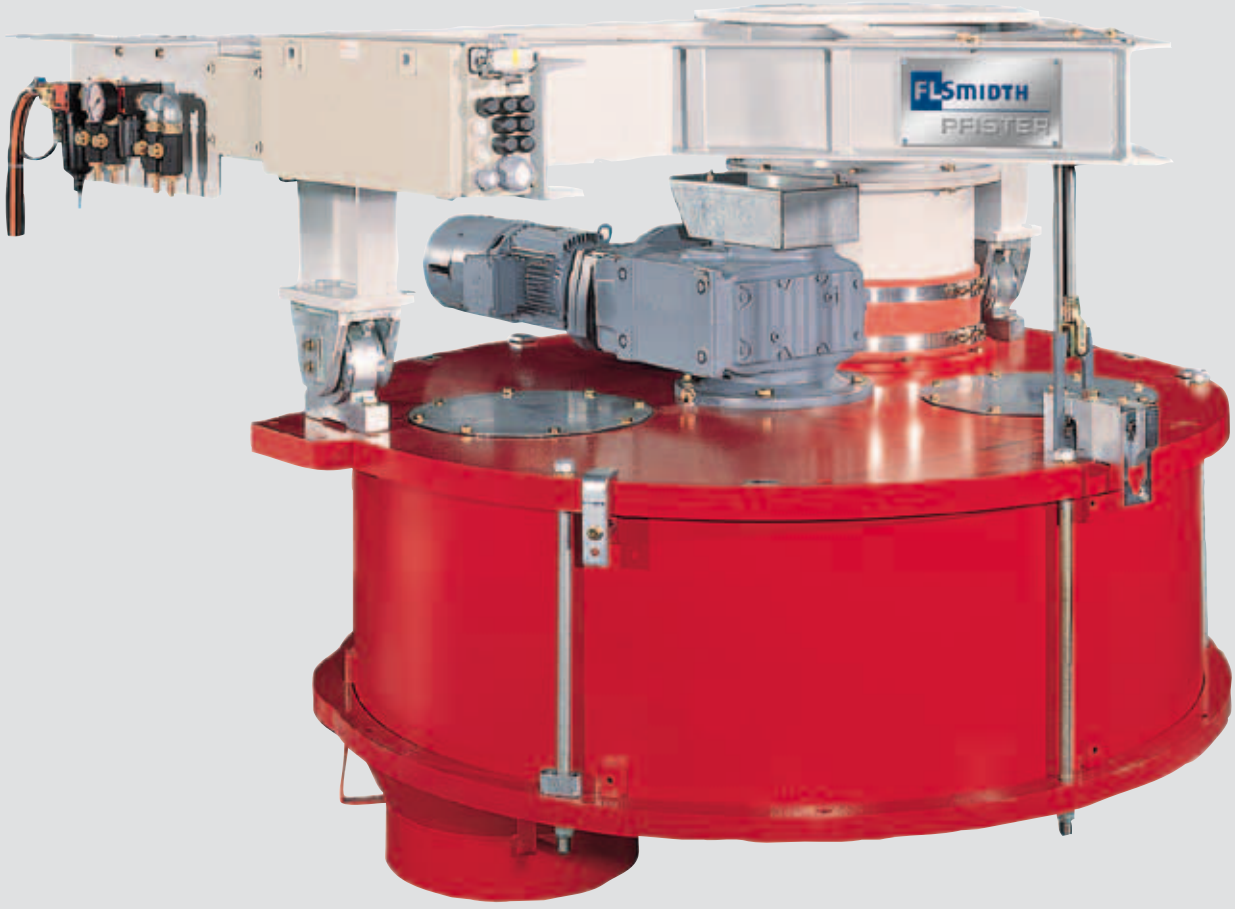
One Source

Product Brochure Pfister® FRW/SRW



Highly accurate and reliable gravimetric feeding of fine grained materials

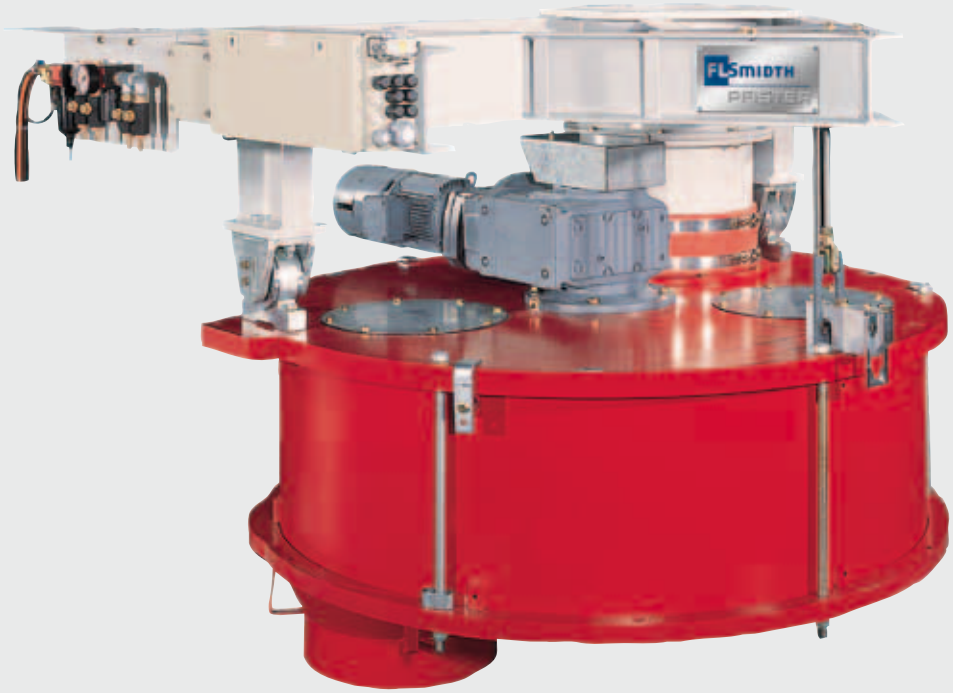
FLSmidth PFISTER

Rotor Weighfeeder Pfister® FRW

Highly accurate and reliable gravimetric feeding of pulverised limestone

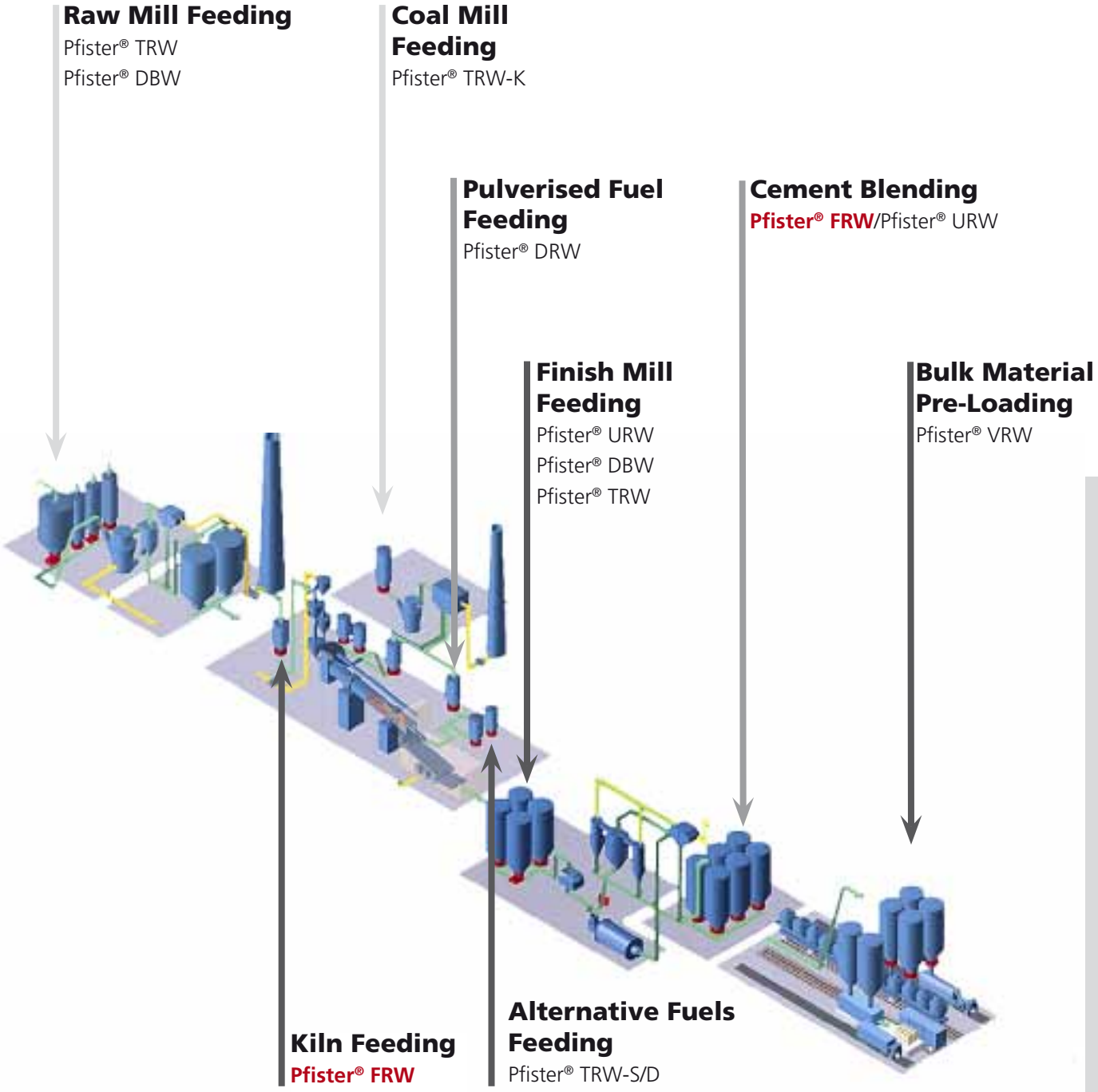
The special design of rotor weigh-feeder Pfister® FRW is ideal for dosing powdered bulk materials such as raw meal, limestone, hydrated lime, fly ash or bypass dust with high dosing constancy and precision. Due to the integration of weighing and dosing the system is easy to operate and thus extremely reliable.

In combination with a feed bin the system can be calibrated online to ensure reproducible output data. With rotor weighfeeder Pfister® FRW it is possible to dose up to 800 t/h with only one system. Rotor weigh-feeder Pfister® FRW has proved highest short- and longterm accuracy as well as outstanding reliability in hundreds of installations. Wear-resistant materials guarantee smooth operation and long life time and thus easy maintenance.



