle position can be measured using laser measuring technology, making it reproducible or even controllable.



Handling system

Usually the LC is fed through the window of the front door manually or using containers and lifting equipment.

The product is discharged into a tablet container through the discharge opening on the coater front while the drum reverses.



Components of the Coating Units

Lödige Coating Units are individual, customised systems.

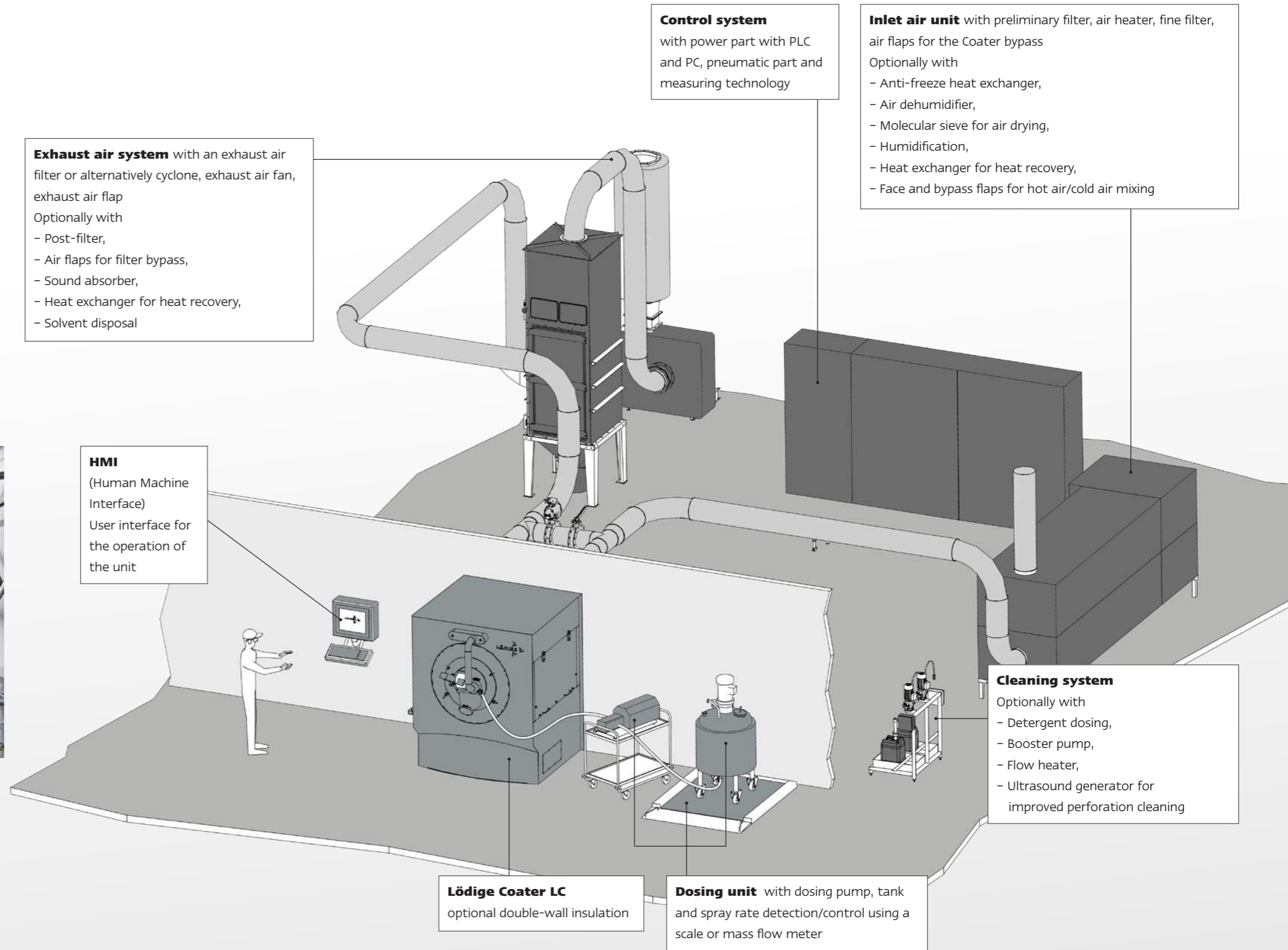
Lödige Coating Units are individual, customised systems.
The containment and ATEX 2014/34/EU requirements are, of course, taken into account for the design.

Special designs, e.g. nitrogen circuit systems are available.

The units generally consist of the pictured components.



