


**PHARMACEUTICAL**



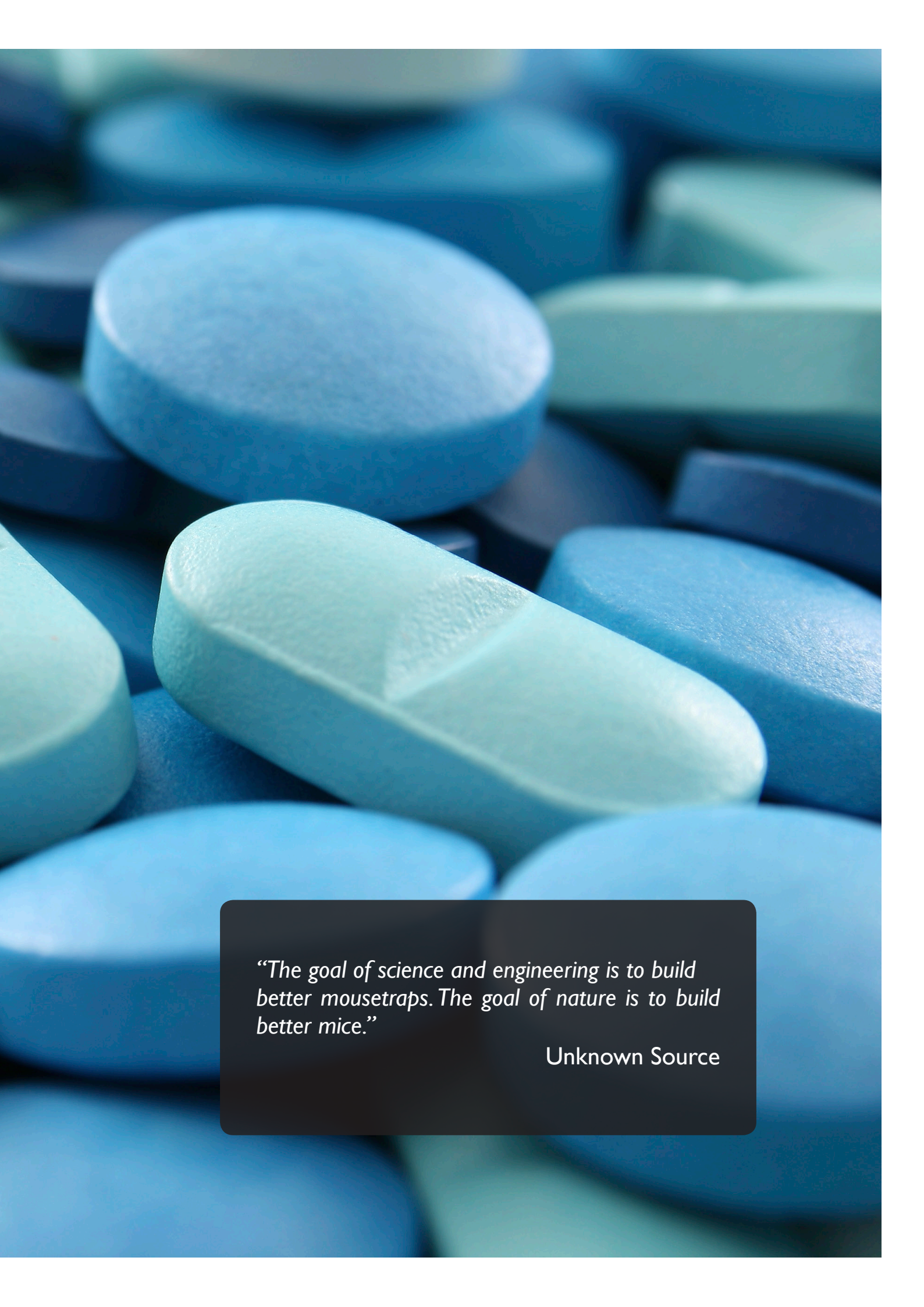




Our delivery program is covering most of the critical steps within the field of Formulation.

From small scale to industrial production we could be your partner for building up your complete process.





*“The goal of science and engineering is to build better mousetraps. The goal of nature is to build better mice.”*

Unknown Source

# Powder Processing



## ROLLER COMPACTORS

Roll compaction equipment increases powder densities and produces free-flowing granules for high speed tableting and encapsulation. They are mainly used both for primary and secondary processing and improve dispersion and solution times in both intermediate and final products.

### Technical details:

Capacities from 50 g/h up to 5 t/h. Product containment and Inert Atmosphere System for toxic and hazardous products (ATEX), cGMP and WIP designs. Available even compliant to GAMP 5.0 and 21 CFR part 11.



## JETMILLS

The powder is fed into a milling chamber through a venture system and accelerates in a spiral movement. The micronizing effect takes place by the collision between the slower incoming particles and those which are already accelerated.

### Technical details:

Particle sizes down to less than 1 micron with a capacity from 0,3 g to 3000 kg in batch sizes are possible.