Dosing and Feeding for Industrial Production

FLSmidth® Pfister® feeding and dosing devices exemplary in the cement production process:



Tradition & Progress

FLSmidth Pfister has more than 110 years of experience in manufacturing of industrial weighing equipment. It has been member stock quoted FLSmidth Group/Denmark since 1998.

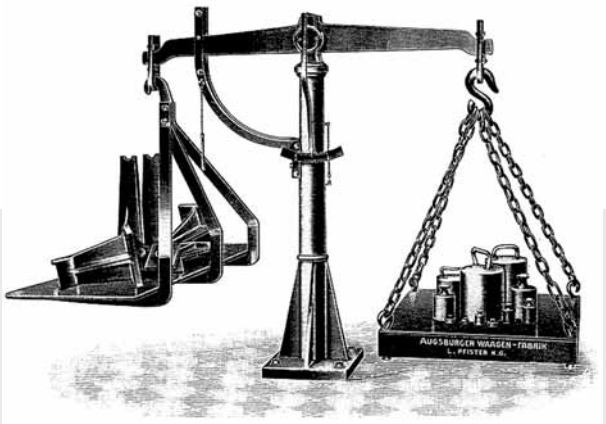
The patented rotor weighfeeder was invented by Pfister in 1984 to feed pulverised fuels for the cement burning process. This state-of-the-art dosing device has proved its properties in more than 2,000 installations worldwide.

FLSmidth Pfister additionally supplies know-how for equipment, related to the coal feeding process in order to ensure problem-free material handling and optimal pneumatic transport of the coal.

Fuels have a wide variety of material characteristics. Thus, FLSmidth Pfister helps to design individual installation solutions.