Technical area of a Coating unit with nitrogen circuit and solvent condensation



Control System and Cleaning



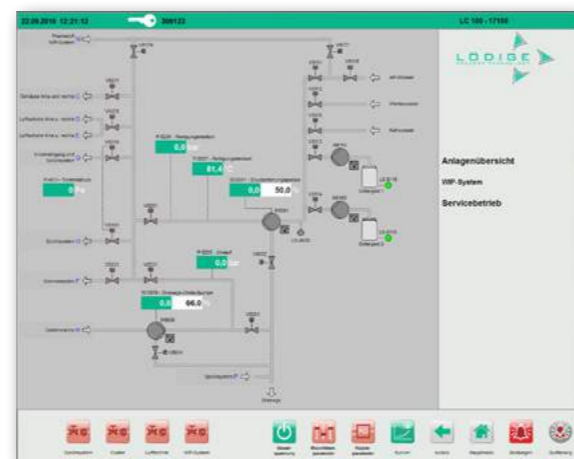
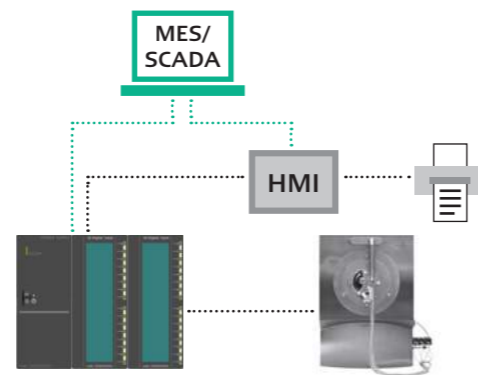
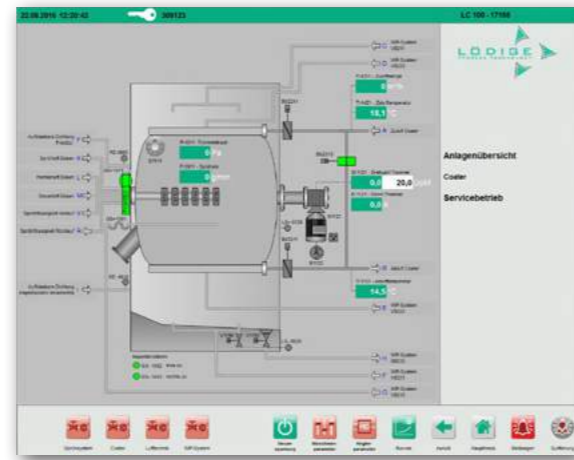
PLC/PC-based control system

The PLC/PC-based control system permits fully automatic operation for production and cleaning of the Coating System.

A safe data exchange with superordinated or parallel systems is possible through interfaces designed for this purpose.

It is designed to be compliant with GAMP 5 and FDA 21 CFR Part 11, meaning it also provides user management with different access authorisations and audit trail functionality.

The HMI (Human Machine Interface) permits intuitive operation and provides an overview of the system's state at all times.



Cleaning WIP/CIP

The cleaning system consists of jet cleaners and spate cleaners with all necessary valves and controls. Effective and mostly automatized cleaning of all coater components in contact with the product from inlet air flap to exhaust air flap is executed by strong mechanical action.

Detergent dosing stations, a booster pump, a flow heater and buffer tanks as well as additional components can be integrated if required.



To speed up cleaning of the drum perforation, an ultrasound generator can be integrated in the cleaning system.

LC Lab - the modular Laboratory Coater System

The LC Lab combines modern design with high functionality.

The drum provides working volumes of:

- complete drum 1.15 - 6 l
- divided drum 0.6 - 3.85 l

The use of either 4 or 2 spray nozzles creates ideal coating conditions comparable to those in the production coater.

The LC Lab control system is available in two equipment versions, either as basic or as comfort version.

An ATEX compliant version of the LC Lab for solvent based coating processes can be provided.

Modules

- Liquid supply station (optional) consisting of:
 - Integrated hose pump and/or optional
 - Mass flow sensor or scale
- The inlet air unit contains:
 - Pre-filter
 - Face and bypass control of the supply air temperature
 - Heating register for hot water heating
 - Fine filter of class H13
- Temperature control unit
- The exhaust air unit contains:
 - The exhaust air fan
 - Filter of class H13 or higher (An industrial vacuum cleaner can be used as an alternative exhaust air system.)

Additional modules are available as an option.



Easy handling has priority.



