3DEFACTO

Customised System Technology

In focus: Prepolymer Processing

www.3defacto.de

From the idea to the turnkey system

Want to invest in a new system for processing high-performance PU elastomers? Then you've come to the right place! We take care of all work steps from planning to detailed planning, manufacture, assembly and commissioning of the system. This makes it easy for us to respond to your individual requirements and take specific circumstances into account.

With our modular design, we find the right solution for every challenge: from individual recommendations for optimisation to implementing complex systems. 3defacto's system technology ensures you economical, energy-saving and optimised production. The numerous projects we have successfully implemented for our customers show that this concept works.

Regardless of whether NDI or often liquid MDI are used for prepolymer production, we develop tailor-made solutions.

There are no interfaces with different suppliers, due to our high level of vertical integration. We complete projects on time, while compliance with all applicable laws and regulations is a matter of course.

With our system modules, we not only supply processors of high-performance PU elastomers but also customers from the chemical, bulk material processing and food industries.

Our trademark ...

- Proximity and direct contact with the customer
- Flexibility
- Individual advice
- Innovative solutions

We are a special machine and system manufacturer which fulfils all customer requests.

Systems that correspond to needs: optimised, economical and energy-saving

The cleaning lance is positioned and locked in the reactor.

Prepolymer system

Filter unit

Signal lamp

Additional filter unit in the vacuum system (optional)

Emergency stop device

Temperature control device for heating the reactor using thermal oil; optionally with heat exchanger for active cooling of the reactor