FLSmidth® Pfister® weighfeeders are

- engineered
- designed
- assembled
- tested
in Augsburg/Germany

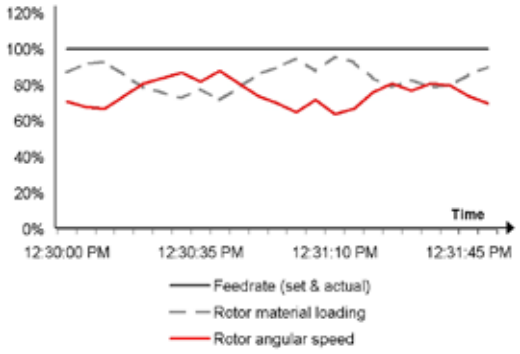


German Ludwig Pfister founded the company in 1894
Above: Historic scale

Functioning Principle of Pfister® Rotor Weighfeeders

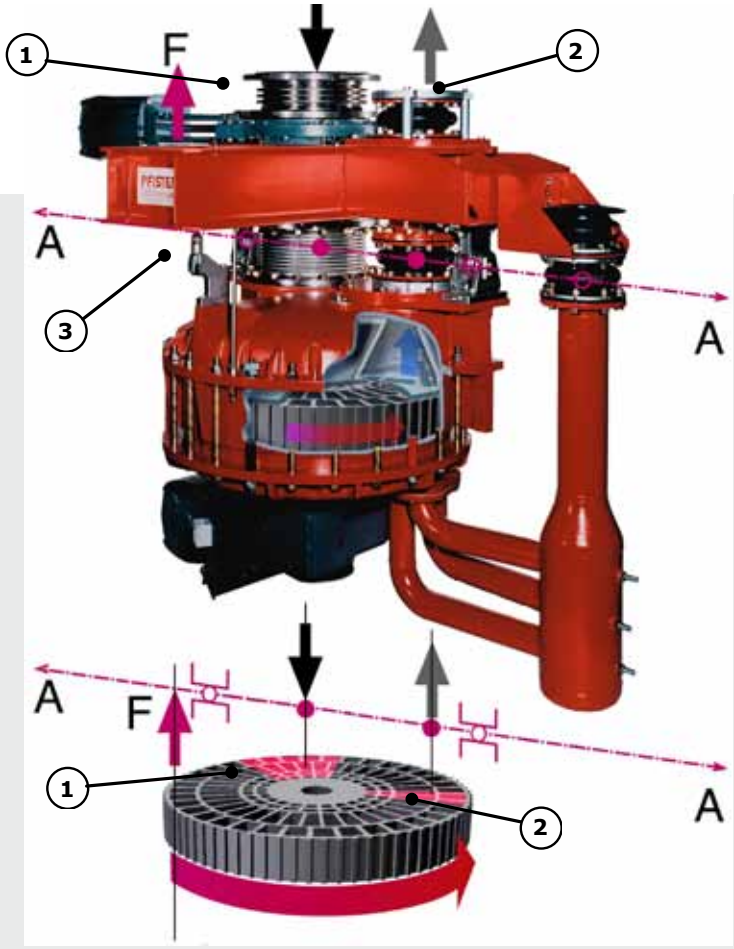
The picture below exemplary displays a rotor weighfeeder for dosing pulverised fuel. However, the weighing and dosing principle of all Pfister® rotor weighfeeders is identical: Material is extracted out of the material silo and is transported in the rotor chambers from the inlet (1) to the outlet (2). The rotor is mounted on bearings which form a weighing axis (A-A). This axis (A-A) is eccentric to the rotor shaft, and through the middle of inlet (1) and outlet (2). The third point is suspended at a load cell (3) which weighs the content in the rotor wheel gravimetically (F). This means the rotor weighfeeder measures actual kilograms and is therefore a real scale. The measured gravimetric force (F) provides information on the bulk material mass in the rotor weighfeeder before material discharge. The load of the rotor and the related rotor wheel position, is stored by the weighing electronics. The rotor wheel speed is controlled invers to the measured force (F). The feeder discharges the material at the outlet (2) with a highly accurate mass stream.

To achieve high accurate feeding, the angular speed of rotor is controlled invers to its loading.



Prospective Control ProsCon®:
Advanced Weighing Electronics

The electronic controller calculates the required speed of the motor for the time of the discharge. It uses the set feed rate and the measured bulk material mass to calculate the angular speed of the rotor (see chart). Less material in the rotor results in a higher angular speed, more material in a lower speed. With this pro-active principle, the so-called prospective control ProsCon®, Pfister® rotor weighfeeders achieve highly accurate compensation of variations in rotor loading and material density. This results in an extremely accurate short- and longterm feed rate.



1: inlet
2: outlet
3: load cell,
A-A: eccentric weighing axis
F: material measuring force

Customer Benefits
of FLSmidth® Pfister® Rotor Weighfeeders

Outstanding reliability & long service life
- Simple design with minimal number of functional parts
- Slowly moving rotor (4-8 rpm)
- Steel only in contact with material

High short- and long-term accuracy
- Prospective control ProsCon® (see below)
- Online calibration during operation if pre-bin is equipped with load cells
- Insensitive to pressure fluctuations in the process

Intuitive operator interface
- The rotor weighfeeder is an advanced mechatronic system
- However, it is easy to operate
- Flexible, reliable communication to the local plant control system

Reactive Control Compared to Proactive Control Strategy

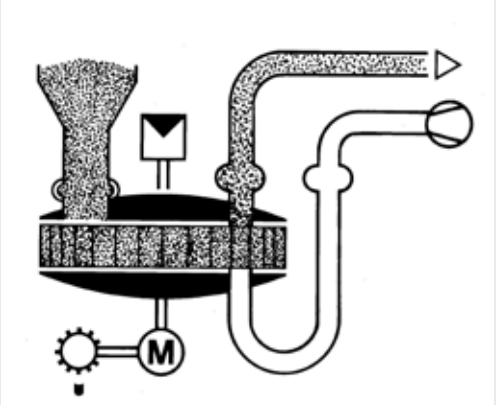
Other feeders are based on a reactive control (follow-up) rather then a pro-active control. Deviations in feed rate is measured and thus pre-feeding is adjusted. The measured deviation is already sent to the process. This also requires a sensitive pre-feeding device.

With the pro-active rotor weighfeeder, the material mass is measured before it leaves the rotor weighfeeder. That means that the speed of the rotor is adjusted before the material gets discharged into the system. The result is an extremely high accuracy.

