

**FULLER®**

# **PFISTER® DRW ROTOR WEIGHFEEDER UPGRADES & SERVICES**



# HIGHLY ACCURATE FUEL DOSING FOR YOUR PULVERIZED FUELS

Accurate fuel dosing can be the difference between your process burning too fast and just right. Between fuel economy and high fuel costs. Between optimum production levels and failing to meet your targets. The PFISTER® DRW rotor weighfeeder is designed for the utmost accuracy.

When it comes to performance, consistent and reliable dosing is crucial. But it's not the only factor affecting your process – inefficiencies have a big part to play. That's why we continue to work on upgrades to our DRW Rotor Weighfeeder, which is now available with a series of optional enhancements to optimise performance. New developments offer the potential to increase the performance and reliability of your dosing equipment.

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# PFISTER® SMART AERATION

for DRW rotor weighfeeders

Fixed aeration intervals don't account for the changing flow behavior seen in the prehopper and silo bottom. You can end up using too much air and wasting money – or not enough, and losing productivity.

Smart Aeration is an intelligent solution that adapts to changing flow requirements, reactively increasing or decreasing the pause duration in the cycle to provide optimum aeration and minimal costs.

## KEY BENEFITS

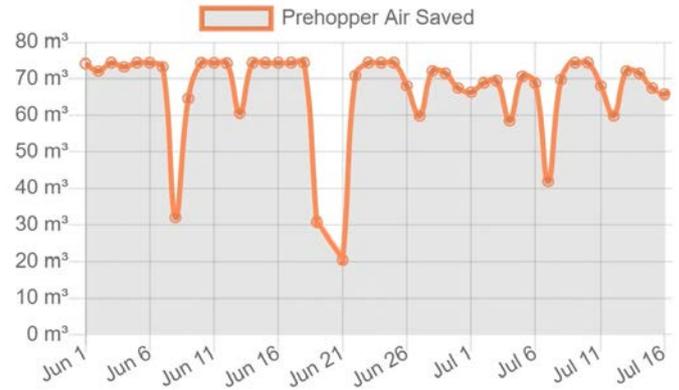
- Smoother, more reliable material flow
- Lower maintenance and operational costs
- Reduced risk of spontaneous combustion of materials
- Up to 90% less air consumption and related cost benefits
- Increased lifetime of sinter plates at the prehopper and silo

# SAVE UP TO 90% AERATION AIR

A fixed interval aeration system typically consists of a 3-second pulse followed by a pause of 9 seconds for prehoppers or 12 seconds for silos. This doesn't enable the air input to adjust in response to actual flow conditions.

The Smart Aeration system is different. It monitors the flow rate and reacts to it, adjusting the duration of the pause by +/- 10 seconds to optimise aeration and reduce costs. When the highest level of aeration is required, the series will be a 4-second pulse followed by a 10-second pause. The lowest level of aeration will be a 3-second pulse followed by a 120-second pause. Whatever the required aeration level, the input of air will never be higher than with the old system of fixed intervals.

This reduction in compressed air usage can save you significant sums. So that you can see just how much money you're saving, information about air usage is captured and displayed in a graph.



Summarized air volume can be seen in the web browser overview (m³ per day)