Weighed receiving container for solids

Vibration motor for completely emptying the solids container

Frequency-controlled agitator

Vacuum connection with filter unit

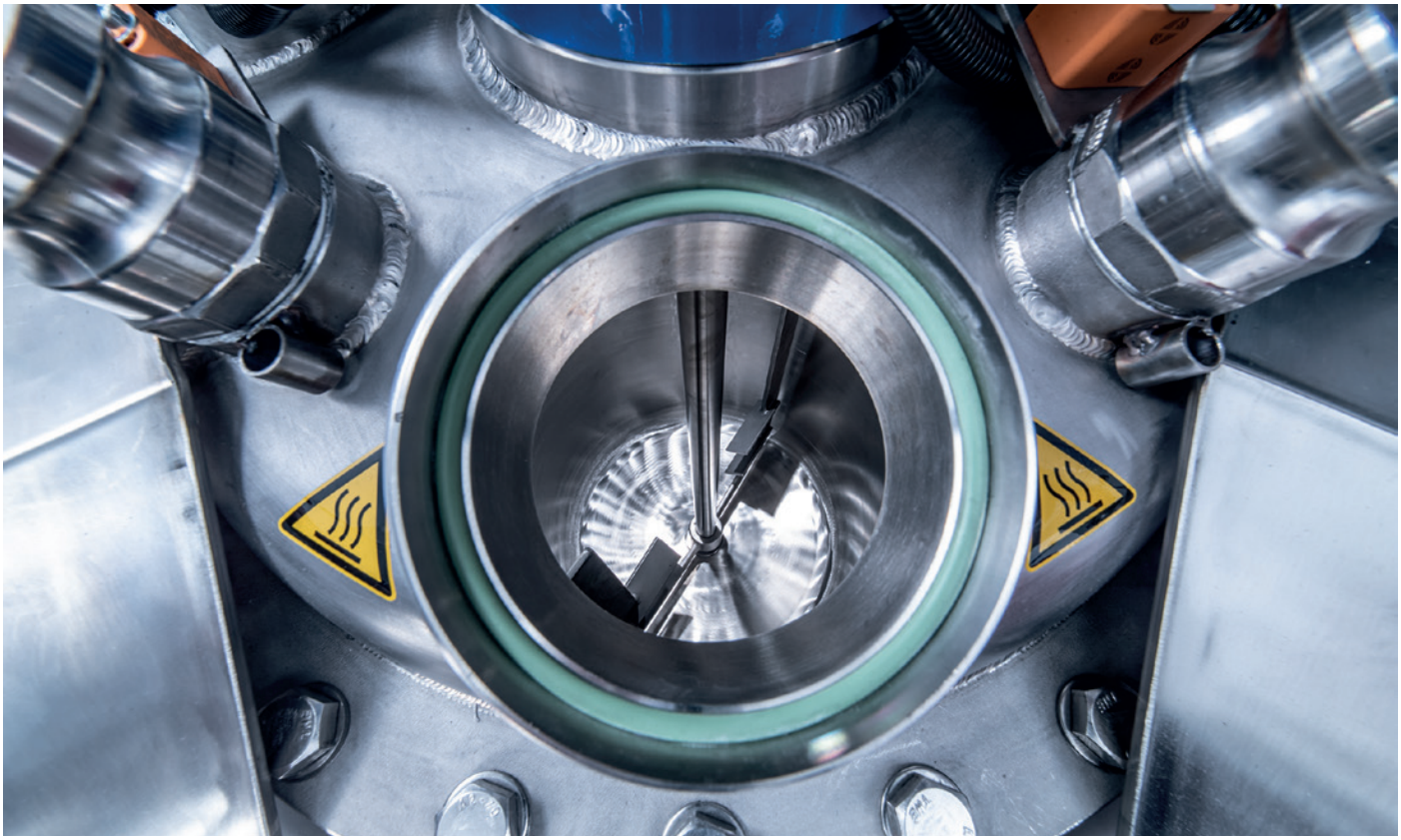
Cleaning lances

Sight glass

Drip pans and trays

Parking position for cleaning lances

User-oriented labelling of all essential system parts



Top view of prepolymer reactor

Prepolymer reactor

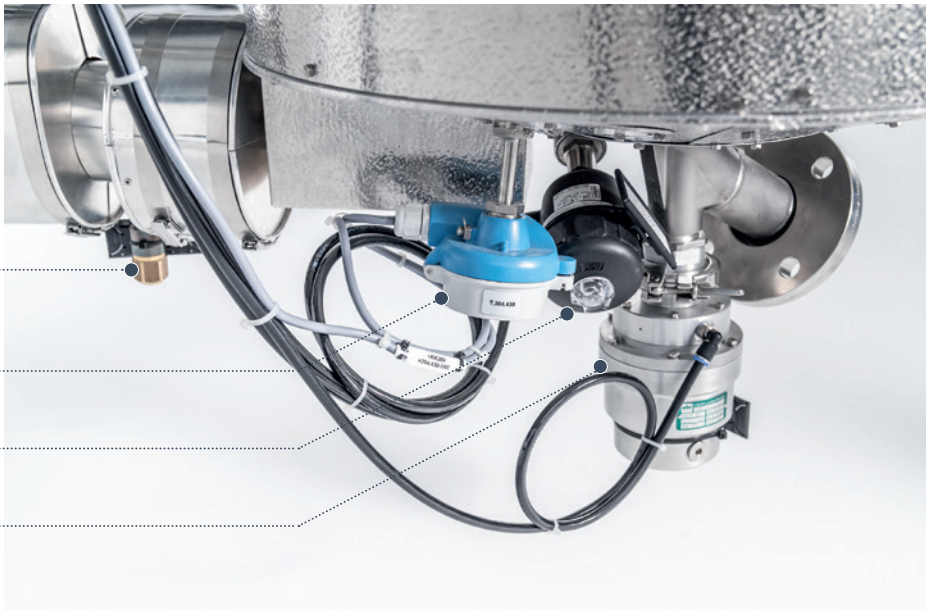
In the reactor, the heart of the system, the various raw materials are mixed to form a homogeneous mass: polyol, NDI or MDI and additives. Before that comes the fully automatic dosing technology. It ensures that all substances enter the reactor in exactly the right quantities. The dosing and mixing process can include up to 20 process steps. Any number of stored recipes guarantee the right mixture for every high-performance PU polymer to be produced. The result: a wide range of end products.