Easy maintenance
- All measuring parts and drives are accessible from the outside
- No cleaning necessary since no spillage possible
- Integration of material extraction, weighing, feeding and dosing in one system

Instantaneously adjustable feed rate
- High accuracy in a range from 10% - 100% of max. feed rate
- Feed rate can be adjusted promptly without loss in accuracy
- Prospective control ProsCon® ensures virtually no reaction time in changes of the feed rate

Prospective control ProsCon®, pro-active control strategy

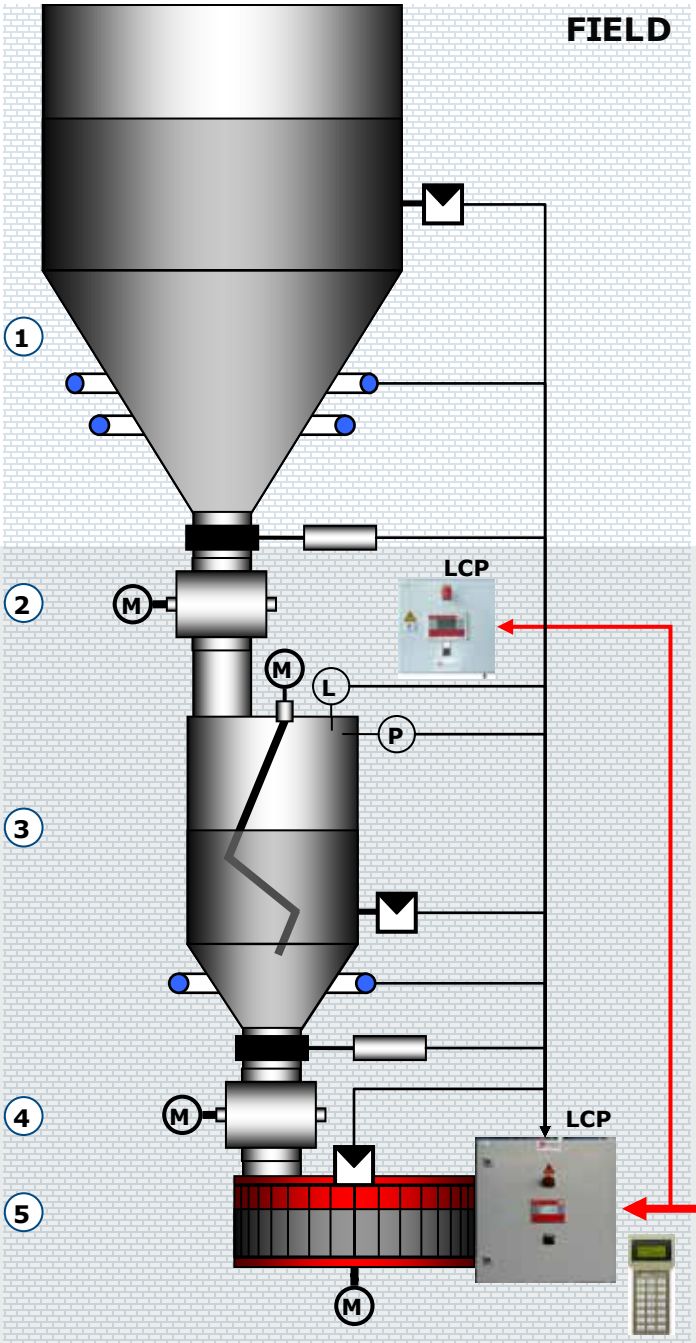


Structure of the dosing system:

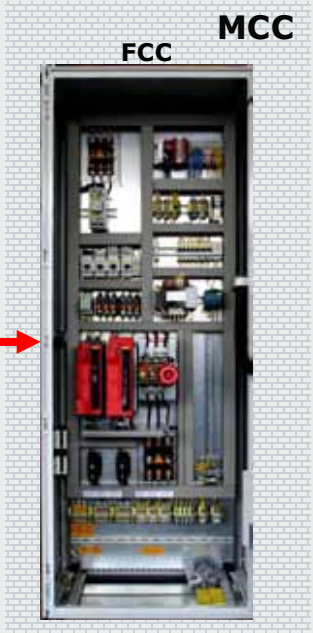
F-Control™ + dosing machine

F-Control™ dosing control system is used for continuously operating gravimetric feeders like rotor weighfeeders, belt weighfeeders, etc.

The main structural elements are a control cabinet FCC located in the plants motor control center (MCC) and local control panels (LCP) specifically designed for the environment surrounding the feeder (FIELD).
The control cabinet FCC contains all controllers for dosing and speed. This also includes the monitoring of these functions.
The local control panel(s) LCP consist of all necessary equipment to link the F-Control™ dosing control to the process and all devices to provide local access for maintenance and service operation.



System design: 1: material silo, 2: level feeder to bin, 3: calibration bin, 4: pre-feeder to feeder, 5: feeder
FCC: feeder control cabinet, LCP:local control panel(s)



Technical Facts
of Rotor Weighfeeder Pfister® FRW

Application fields: Kiln and grinding process

Materials: Fine grained materials such as raw meal, fly ash, bypass dust, kiln dust, cement, ground slag, fluorspar, perlite etc.

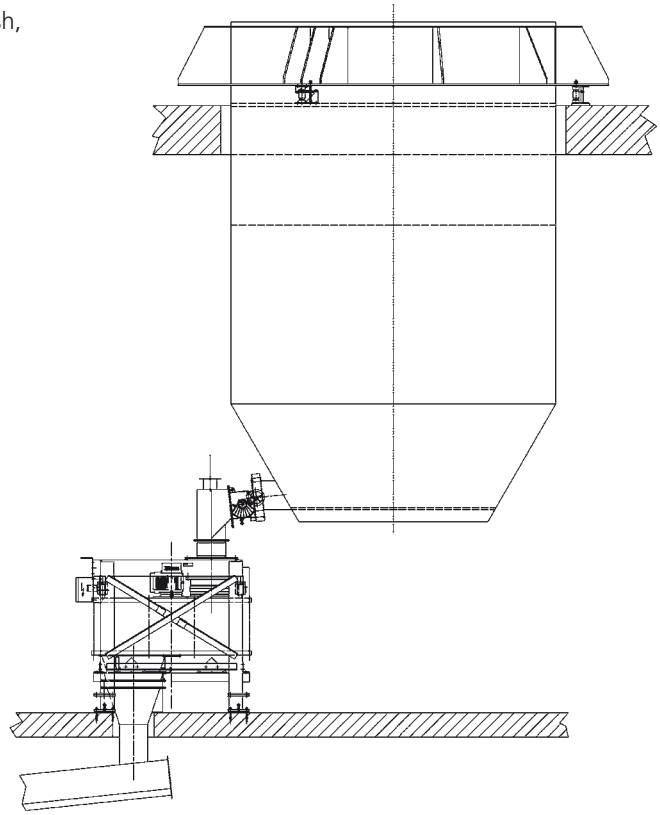
Dosing capacity: From a few 100 kg/h up to 800 t/h

