FINE CHEMICAL

THURNE
TEKNIK

Reactor Environment

GLASS REACTORS & REACTOR SYSTEMS

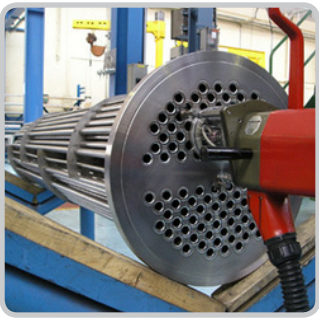
Borosilicate glass is transparent, corrosion resistant and catalytically inert and has a smooth and easily cleaned surface. These features make the material well suited for synthesis of fine chemicals and API's.

Technical details:
Reactor size from 1 to 630 L (with glass or glass-lined reactor bottom part) available either as stand-alone unit or as complete skid mounted system with ATEX certification and CE labeling.

GLASS-LINED AND METAL REACTORS

With a glass-lined reactor, the transparency is lost and instead pressure resistance is gained. Other materials such as steel alloys or reactive metal solutions (Ti, Ta, Zr) can be offered.

Technical details:
DIN range of glass-lined reactors of type AE, BE and CE covers nominal sizes from 63 L to 40 m3 and OPX (Optimix) range with three integrated baffles covers the same size range. Metal reactors are flexible in size and design.



CONDENSER

The heat exchanger acting as condenser has an important role either if it is for reflux, evaporation or condensing vapors in ventilation gas.

Technical details:
A wide range of condensers for GMP environment such as Shell & Tube, Welded Plate, Spiral, or Block type is available in the widest range of materials: Tantalum, Ni-alloys, Steel Alloys, SiC, Graphite, Glass and Glass-lined Steel.

CONTINUOUS REACTORS

Transforming batch processes of chemical reactions into continuous operated systems serves numerous distinctive advantages, such as improved safety, reduced manpower, constant product quality and maximized space-time yields.

Technical details:
From Mini production Plants up to full scale production units in a wide range of materials.

TEMPERATURE CONTROL UNITS

A complete, turn-key stand-alone unit for heating/cooling applications in which the unit operates with a single heat transfer fluid and monitors and controls the temperature of the process.

Technical details:
Available from heating and cooling capacities from 1 kW and upwards covering temperature ranges between -100°C and +400 °C working with either water based or oil based heat transfer fluid.

Solid/Liquid Separation & Drying

CENTRIFUGES

Mechanical separation of solids from a liquid phase is a common unit operation and a centrifuge with a filter media cloth offers a way of doing so with efficient washing of the product cake and high throughput.

Technical details:
Continuous operation with a pusher centrifuge or operation in cycles with a vertical or horizontal peeler machine or a horizontal pharma centrifuge.

FILTER/DRYERS

With functionality for heating/cooling, motor driven height adjustable agitator and dust filter connected to vacuum source, the pressure filter is turned into a filter/dryer machine with combined filtering & drying.

Technical details:
Available in nominal filter area sizes between 0.03 and 16 m2 and made of Steel Alloys, Ni-Alloys or Glass-Lined Steel.

STATIC VACUUM CABINET DRYERS

By means of heat and vacuum, product is dried while lying still on the trays inside the cabinet. The wide range of suitable batch sizes for a certain cabinet size offers great flexibility for this method of drying.

Technical details:
Available in volumes from laboratory size to over 5000 L and delivered either as stand-alone unit or as a complete drying systems.

ROTATING VACUUM DRYERS & MIXERS

The design of the double conical dryer combines the drying and mixing function in one simple and stable device with drying times at acceptable levels.

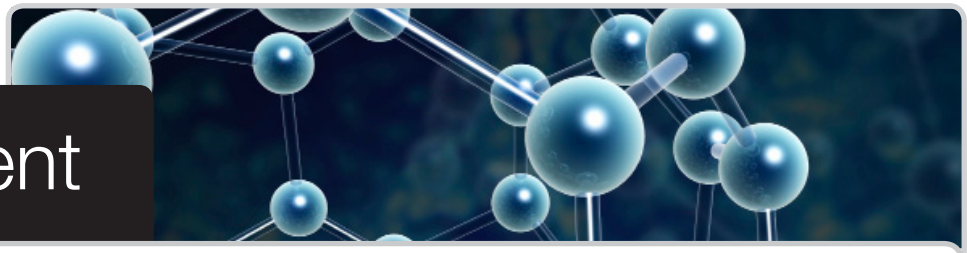
Technical details:
Available in nominal volumes between 100 and 10000 L and made of Steel Alloys, Ni-Alloys or Glass-Lined Steel.