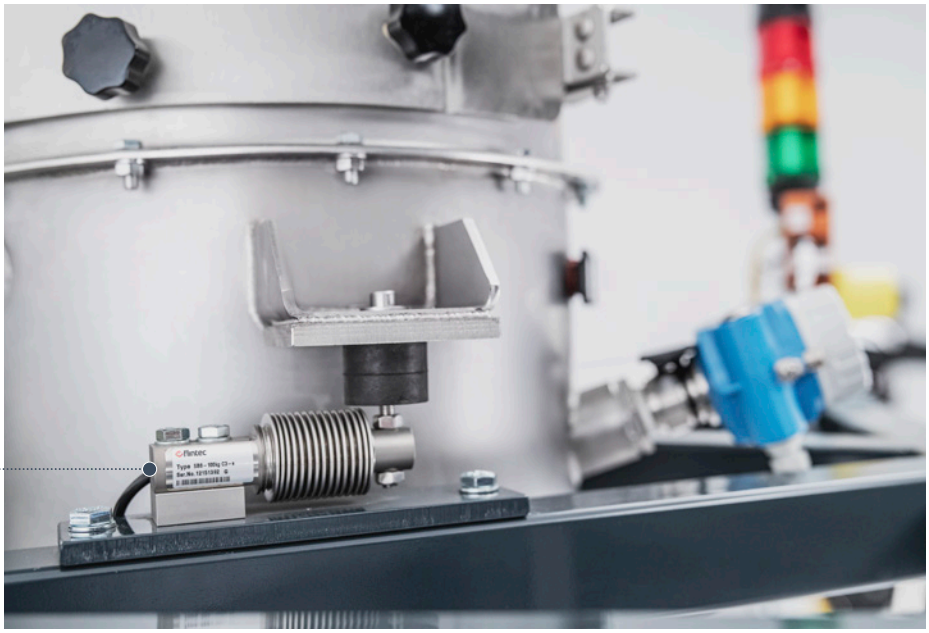
We attach great importance to operational safety. This is achieved by different password levels. For example: the system operator can start a new batch, the shift supervisor can also select a different recipe.

The course of the reaction determines the product quality. It depends on the exact mixing ratio of the raw materials and the temperature control. We have these factors under control. The optimal surface ratio of our reactor ensures fast and precise temperature control. The status of the reaction process can be observed in real time. The advantage: the optimal point in time for further prepolymer processing can be identified immediately. We have also given thought to cleaning. It can be done easily and efficiently.

Reactor prepared for cleaning mode: the spray lances are plugged in.

Detailed views of the prepolymer reactor





Conditioning station

High-quality end products require impeccable basic materials; residual moisture or gases trapped in the raw material are out of the question. The conditioning station removes moisture and gases from the raw materials, controls the temperature and prepares them for the subsequent process steps.

The main components of our standard conditioning station are two conditioning tanks, two temperature control units, a withdrawal pump unit, a vacuum pump, and various measuring and shut-off devices.

The advantages at a glance:

- While conditioning is taking place in one container, the other container supplies production
- Automatic switching between containers
- Continuous production with perfect raw materials guaranteed
- No waiting times for temperature control during further processing
- Higher output of reaction, dosing and mixing systems

Solids dosing station

All free-flowing raw materials enter the process via the solids dosing station. The docking station for the raw material container can pick up drum, container or big bag packs and empty them completely. Our system technology ensures low-dust docking of the raw material containers. From the docking station, the raw material arrives in a buffer container, and from there with the help of a microdoser passes to the sending container. The system pneumatically conveys the precisely dosed quantities of solids – for example into the reaction systems.

The solids dosing station is easy to operate thanks to the user-friendly controls. And it is very easy to integrate them into the overall process. For example, a subsequent process step can request a specified amount of solid matter. This is then automatically dosed and sent.

The advantages at a glance:

- Docking station for drum, container and big bag packs
- Exact microdosing
- Simple integration of the dosing in the control of the overall system

Big bag emptying station BBU 2000

Solid matter dosing station in a compact design for picking up and emptying various containers.

Liquid dosing station

Additives and crosslinkers are part of PU processing. We store these additives in the liquid dosing station and control the fully automatic dosing. For this purpose, a compressed air diaphragm pump pumps the liquid substances from their containers into storage tanks, with volumes designed according to your quantity requirements. The containers can of course be cooled. You can store various recipes in the controls, to enable dosing at the push of a button. Small transport or mobile containers for larger quantities are available as receiving containers.

Once dosing is complete, the mixture is homogenised with the aid of a stand agitator. The dosing station can also optionally be connected directly to the reactor.

The advantages at a glance:

- Flexible number and size of storage containers
- Cooling of the storage tank
- Fully automatic dosing
- Different recipes