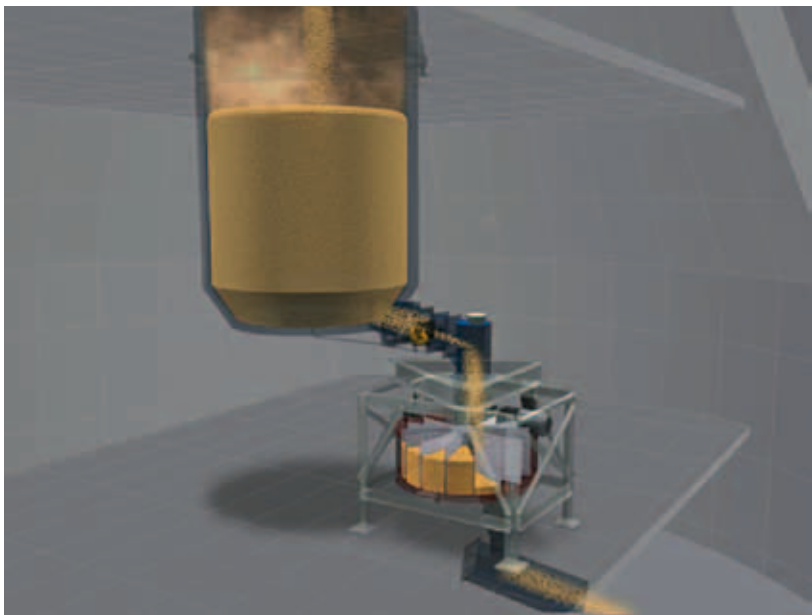
Design example:
- Calibration bin
- Bin load cells
- Shut-off gate
- Flow control gate
- Rotor weighfeeder Pfister® FRW

Features:
- Stable material dosing
- Outstanding reliability
- High short- and longterm accuracy
- Compact, robust and closed design
- High measuring loads
- Large feeding range
- Online calibration during operation
- Simple and modular design
- Slowly moving rotor, therefore less wear
- Easy to maintain

Dosing control:
- Feeding Dosing Controller
- Prospective control ProsCon®
- FlowBalance™ control
- User oriented interfaces
- Remote service access available

Certificates: ISO 9001:2008

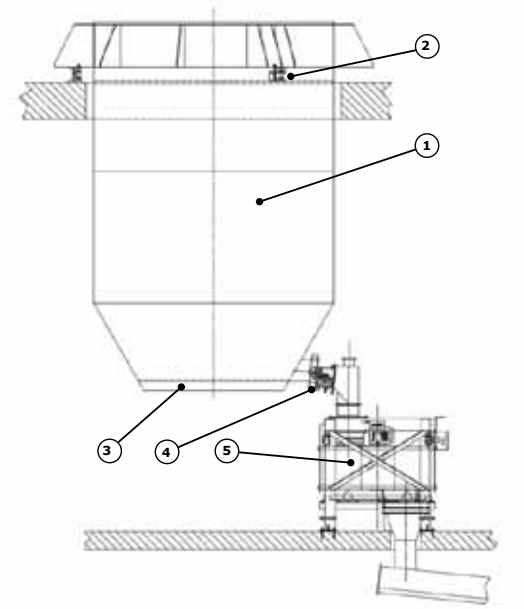




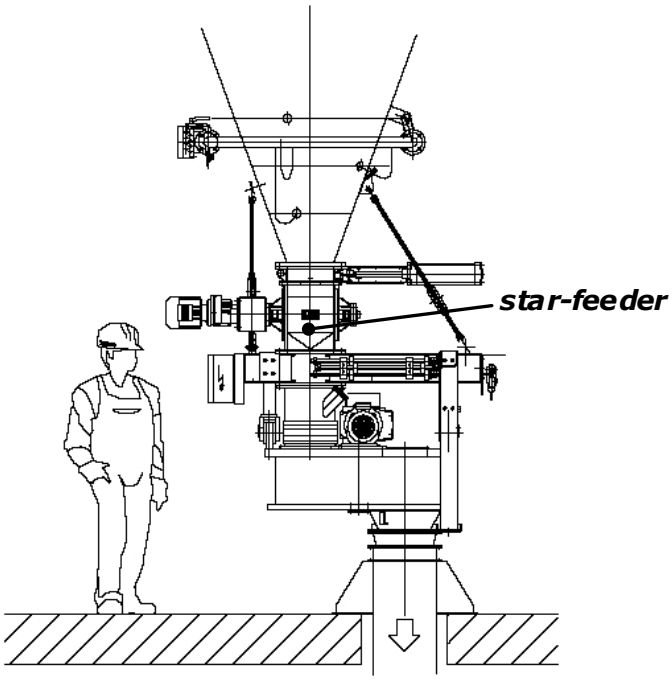
Solutions
with Rotor Weighfeeder Pfister® FRW/SRW

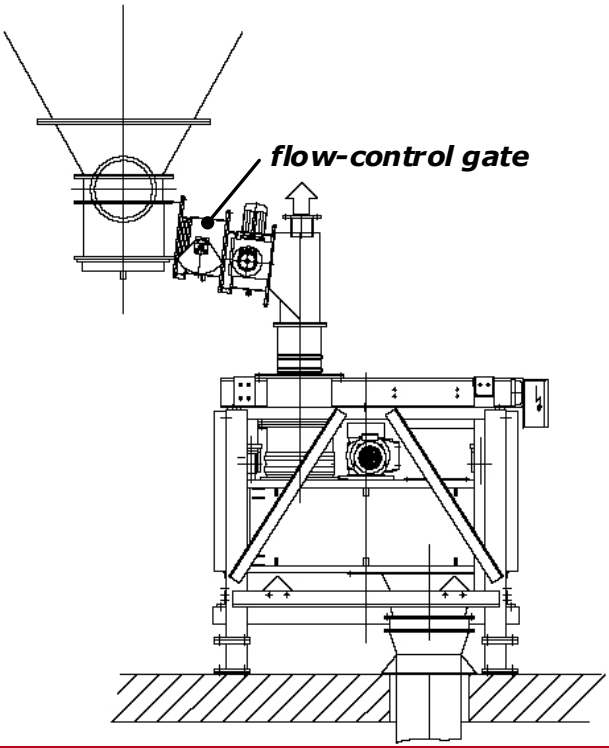
Dosing solutions with rotor weighfeeder Pfister® FRW/SRW can be designed for a large variety of applications. Based on the pre-conditions and requirmeents on-site, FLSmidth® Pfister® engineers help to determine the optimal installation.