## FREE 3-MONTH TRIAL OF SMART AERATION

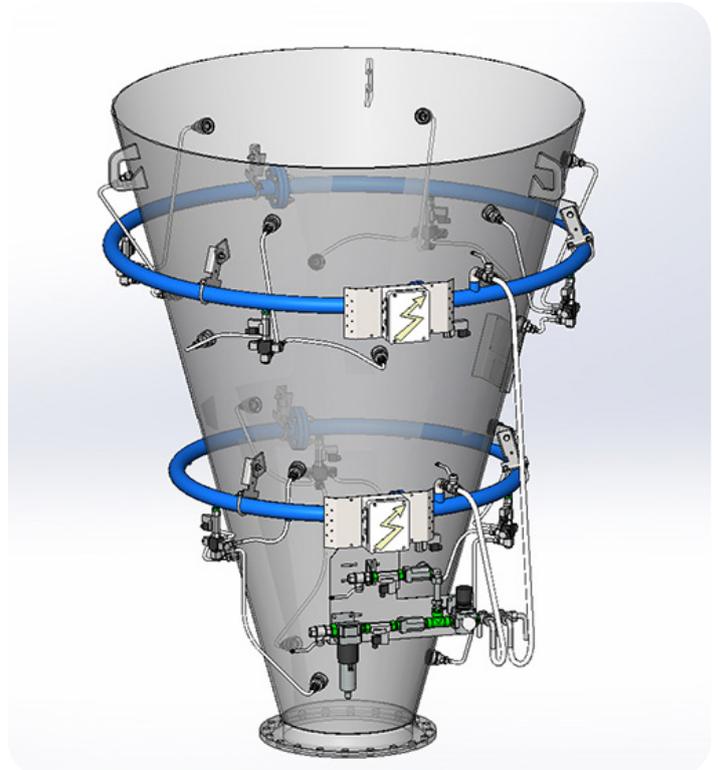
### TWO WAYS TO GET STARTED

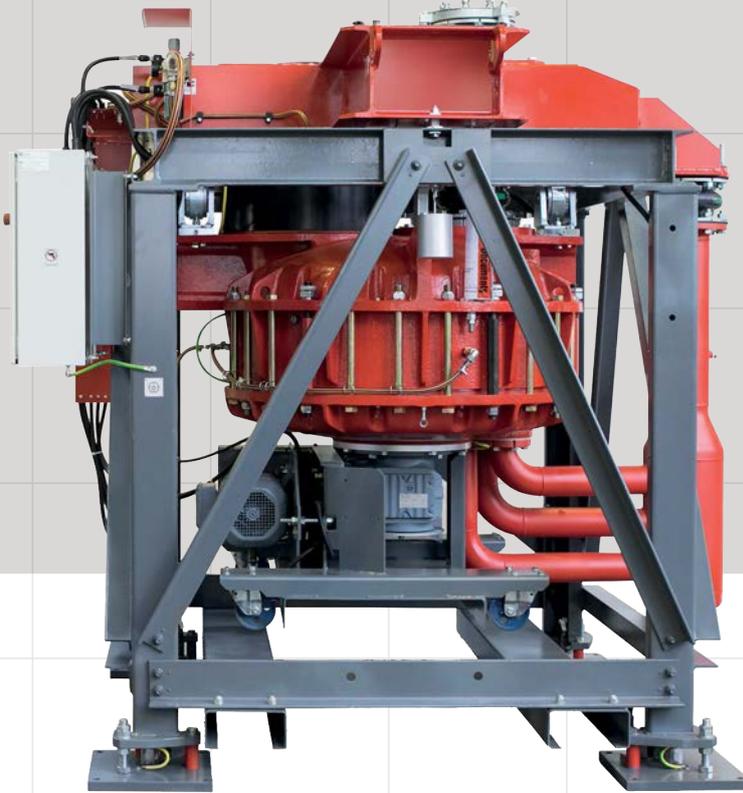
#### 01

Contact us for your free trial PIN, then enter trial PIN yourself in the parameter setting.

#### 02

Or during a scheduled maintenance visit our technician will implement the free trial.





# PFISTER® FEEDFLEX™

How your dosing solution can help you on your way to Net Zero

The road to Net Zero is long, but the cement industry is already making headway.

Fuel switching and energy-saving measures have enabled cement plants to bring down carbon emissions. And though it is tempting to think that the biggest changes are brought about in the largest equipment, the smaller machinery also has a part to play.