Modular construction

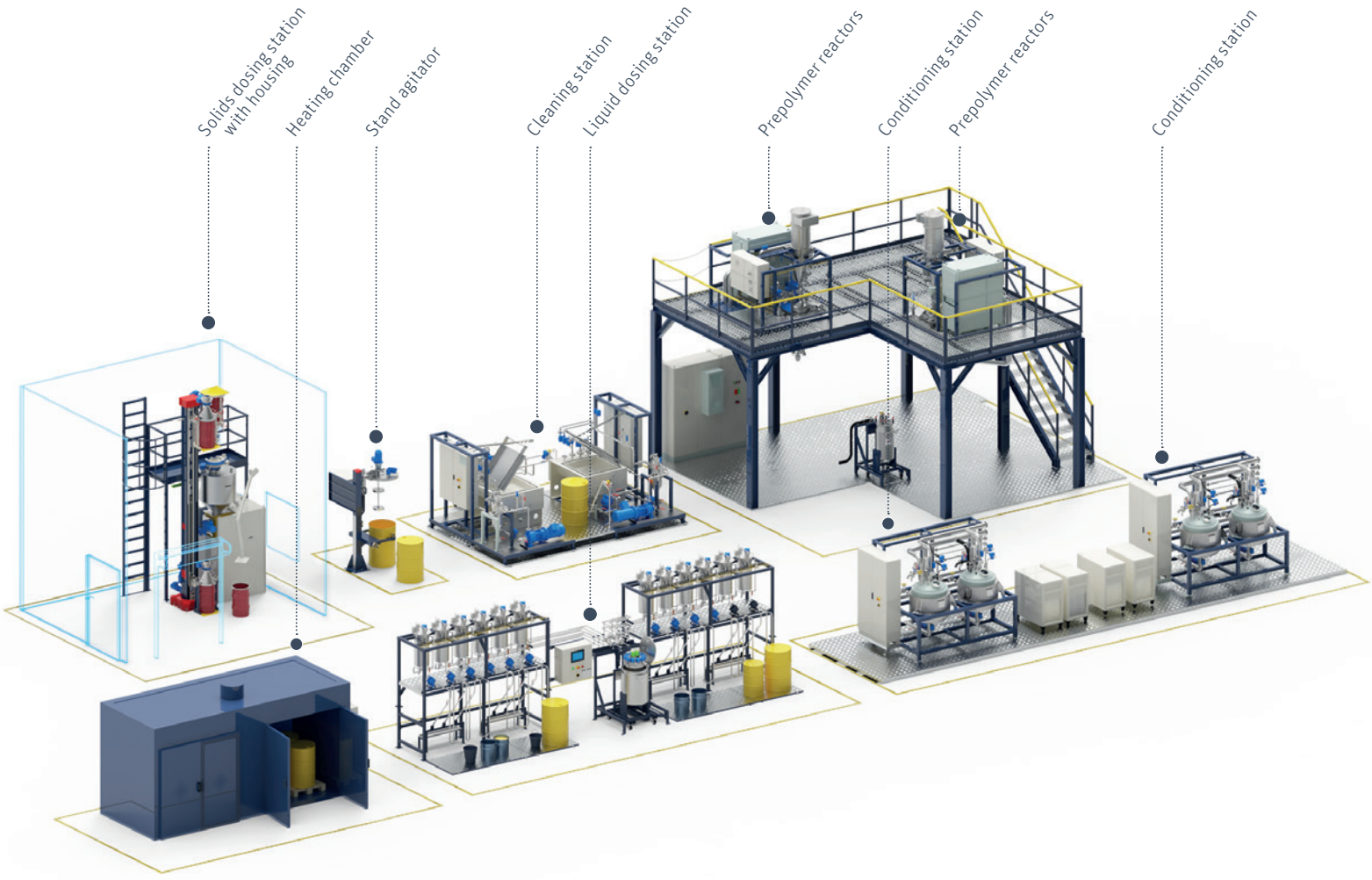
All modules, including the control cabinet, are created entirely in our factories, together with all connections, such as for the compressed air or vacuum supply. We install all components within the steel structure. So they survive the transport to you without any damage!

Before we deliver the system to you, we first test all the modules and connections in-house.

On your site, all you have to do is set up, connect and start up.

The advantages at a glance:

- Very quick installation and commissioning
- Flexible system configuration



Cleaning station

The cleaning agent is stored in the cleaning station. Here it is heated up to unleash its full effect. Our standard cleaning system consists of a storage container with a usable volume of 300 or 500 litres. Several spray lances are positioned in the container to clean a reactor. The cleaning process starts as soon as the minimum temperature of the respective cleaning agent in the storage tank is reached. We keep the cleaning medium in constant circulation during this process. An automatic filter cleans the medium continuously. After cleaning is complete, the system can be re-cooled in a very short time. Various safety devices ensure that the operator never comes into contact with the hot medium.