A typical installation of rotor weighfeeder Pfister® FRW/SRW can be seen on the right:
Pfister® supplies: 1: pre-bin engineering, 2: pre-bin content measurement units, 3: pre-bin bottom aeration, 4: pre-bin bulk material extraction devices, 5: bulk material dosing with rotor weighfeeder Pfister® FRW.



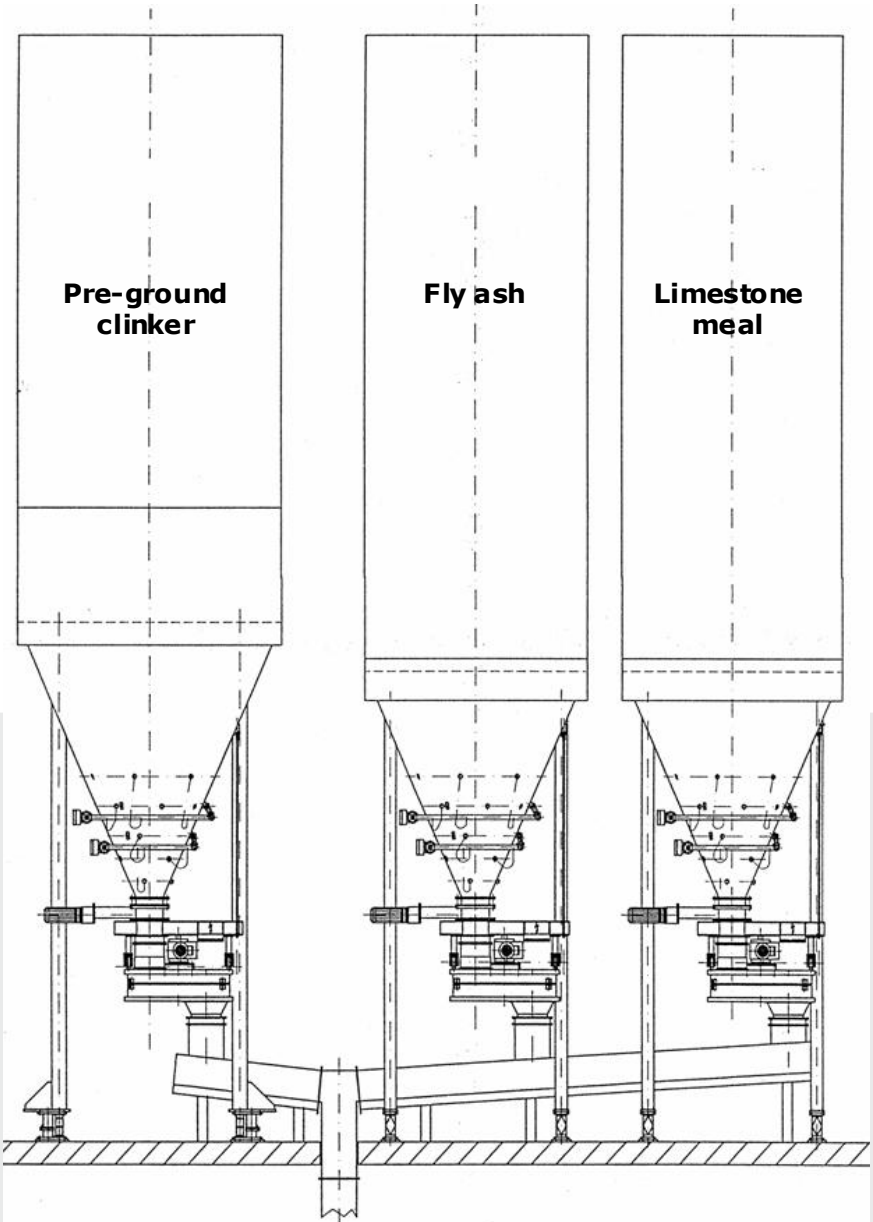
Below right: Installation of rotor weighfeeder Pfister® FRW with material extraction devices star-feeder or flow-control gate:
- Star feeders for feed rates between 0 - 35 t/h
- Flow control gates starting from feed rates of 3 t/h





Cement blending (graphics below and right)
Installation of three rotor weighfeeders Pfister® SRW for online cement blending. In the installation shown it is not necessary to use a pre-feeding device because of small feedrates.

The installation picture displays a rotor weighfeeder Pfister® SRW in cement blending. There is no pre-feeding device, the feeder is directly extracting out of the bulk material silo.



Applications with Pfister® FRW:
Kiln feeding at a cement plant

This rotor weighfeeder Pfister® FRW is installed for kiln feeding in a cement plant with feed rates of 250 t/h.

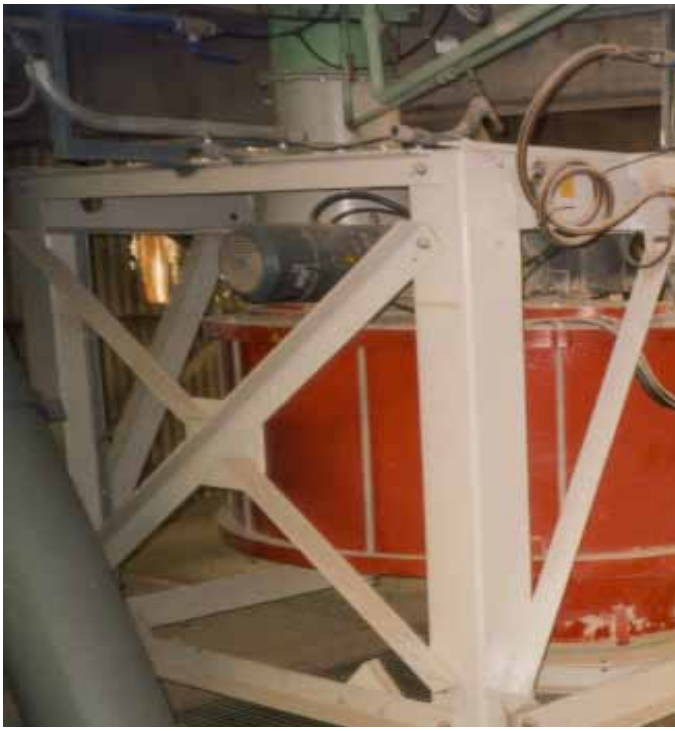
Picture: Rotor weighfeeder Pfister® FRW with pre-feeding devices.
1: Feeding bin, 2: shut-off gate, 3: flow-control gate, 4: discharge spout, 5: rotor weighfeeder, 6: aeration pipes

Mill residues feeding at cement mill

This rotor weighfeeder Pfister® FRW is utilized in an installation for feeding spec-off cement back into the finish mill with a feedrate of 180 t/h.