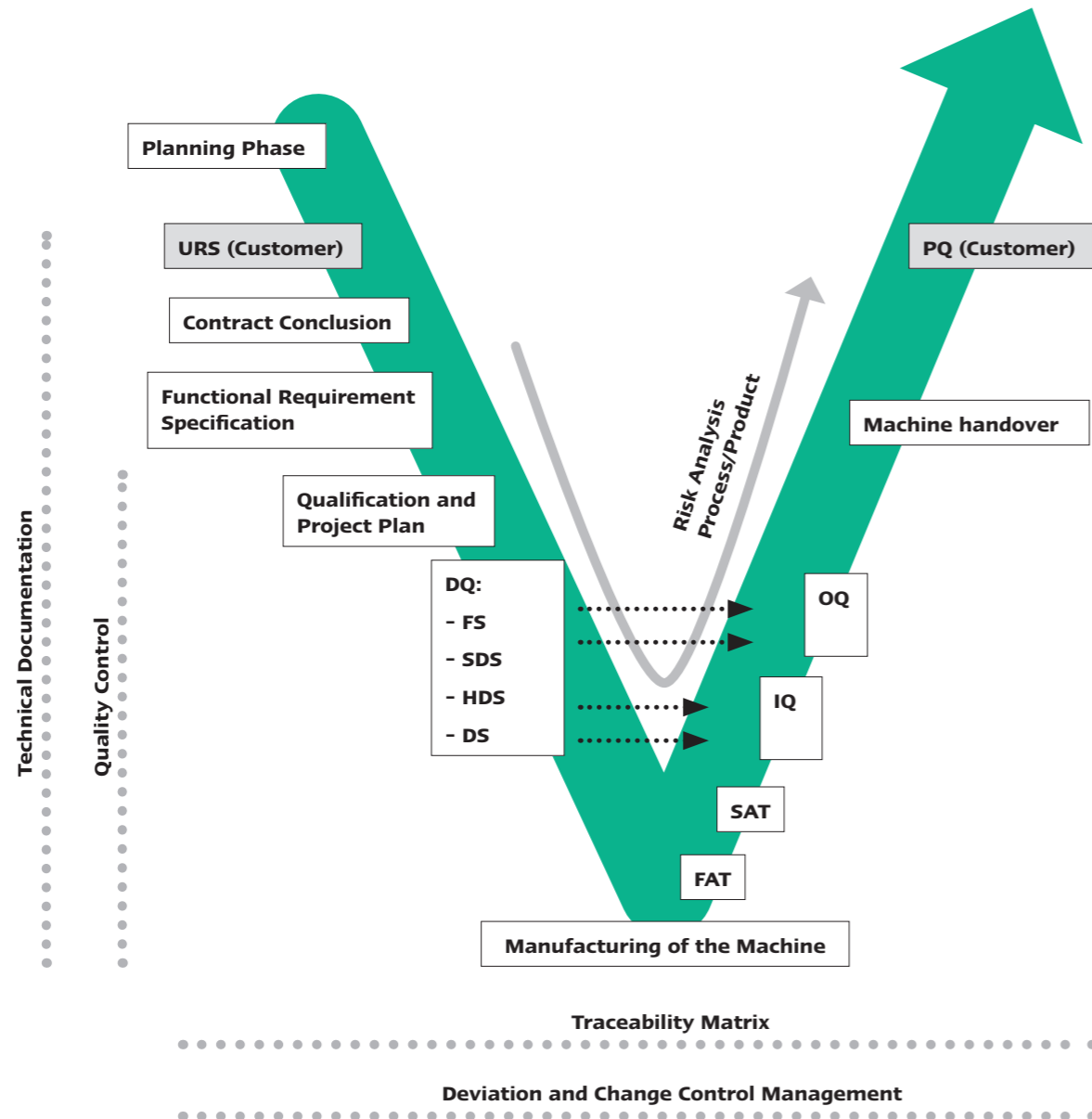
Qualification

The qualification according to Lödige standard is characterised by on-time processing integrated into the project schedule. This ensures that the creation and documentation follows the current pharmaceutical regulations and guidelines.

All documents are included. If requested, the complete execution according to the V-model can be realized. Partial qualification is also possible.

We will be glad to support our customers in integrating our qualification documents into their own quality system.

Lödige supplies GMP compliant, qualified systems with robust and safe processes



The Lödige Pharmaceutical Test Centre

A modern Pharmaceutical Test Centre permits trials in batch and continuous pharmaceutical mixers, granulators and fluidised bed processors as well as coaters on laboratory and pilot scale.

After Sales

The role of our qualified After Sales Service is to ensure the high quality of the supplied machines by providing maintenance worldwide at regular intervals.

We can provide a specific solution for any problem rapidly and at any time.

**Gebrüder Lödige
Maschinenbau GmbH**

P.O. Box 2050
33050 Paderborn

Elsener Straße 7-9
33102 Paderborn
Germany

Phone: +49 5251 309-0
Fax: +49 5251 309-123
E-mail: info@loedige.de

Contact numbers
Sales Department:
Phone: +49 5251 309-147
Customer Service:
Phone: +49 5251 309-222

www.loedige.de

Lödige supplies high-grade components, subsystems and systems for technical processing applications in a wide range of industries. We are specialized in the field of mixing, granulating, coating, drying and reaction. Our profound knowledge of processes, development and production enables us to contribute to the success of our partners throughout the world.

Lödige, which was founded in 1938, is a family-run business now in its third generation.

With the invention of the Ploughshare® Mixer, Lödige created a mixing unit that can cover a wide range of different processing tasks. This unit forms the basis for numerous innovations in the area of mixing and processing technology.

Industrial mixing and processing technology has been significantly influenced by Lödige and will continue to be so in the future.

Over 500 patents and more than 30,000 machines and systems demonstrate our experience with customer-oriented system solutions. Lödige operates with more than 300 employees worldwide and supports its customers with a network of subsidiaries, technical offices and agencies.