## KEY BENEFITS

- Reduce solid fossil fuel consumption
- Increase alternative fuels utilization
- Reduce your CO2 footprint
- Maintain maximum feeding capacity at kiln start-up process
- Retrofit at existing feeders will help to cut fuel cost with quick ROI

NOW ALSO AVAILABLE FOR DRW 4.14/3.14

# PFISTER® FEEDFLEX™ IS OUR CONTRIBUTION TO A MORE SUSTAINABLE FUTURE

Take, for example, the PFISTER DRW Rotor Weighfeeder. This robust feeder has been serving the cement industry for decades, providing efficient, reliable, and precise dosing of pulverised fuels such as hard-coal, lignite, or petcoke.

As the use of alternative fuels (AF) increases, fuel feeding systems that offer more highly variable feed rates are needed. But as AF use increases, there is a need for ever smaller feed rates in primary fuel feeders, which has been an obstacle for cement producers trying to maximise fuel substitution.

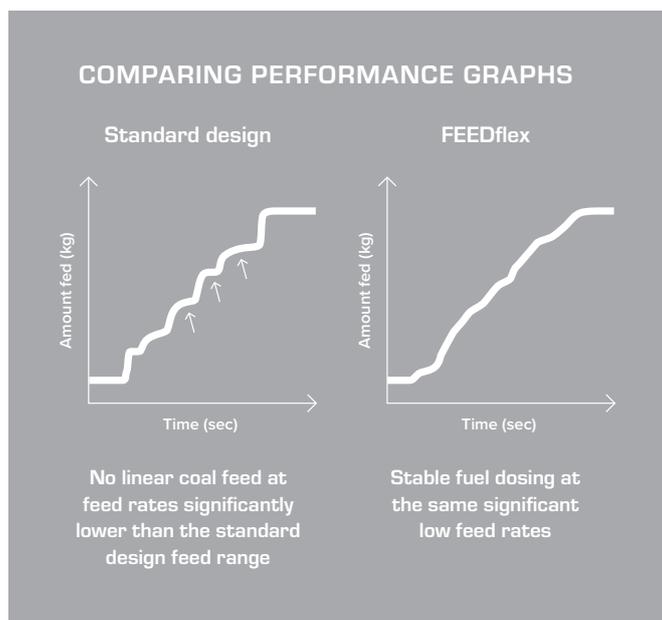
Our feeding experts have developed a solution to this problem, by significantly reducing the feed rates of the PFISTER DRW Rotor Weighfeeder without limiting the maximum possible feedrate.

## Minimising coal consumption

The patented PFISTER FEEDflex technology is an upgrade to the DRW Rotor Weighfeeder that enables you to dose very small quantities of pulverized fuel, pulsation free – down to as little as 60 kg per hour, dependent on the DRW Rotor Weighfeeder type. In addition, a new DRW can be optionally equipped with FEEDflex.

The maximum feed rate is unaffected, so when you need to increase coal consumption – at kiln start-up, for example, or if AF supplies are low – you can do so.

FEEDflex gives you the flexibility to operate with very low coal feed rates in the max. feed range of 1:100 pulsation free dosing and the scope to increase the use of low-cost, environmentally friendly alternative fuels.



Countries	Feeder Type	Min. Feedrate t/h original design	Min. Feedrate t/h with FEEDflex	Possible coal savings t/h
Germany	DRW 4.12	1.30	0.30	1.00
Polska	DRW 1.2	1.20	0.06	1.14
Romania	DRW 4.12	1.20	0.25	0.95
Germany	DRW 1.2	0.65	0.14	0.51
Germany	DRW 3.10	0.60	0.14	0.46
Turkey	DRW 3.10	0.92	0.14	0.78
Germany	DRW 1.2	1.20	0.20	1.00
Thailand	DRW 4.14	3.50	0.40 <sup>1</sup>	3.10

\*Customer experience see here: Schwenk Zement KG achieves flexible solid fuel dosing with FEEDflex

<sup>1</sup> We guarantee 0,4 t/h min. for the 4.14, but customer was able to achieve 0,35 t/h w/o pulsations