GAS & LIQUID FILTRATION

A comprehensive range of filtration solutions from clarification to pre-filtration in different media and media combinations. Typical applications are filtration of gas and liquid raw materials, removal of catalyst and liquid product filtration before final crystallization.

Technical details:
Filter capsules and cartridges in a wide range of different pore sizes and surface areas with different connection types or end cap codes.

Containment



REACTOR CHARGING

To charge a reactor with powder in a safe and contained way is a challenge when using solvents in pressurized vessels. By using a PTS this operation could be handled in a closed and safe way from all kinds of powder containers into a reactor even under operation.

Technical details:

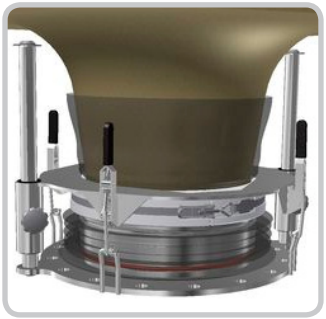
Capacities from less than 1 kg up to 9 tons per hours. As there is no risk of solvents to reach the PTS body it is usually supplied in Stainless Steel but can be supplied in other materials.

SPLIT VALVES

A Split Butterfly Valve provides a safe method of transferring product from one container or process vessel to another whilst minimizing the levels of dust emission before, during and after the material transfer.

Technical details:

The valves can be delivered in sizes from DN50 up to DN300 and with containment performance from <10µg/m³ to <1µg/m³ and in materials from Stainless Steel to Ni-Alloys.



FILLING & EMPTYING STATIONS

Contained and dust-free handling of bags and drums, containing ingredients or intermediates, improves not only the operators´ safety but also protects the product and improves the cleanliness of the facilities.

Technical details:

For OEL's of <1µg/m³ and <10µg/m³, different type of isolator systems and contained connection systems are available for bag, drum and big-bag emptying.
As filling equipment, we can offer isolators or efficient endless-liner filling stations.
Big-bag filling stations are available at different levels of containment.

VOLUMETRIC & GRAVIMETRIC FEEDERS

Volumetric or Gravimetric Feeders for a high and safe feeding accuracy. They are used for powders, granules, fibres, flavours, pigments and liquids.

Technical details:

Feed Rates up to 45 m3 (volumetric), Feed rates from 0,2 dm3 (gravimetric).
Robust, easy cleaning, high feed accuracy and low maintenance costs are some advantages.

IN-LINE MILLING AND SIEVING

Milling, micronizing and security screening of wet or dry ingredients and products is possible to do in a contained way, minimizing dust and product exposure by using our in-line cone mills and sieves.

Technical details:

The mills/sieves can be connected with split valves or placed directly in-line for active transport through the equipment with vacuum transport systems. Capacities from 1 kg/h to 100 t/h.

Service & Systems

REACTOR SYSTEMS

Complete turn-key skid mounted systems which are assembled and tested before delivered to customer site and delivered together with CE marking/labeling in accordance with machine directive, PED and ATEX as well as complete documentation file. Available from reactor nominal volumes from a few L and upwards and customized solutions around the reactor/reactors.

EXHAUST GAS PURIFICATION SYSTEMS

Solvent condensation units or scrubber systems for absorption of acidic gases, NOx and other applications are available. Standard mobile scrubber systems made of glass in smaller size and customized solutions for other materials and larger sizes.