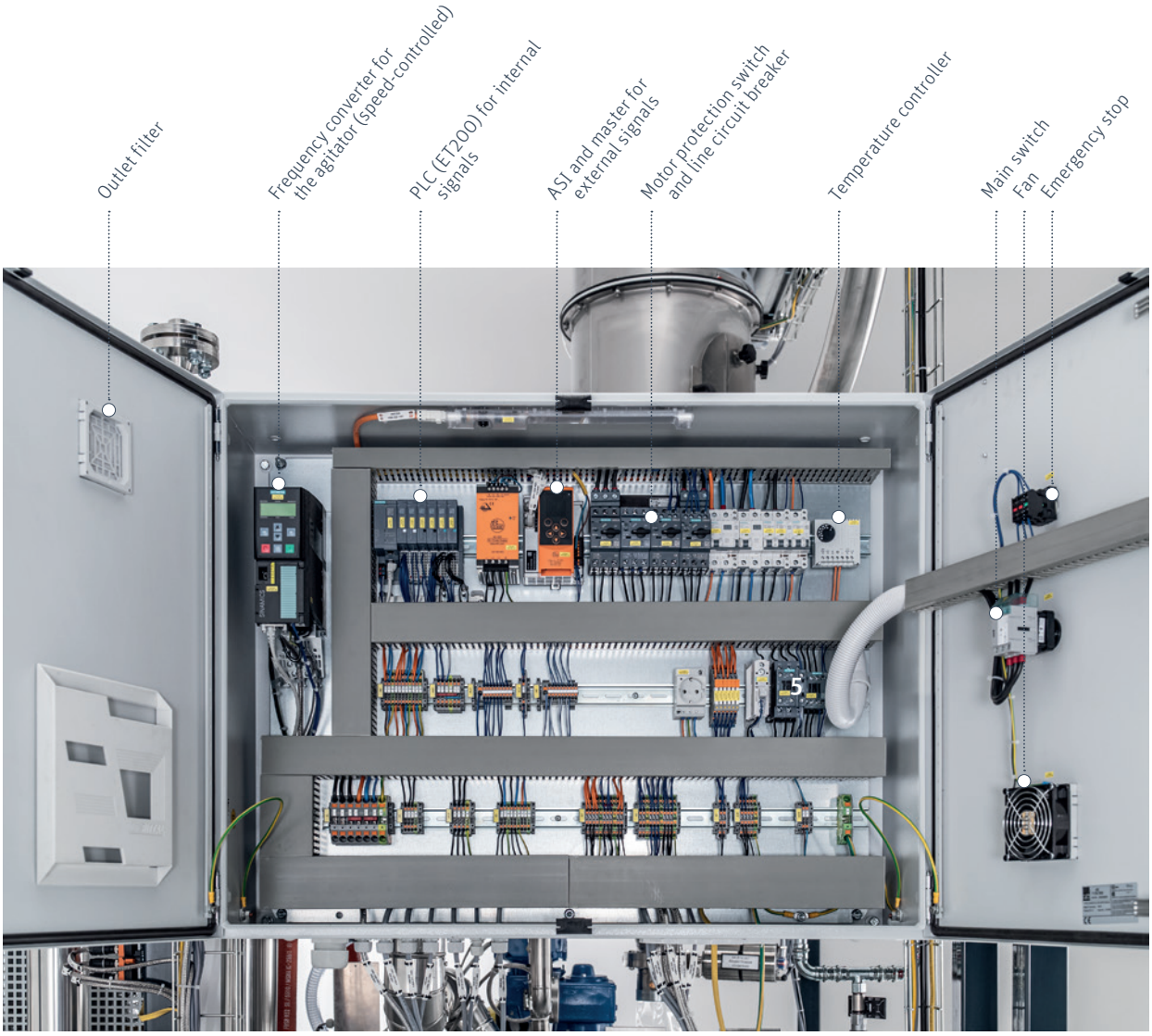
If the capacity of the cleaning medium is exhausted, a pump automatically empties the entire cleaning system and it can be filled with new medium.

The advantages at a glance:

- Fully automatic system cleaning
- Temperature control of the cleaning medium
- Longer service life of the cleaning medium due to continuous filtration
- Safe handling

Electrical engineering and control cabinet construction

We build your control cabinets in our electrical workshop. You receive an all-round carefree package that includes the complete electrical engineering, together with a connection to your own ERP system.