	DRW 4.10/1,25	DRW 4.10/1,6	DRW 4.12/2	DRW 4.14/3	DRW 3.10/1,25	DRW 3.10/1,6	DRW 3.12/2	DRW 3.14/3	DRW 1.2/1,25	DRW 1.2/1,6
Option for new equipment	yes	yes	yes	yes	-	-	-	-	-	-
Retrofit	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Min. feed rates with FEEDflex	0,06 tph	0,14 tph	0,25 tph	0,40 tph	0,06 tph	0,14 tph	0,25 tph	0,40 tph	0,06 tph	0,14 tph

## Getting to zero

When it comes to achieving our ambitious Net Zero targets, every little helps. Solutions like the FEEDflex technology enable improvements in alternative fuel use and energy performance, helping cement plants cut their carbon footprint and reduce their environmental impact.

# FEEDFLEX™ REFERENCE LETTER



The Siam Cement (Kheng Khoi) Co., Ltd.  
31/4 MOO 3, Banpa, Khaeng Khoi District  
Saraburi 18110  
Thailand

Am Mittleren Moos 53  
Att. Management  
86167 Augsburg  
Germany

23.08.2024

## **Pfister FEEDflex™ for DRW Rotor Weighfeeders**

We have been asked by your sales representative to share our experience with the recently installed DRW 4.12 Rotor Weighfeeder including FEEDflex™ technology and related feed range 1:100.

In May 2024 one of our two new DRW 4.12 has been successfully commissioned by your service engineer who was very skilled and experienced. The feeder is designed with a max. feedrate of 25 t/h and min. 0,25 t/h hard coal dust. The intention to order the DRW with the optional FEEDflex™ technology was that we plan to increase our AF substitution rate to a very high extend of 50% over the next years.

As coal feeding is the limiting factor to increase the AF substitution rates, we have been looking for a coal dosing equipment where we can dose very low coal quantities during normal operation, but maximum possible when required during kiln start-up. Compared with the standard design dosing range 1:10 we only would be able to go down to 2,5 t/h. But with FEEDflex™ and the feed range 1:100 we achieve now stable 0,25 t/h without pulsations. This means we can save up to 2,25 t/h coal and use AF material instead. We tried to go down to 0,2 t/h just for curiosity and there we experienced no pulsations and a stable flame in the calciner. Our little concerns, that motor temperature will increase and make us trouble did not become true. The Pfister® feeder design has enough safety buffer that standard cooling of the motor is fully sufficient.

We are very happy that we took the right decision and choose the FEEDflex™ option as impact on saving fuel cost and reduction of CO2 emissions will help us achieving our goals on our path to a CO2 neutral cement production. The ROI is very short due to the huge saving of coal and lower cost of the AF material.

Best regards

Teerapong Nindupkaew  
Cement Plant Director , KK

เอกสารนี้จัดทำโดยโปรแกรม eSign โดย Narumon Kolasin, 26/08/2024 08:07:27



# PFISTER® AUTOGAP 2.1

Reduce maintenance and extend the lifetime of wear parts in your Pfister DRW rotor weighfeeder with automatic gap adjustment.

## KEY BENEFITS

- Increased equipment performance
- Protection against blockages
- WIFI-Dashboard optional available
- Reliable and accurate feeding
- Reduced maintenance costs
- Reduction of wear due to ideal GAP setting

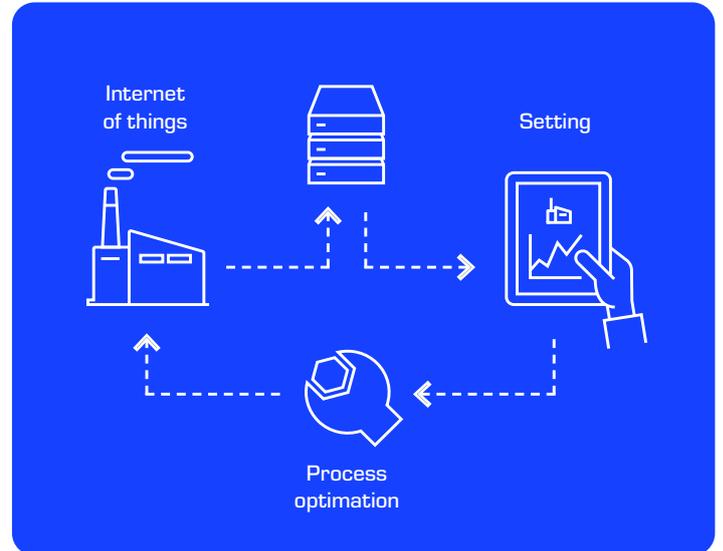
Now also available in CCCEX and HazLog execution