Kiln feeding at a cement plant in Spain

Right:
Replacement of an old feeding system with rotor weighfeeder Pfister® FRW 4.18, feed rate 250 t/h.



Feeding at a cement mill in Austria

Below: Application for feeding mill residues back into the cement mill.

Kiln Feeding at a Cement Plant in Lybia

Replacement of a 25 years old FLSmidth® Pfister® belt weighfeeder for kiln feeding with rotor weighfeeder Pfister® FRW.

Picture below left:
Previous belt weighfeeder installation

Picture below right:
Rotor weighfeeder Pfister FRW® handling 120 t/h

Kiln Feeding at a Cement Plant in Germany

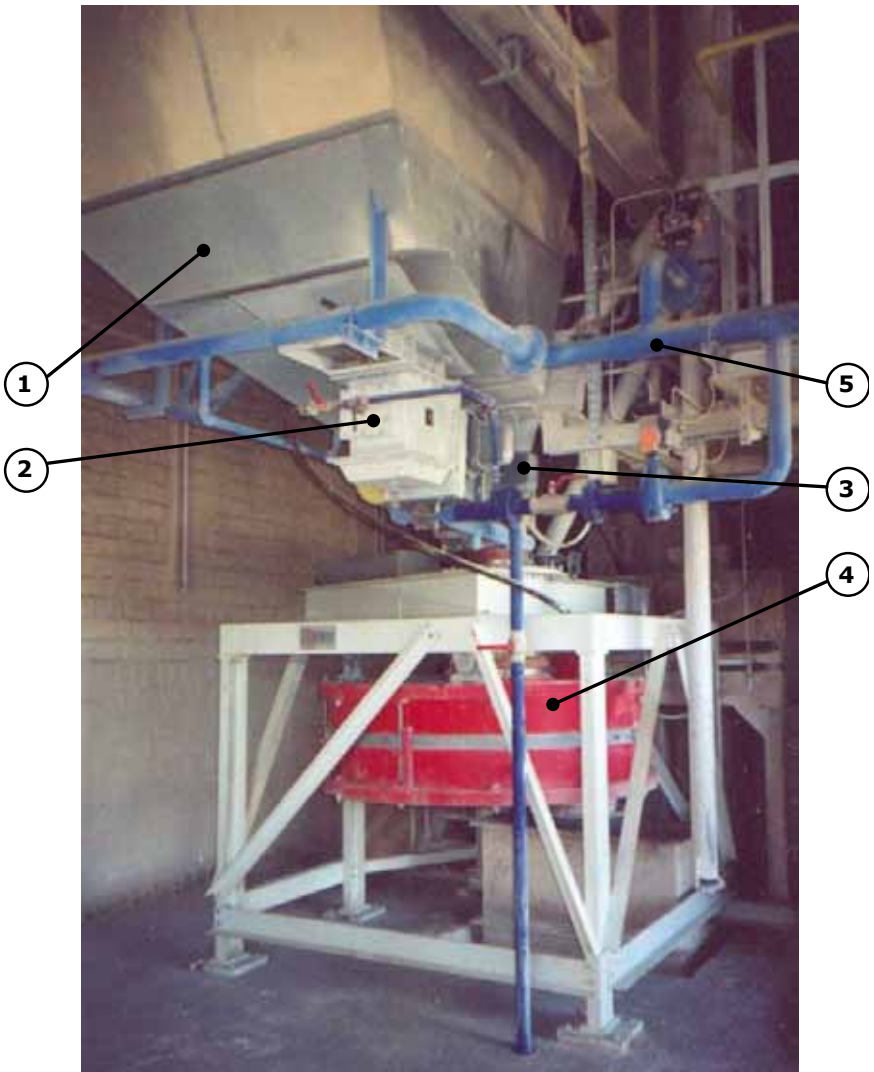
Application for cement blending

Cement plant, Romania

Rotor weighfeeder Pfister® FRW with pre-feeding devices:
1: Pre-bin, 2: shut-off gate, 3: flow-control gate, 4: discharge spout, 5: rotor weighfeeder Pfister® FRW, 6: aeration pipes

Cement plant, Germany

The picture to the right displays an installation for kiln feeding at a cement plant in Germany. Former belt weighfeeder were replaced by rotor weigh-feeders Pfister® FRW.



German Design & Assembly of FLSmidth® Pfister® Weighfeeders

All FLSmidth® Pfister® weighfeeders are engineered, designed and assembled at FLSmidth Pfister's headquarters in Ausgburg/Germany.

An experienced team of engineers and technicians tests all equipment at their own test fields.

In addition, Pfister® spares and parts are kept in stock for immediate disposal.