## HAMMER MILLS

Typical applications are: coarse grinding and chopping of dry material, de-lumping of agglomerated wet or dry material, pulverizing, solid blending, granulating compacted materials. Size reduction for median PSD range 50 -150 microns.

### Technical details:

Capacities from 50 g to 100 t/h. A wide range of blades and screens is available. cGMP, CIP/WIP, ATEX and product containment system design available.



## FINE GRIND MILL

Developed to grind powders within 5 to 150 micron range. Through centrifugal acceleration the product is directed to the screen ensuring optimal delivery into the action zone in the secondary milling chamber. Finished product is discharged into the collecting system or other process steps.

**Technical details:** Capacities from 50 g to approx. 200 kg/h. Complete, stand-alone, compact milling platform, ATEX rated, inert milling and in line milling design. Quick disassembly, WIP, low noise and power consumption. PAT ready.



## IN-LINE MILLING AND SIEVING

Milling 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 1kg/h to 100 t/h.



# Powder Processing



## SIEVES AND CLASSIFIERS

There are occasions where you need to make sure that there are no impurities in your material and other occasion where you need to classify your product in different fractions. We have a full range from Vibrating Energy Separators to rotating inline security screeners.

### Technical details:

Capacities from 1 kg/h to 50 tons/h.



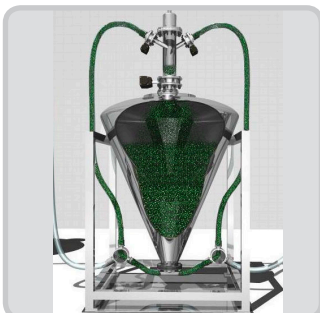
## VOLUMETRIC & GRAVIMETRIC FEEDERS

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 m<sup>3</sup> (volumetric), Feed rates from 0,2 dm<sup>3</sup> (gravimetric).

Robust, easy cleaning, high feed accuracy and low maintenance costs are some advantages.



## IN LINE MIXERS & BLENDERS

The Batchmixer provides the ultimate in speed and flexibility, reducing overall process time compared to traditional systems, enabling the operator to mix powders with different characteristics in a contained environment.

### Technical details:

With applications from 2 l to 5000 l, the system also allows the operator to vary product volumes from 10-100%.



## POST HOIST BLENDER AND IBC SYSTEMS

The Process might require many different steps where you need to consider different IBC's, drums and bins for dispensing, mixing, filling, emptying, intermediate transport and storage.

### Technical details:

Lifting load from 200 kg to 2000 kg. Volumes 5l to 2000 l, GMP-regulated design, ATEX execution, IQ/OQ, integrated control systems as well stand-alone control systems.



## ROTATING VACUUM MIXER / DRYER

The design of the 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.

# Containment



## ISOLATORS

Process integrated containment technology provides solutions for both potent and aseptic compounds, from simple glove bags and flexible isolators through to extremely complex fully integrated process isolators.

### Technical details:

Gravimetric or volumetric input, integrated CIP and SIP, Top and bottom discharge configurations.



## SPLIT VALVES & ROTARY 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  $<10\mu\text{g}/\text{m}^3$  to  $<1\mu\text{g}/\text{m}^3$  and in materials from Stainless Steel to Ni-Alloys.



## POWDER TRANSFER EQUIPMENT

The PTS system are using both vacuum and pressure to ensure safe and total contained powder transfer for wet and dry powder to any process vessel even under inert pressure.

### Technical details:

Capacities from less than 1 kg up to 9 t/h. 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.



## 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  $<1\mu\text{g}/\text{m}^3$  and  $<10\mu\text{g}/\text{m}^3$ , 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.



## GAS AND VENT FILTERS

Gas and vent filters are used to protect the workers for exposure of potent material as well as protection the product from contamination and to keep process environment sterile.

### 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.

# Service & Support



## **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.



## **MILLING AND SIEVING SCHOOL/TRAINING ON SITE**

It's not only important that you make right choice of equipment for your process. It is also important that you make sure how to run and how make new settings on equipment in order to maximize the yields and results when your process might require. Thurne Teknik offers training at site as well in house training.



## **TEST UNITS**

When making decision on what powder processing equipment to use is always our recommendation to perform tests to evaluate the technology as well as find out capacities and need for conceptual changes in the system. Therefore we have at Thurne Teknik several machines for rental for making trails on your site. Contact our office's for more information about rental proposals and schedules.



## **CUSTOMIZED SOLUTIONS POWDER HANDLING SYSTEM**

Our product portfolio is built up in such ways that we can supply complete close powder handling system by connecting the individual equipment's for application where there is a need for high containment process system.





# SUPPLIERS

## Pharmaceutical



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

## A network for life.

Today we can offer all major equipment including the tablet presses, starting with all material handling equipment and process equipment for dispensing. We can also offer complete process lines with mixing, milling/classifying, drying, granulation and coating.

All equipment is designed for high containment applications and all our partners within this field are dedicated to applications with high demands on quality following cGMP standards.

We are proud to present our partners below:



Vers. 1807

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