# MIND THE GAP

## Less wear. Low maintenance.

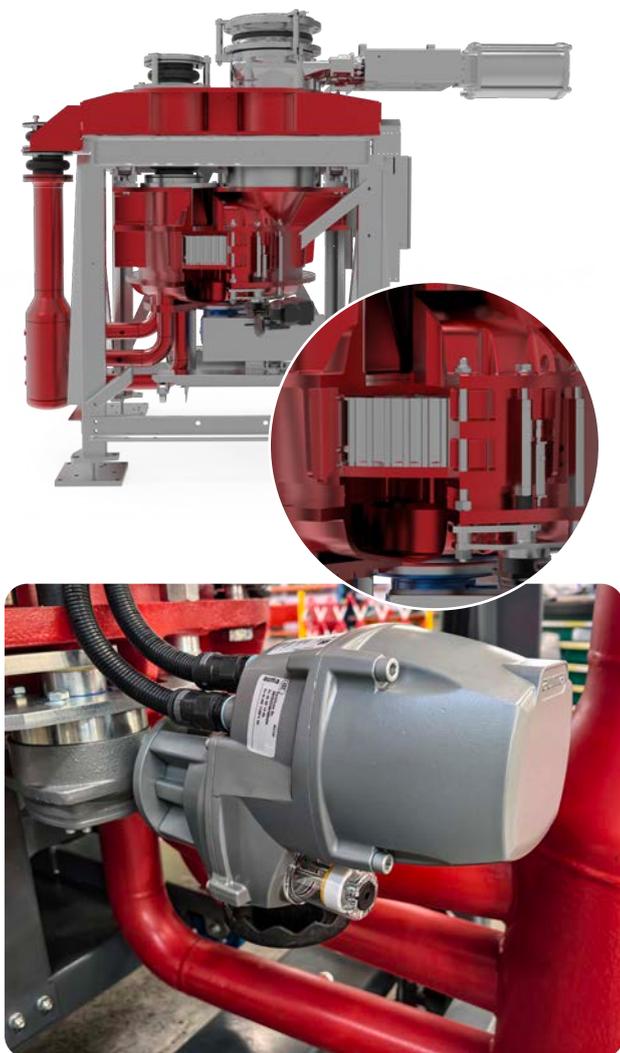
Getting the right gap width in your DRW rotor weighfeeder is crucial to smooth operation. If the gap is too large or too small, you risk blockages, reduced dosing accuracy and high levels of wear and tear. Manual adjustments are possible only when the machine is stopped – by which point it may be too late.

AutoGAP 2.1 automatically adjusts and controls the upper gap width, ensuring the best possible performance of your DRW rotor weighfeeder. Three distance sensors measure and adjust the gap between the upper and lower housing during feeder operation. The motor current is also monitored constantly to support the quick-open function.