Control cabinet of a reactor

Other facilities: container removal station

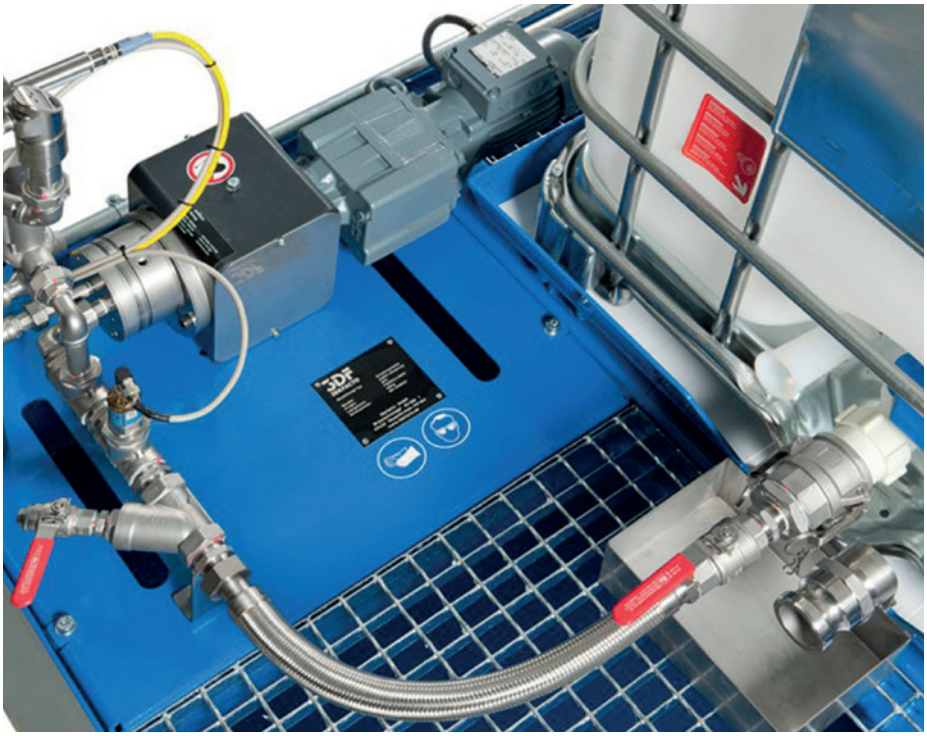
Liquid media often enter companies in cubic transport containers (CTC) made of steel or plastic. Our container removal stations are efficient, high-quality and we have adapted them to all liquid components. Our stations independently and automatically remove the liquid medium from the containers and forward it to the delivery point, e.g. a day tank. Integrated steel catch basins comply with the provisions of the German Water Resources Act and ensure safety if anything leaks.

Every station is mobile. We configure the stations individually to meet the requirements of the product and the system. We adapt pumps, agitators and heating or cooling systems to special product requirements. If necessary, we select the explosion-proof version.

When the station arrives at your premises, it has already been pre-checked and is ready for connection, including the control cabinet.

The advantages at a glance:

- Individual adaptation to customer requirements
- Numerous expansion and optimisation options
- High-quality workmanship
- Can be used for almost all liquid components



The IBC is positioned and connected to the removal station. Emptying with the pump can begin.

What we offer

Procedural design and project planning of systems according to your individual requirements. We make sure to use precisely those components that optimise your production, in terms of energy and economy.

From individual units to complex systems, for example in the chemical industry, 3defacto has already implemented many successful projects.

Here are some examples:

- Tank farm for storing water-polluting and flammable liquids and chemicals: standing, lying, above and below ground
- Production systems for Vulkollan and other high-performance PU elastomers
- Emptying stations for bulk goods
- Removal stations for drums and containers
- Conditioning units for temperature control, degassing and dewatering of polyols and isocyanates
- Blending stations for producing preliminary and intermediate products
- Supply systems for compressed air, vacuum, nitrogen
- Heating and cooling systems

Our delivery programme:

- Turnkey systems for processing liquids and solids
- Subsystems for individual processes
- Systems for processing prepolymers into high-performance PU elastomers
- Tank farms
- Components for the food and pharmaceutical industries
- Container removal stations
- Control cabinet construction
- Automation technology

3defacto – active at three locations

3defacto is a system manufacturer with its own production as well as an engineer service provider for mechanical engineering, system technology, construction, consulting and seminars. We would be happy to advise you on your concerns, so get in touch:

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View of the technical centre in Mühltal

Individual, professional and made in Germany

Since it was founded in 2000, 3defacto has supported its customers with the introduction and optimal use of SolidWorks, contributing a wide range of expertise as a construction service provider and acting as an innovative and reliable partner in product development. Individual special machine construction along with the design and implementation of turnkey systems have formed part of its range of services for many years, as well as customer-specific software for automating SolidWorks processes.

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