INSPECTION OF STATUS OF ENAMEL

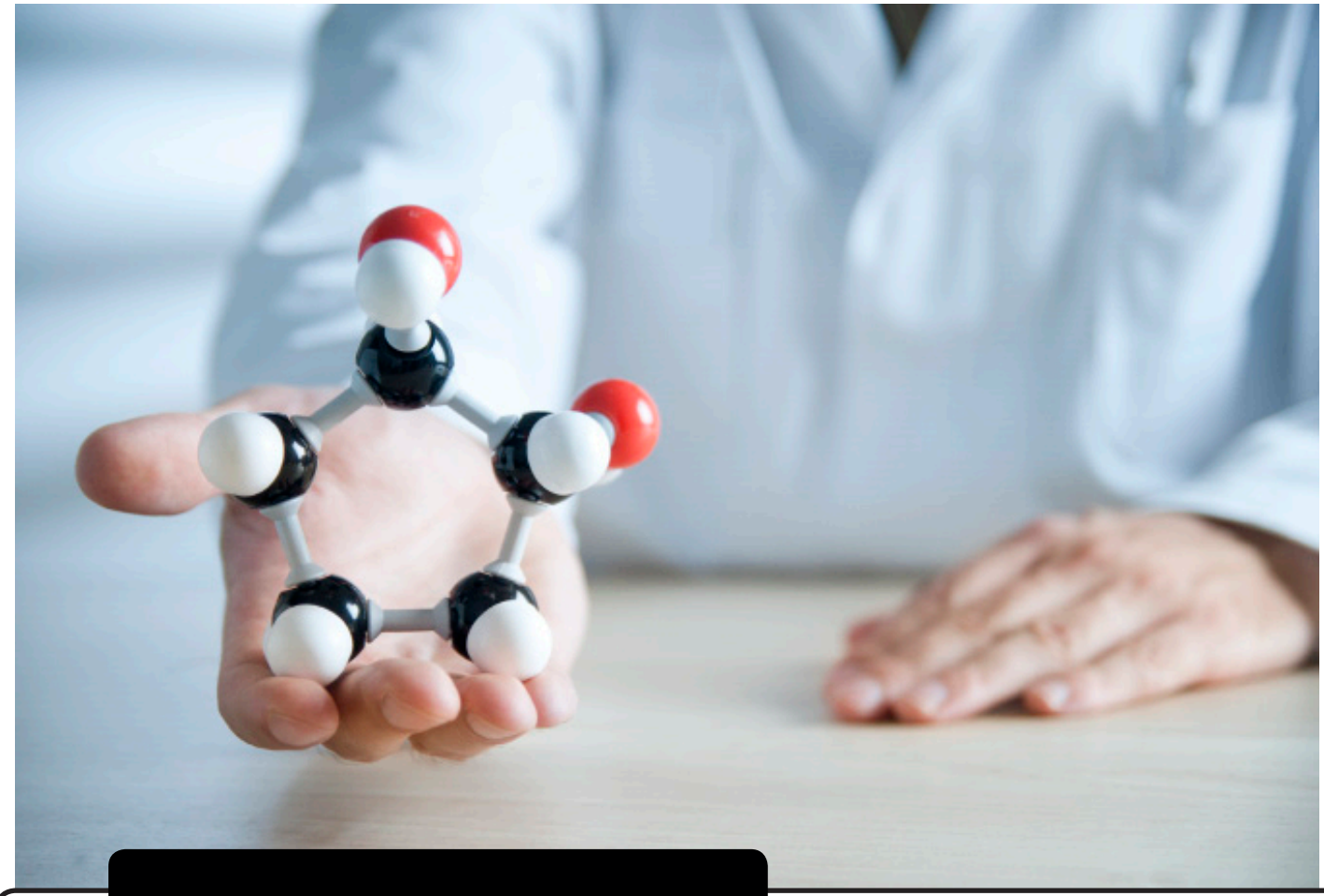
Glass-lining is controlled visually and by using Quick Glass Test, which works with the principle of measuring a leak rate of current that depends of the size of the glass failure. Test results and observations are compiled in a formal inspection report issued by Thurne Teknik.

COURSE FOR USERS OF GLASS-LINED EQUIPMENT

The target group for the course consists of users of glass-lined equipment, i.e. process operators, process engineers and maintenance staff and the program takes half a day to cover. This is done by explaining what enamel is, how glass-lined equipment is manufactured and practical advice by using examples from reality.

FILTER SCHOOL

It is one thing to understand a filter itself as a product, and it is another thing to understand how it works when fulfilling a filtration task. Therefore, Thurne Teknik offers a basic filtration course to explain the theoretical background of separation by filtration. The theory is varied with practical examples. Duration of the course is half a day.



SUPPLIERS
Fine Chemical

THURNE TEKNIK

Some equipment may not be available from Thurne Teknik in certain geographical areas.

A network for life.

Since the start of the company we have been focusing on API (Active Pharmaceutical Ingredience) & Fine Chemical Applications with reactors being the heart of the product line.

As the environments often are corrosive, our range of material is one of the most complete you can find: 316L, Tantalum, Glass lining, Borosilicate Glass, Nickel Alloys, Graphite, PTFE, other metal alloys and plastics.

In the last years there has been a strong focus on containment issues for handling of hazardous powders. Therefore we have built up a complete program for all material handling in toxic environments.

Vers. 1506

De Dietrich PROCESS SYSTEMS · MERSEN · fluitec mixing + reaction solutions · LAUDA · ANDRITZ Separation

Dec Group · italvacuum · Parker domnick hunter · QUADRO Leading Process Equipment Innovation · SWECO · TEKEMAS

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