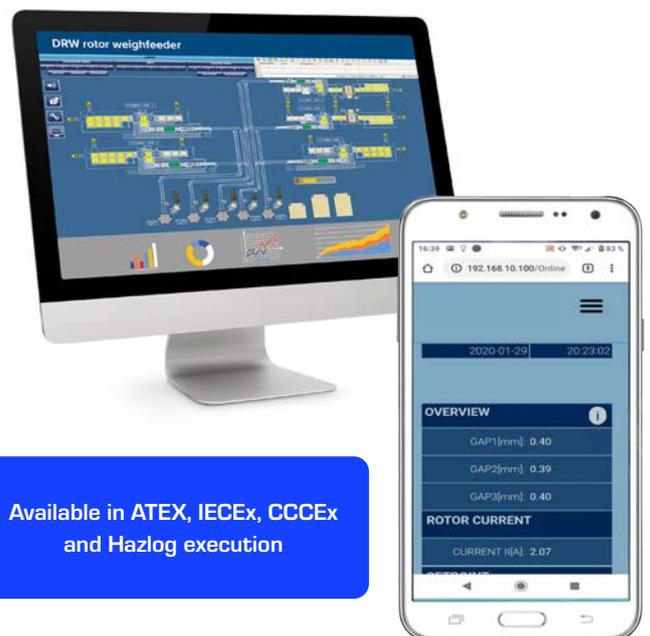


## Easy, predictive maintenance

With no more outages for gap adjustment, you can move from reactive to predictive maintenance. To help ensure the smooth running of your machine, AutoGAP 2.1 can be supplied with WiFi dashboard to monitor equipment performance, including motor current, speed, GAP position, and to set new parameters. Used in combination with Pfister® Wear Index you can process and analyse your data for more efficient, more effective maintenance planning.



Pfister® AutoGAP 2.1 actuator



Available in ATEX, IECEx, CCCEX and Hazlog execution

# AUTOGAP™ REFERENCE LETTER

**medcem**

Am Mittleren Moos 53  
Att. Management  
86167 Augsburg  
Germany

Silifke/ Mersin,  
13.08.2024

AutoGAP 2.0 – automatic gap adjustment for DRW Rotor Weighfeeders

In 2013 we purchased two DRW 4.14 and one DRW 4.10 rotor weighfeeders for coal dosing with FDC Control from your company. We operate the Pfister feeders to our satisfaction and take care for them with regular maintenance and original spare and wear parts.

During visits of your sales manager, he introduced new developments around the Pfister feeders, and we came to know about AutoGAP in the 2<sup>nd</sup> generation and the possibility to upgrade our more than 10 years old feeders. First, we thought the upgrade cost are too high for what we will get, but in times of reduced work forces new and automated technologies will help to keep equipment performance on a high level and with reduced wear. AutoGAP 2.0 includes three distance sensors which measure the gap continuously. If the amps will be too high because of foreign particles the upper gap will be opened with the quick-open function to avoid blockages and related feeder stoppage. After a few turns of the rotor, the gap will be closed to the original setting in the controller.

With the optional WIFI dashboard we see all relevant parameters, such as motor current, speed, or the gap positions. Also, the setting of the upper gap is very simple with this interface connected to the cell phone browser. Besides this, we still have the possibility to power off the AutoGAP and adjust the gap with the handwheel of the three actuators. We are very happy with the performance of our DRWs and AutoGAP 2.0 and can recommend this technology to all Pfister Users who want to increase the productivity of their coal feeders.

Best regards

**medcem**  
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# PFISTER® FEEDING & DOSING EQUIPMENT SERVICES

Increase performance through preventive maintenance

## Why wear matters

In harsh industrial environments, wear is inevitable. This is particularly true for the wear parts of your feeding and dosing system, such as the rotor wheels and sealing plates. But though wear is continuous, its impact can vary over time.

Checking the condition of your parts can help to prevent downtime and avoid the need for premature replacements. The right maintenance at the right time can save you valuable production time, money and peace of mind.

## Timing is everything

There are three phases of wear: the running-in phase, the stationary phase, and the critical phase. Once you reach the critical phase, system failure is imminent, and performance can decrease. With more than 140 years' experience producing and servicing our equipment, we have extensive expertise in the operation and maintenance of feeding and dosing products.

### Key benefits

- Maintained dosing accuracy
- Saved costs through pre-planned production outages
- Support for crucial spare-part management
- Increased machine life
- Lower operational costs

We use this experience to plan an inspection program tailored to your operation. Based on the insights gathered during the inspections, we can then advise what needs to be done and when, for optimum performance. The result? Increased machine life and reduced service and operation costs.