FLSmidth® Pfister® assembles all weighfeeders in Augsburg/Germany

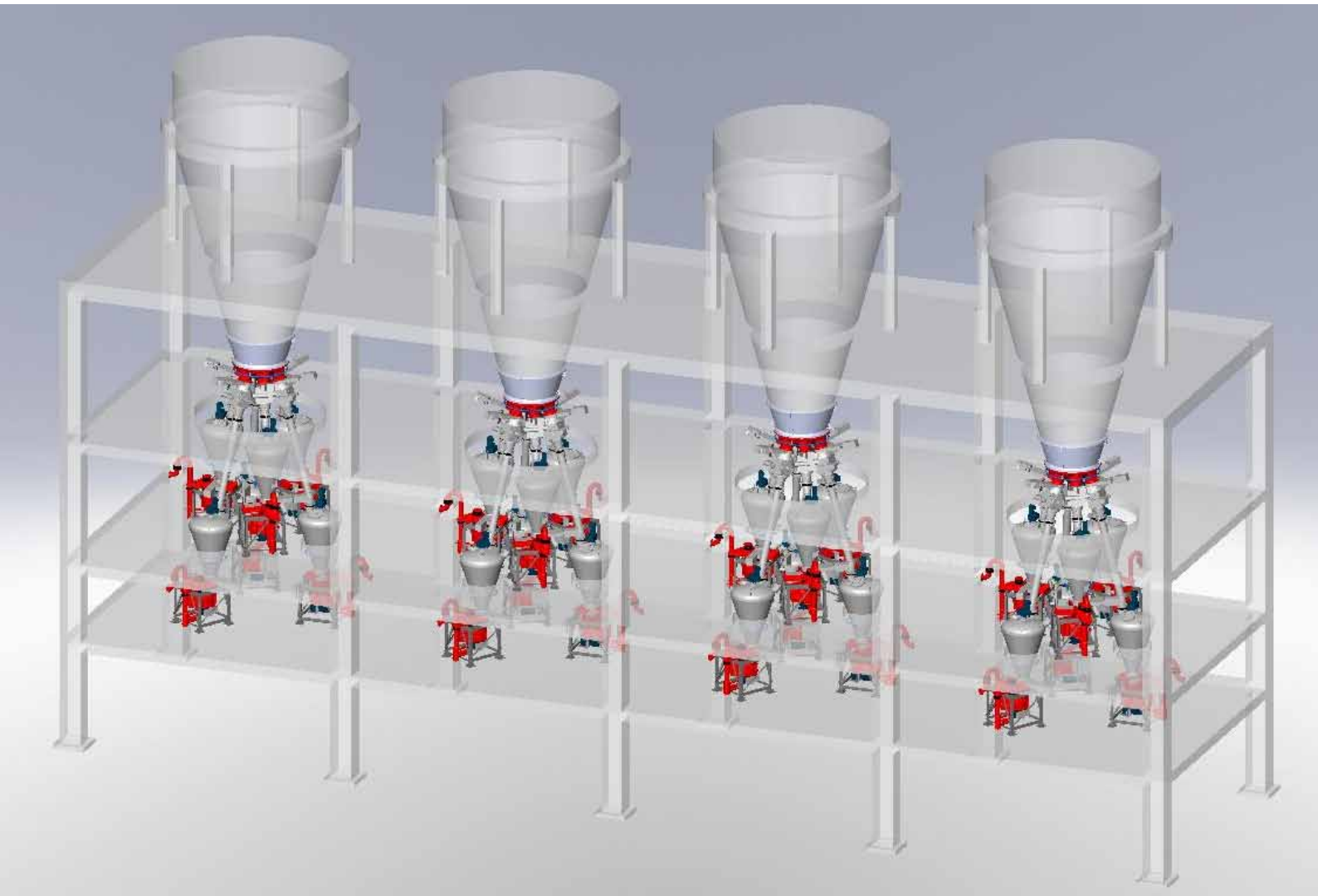
Engineering & Design

FLSmidth® Pfister® Engineering Services comprise:

- **Silo design**
- **Installation of equipment**
- **Calculation of pneumatic transport**

FLSmidth® Pfister® does not only supply the single dosing machines. FLSmidth Pfister's know-how includes the complete setup and surrounding of the installation like silo engineering, intermediate material transport and safety equipment.

That ensures that customers get all engineering from one experienced partner and one single source.



Pfister® Customer Service & After Sales Support

Thousands of FLSmidth® Pfister® systems are currently in operation worldwide and require global presence. Therefore FLSmidth Pfister operates sales and service offices in eight countries on four different continents.

Experienced service technicians stand by your side and provide first-class service. A 24-hour hotline and online trouble-shooting provide worldwide support. Also available are telesupport packages.

FLSmidth Pfister not only keeps a large number of spare parts in stock. Skilled spares specialists are looking forward to assist you in optimizing your own spare parts management.

FLSmidth Pfister´s services are rounded up by service contracts, which can be adapted individually to the customer´s needs.

Customer training on-site or at FLSmidth Pfister's training center ensures the best possible knowledge transfer.

Pfister® After Sales Support:

- **24-hour Hotline**
- **Telesupport**
- **Modern Maintenance Management**
- **Trainings and Seminars**
- **Service Contracts**

Augsburg - Germany

Headquarters:

FLSmidth Pfister GmbH
Staetzlinger Str. 70
86165 Augsburg, Germany
T. +49 821 7949 0 I F. +49 821 7949 524

Sales Department: sales@flsmidthpfister.com
Technology Department: engineering@flsmidthpfister.com
Service Department: service@flsmidthpfister.com

Branch offices & joint ventures:

FLSmidth Pfister Inc.
2158 Avenue C, Suite 201
Bethlehem, PA 18017-2148, U.S.A.
p. +1 610 2645110 I f. +1 610 2645537
pfister.usa@flsmidthpfister.com

FLSmidth Pfister Ltda.
Rua Vigario J.J. Rodrigues, 905 - cj. 51
13.201 - 490 Jundiai, S.P. Brazil
p. +55 11 45266744 I f. +55 11 45875711
pfister@pfister-la.com.br

FLSmidth Pfister GmbH Malaysian Branch
C-3A15, Centre Wing, Metropolitan Office Suite
Metropolitan Square, Jalan PJU 8/1
Damansara Perdana, 47820 Petaling Jaya
Selangor, Malaysia
p. +60 3 7728 2039 I f. +60 3 7727 2039
pfismal@streamyx.com

FLSmidth Pfister GmbH
6, Rue de Bretagne
38070 St. Quentin Fallavier, France
p. +33 474 955544 I f. +33 474 945075
pnl@flsmidthpfister.com

Transweigh India Ltd.
124, ABCD, Govt. Industrial Estate, Kandivli (W)
Mumbai - 400 067, India
p. +91 22 6772 6000 I f. + 91 22 6772 6100
sales@transweigh-india.com

FLSmidth Pfister China
Western Part of Songshan Road
Qingdao Airport Industrial Zone , Chenyang District
266109 Qingdao, P.R. China
p. +86 532 8776 03 80 I f. +86 532 8775 68 52
pfister-china@pfister.de

IB.040.00-e-GB FLS-No. CM 02-12-700-021 ENG

www.flsmidthpfister.com

FLSmidth PFISTER