Our feeding and dosing equipment services include:

- Visual inspection of the equipment
- Software update
- Exchange of wear/spare parts
- Calibration of the system
- Spare part recommendation
- Software/data back up

Don't let wear affect your production goals. Achieve stable and accurate performance with an optimised feeding and dosing system.

**Remote Service** Pfister feeders can be connected to the internet, and the 24/7 hotline can connect and support remotely (remote hardware required).

**Remote Service Agreements** Remote troubleshooting, quarterly performance reports, yearly visits, customized to meet your needs with a focus on performance optimization and reducing downtime.

**Training** Onsite, Online or at production facility in Italy.



# PROFESSIONAL REWORK

of your PFISTER® feeder wear parts

In a rough environment like cement production, no one can prevent wear. This especially applies for the wear parts of your dosing systems like rotor wheels and sealing plates. In order to make sure your systems keep on working at high performance, rotors and sealing plates have to be reworked from time to time.

## OUR RECOMMENDATION

- Re-machining of all four sides which are in contact with material at the same time.
- Re-machining not after a fixed period of operating hours, but on the occurrence of significant wear.

# EXACT PRECISION

## Meeting Every Machining Tolerance

### KEY BENEFITS

- Guaranteed to keep even the closest tolerances
- Quick response: rework within 6 weeks
- Quality insurance: rework certificate including actual measuring values
- Certified workshop: Hologram identification tag
- Quality rework according to ISO 9001

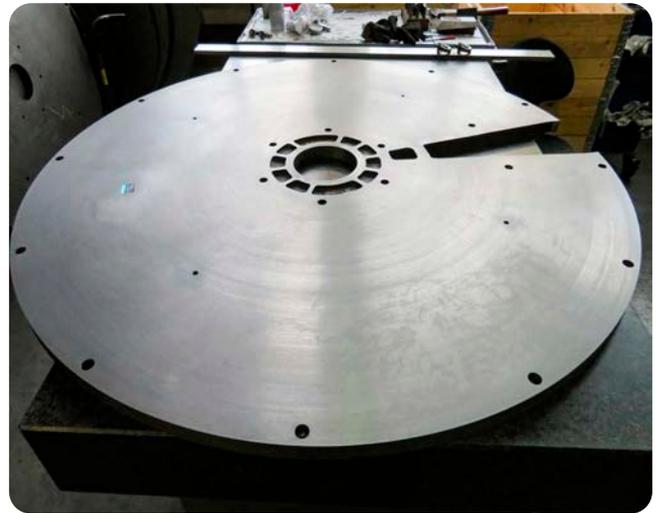
### Our special offer for all PFISTER DRW coal feeders includes:

- Parts: upper sealing plate, lower sealing plate, rotor wheel
- Discounts on rework of complete sets

Ask us for your individualised quotation!

### Focus on TCO

Keep your wear parts in operation up to 9 years with our professional rework. Rotor wheels and sealing plates have estimated operational periods of 2-3 years between rework and can be machined up to 3 times to restore tolerances and performance.



MACHINED SEALING PLATE AT QUALITY CONTROL STATION



BEFORE THE REPAIR SERVICE



AFTER THE REPAIR SERVICE



# PFISTER® WEAR INDEX

Know the wear status,  
decrease wear effects

Any mechanical system in a cement plant is subject to wear. With Pfister® control systems and an innovative predictive maintenance strategy you can plan your maintenance at the right time and avoid the fallout from damaging wear.

## KEY BENEFITS

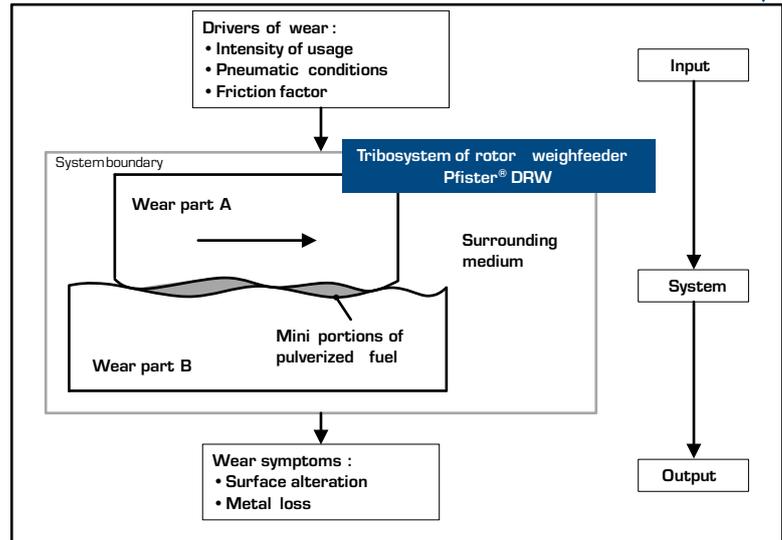
- Improve maintenance planning
- Reduce unplanned downtime
- Minimise the cost of maintenance



# WHAT CAUSES WEAR?

Rotor weighfeeder Pfister® DRW in a tribosystem perspective

Tiny grain size material and fuel residues caught in and on moving parts of your machine cause wear and abrasion of your weighfeeder, leading to two major wear symptoms: surface alteration and metal loss. Over time, these issues can cause serious problems for your operation and could ultimately cause a reduction in dosing accuracy and even equipment failure. Identifying these issues and predicting when they are likely to occur enables you to save time and money by planning your ideal service dates to avoid severe wear.



**You can't change your material's wear characteristics, but you can reduce their impact with Pfister® Wear Index**

## Your tool to determine your ideal maintenance dates

To detect your individual, ideal time for maintenance, Fuller dosing experts developed Pfister® Wear Index: Within the control system of your weighfeeder we implemented a model-based condition surveillance. Taking into account your individual field conditions we use a wear model to compare against actual operating data, identifying the performance gap that indicates both your risk of wear-triggered downtime and your ideal maintenance timeline – empowering you to take control of your maintenance budget and shutdown schedule.

# CASE STUDIES

1

## CASE STUDY

### Medcem upgrades DRW Rotor Weighfeeders with AutoGAP 2.0

In 2013, Medcem, a Turkish cement producer, purchased DRW rotor weighfeeders for coal dosing, equipped with FDC control. These feeders have been maintained with original parts, ensuring their longevity. After learning about AutoGAP 2.0 during a site visit from Fuller, Medcem decided to upgrade their 10+ year-old feeders. The new system optimises key parameters such as motor current and gap positions, preventing blockages and reducing wear. Since the upgrade, Medcem has seen improved performance in their feeders, increasing operational efficiency.

“

*We are very happy with the performance of our DRWs and AutoGAP 2.0 and can recommend this technology to all Pfister users who want to increase the productivity of their coal feeders”*

*says Aykut Aydin, Mechanical Maintenance Manager at Medcem.*

2

## CASE STUDY

### FEEDflex at Mannok Cement Plant

Mannok Cement in Ireland is advancing its Vision 2030 project to reduce its carbon footprint. A key part of this was the installation of the world's first FuelFlex Pyrolyzer, enabling up to 100% alternative fuel use in the calciner. However, the ability to reduce their coal use was limited by the minimum feed rate of their DRW rotor weighfeeder at 1 tph. To address this, they upgraded the DRW with the Pfister® FEEDflex, which reduces the minimum feed rate to just 60 kg/h without compromising maximum capacity.

FEEDflex has saved Mannok over 1 tph of coal, optimising SRF usage while ensuring flexibility when needed. This upgrade, combined with Fuller's ECS/ProcessExpert system, is helping Mannok work towards its goal of reducing carbon emissions by 33% by 2030.



3

## CASE STUDY

### Schwenk Zement KG enhances fuel flexibility with Pfister FEEDflex

Schwenk Zement's Mergelstetten plant faced challenges with fuel feed systems as alternative fuel usage increased. Initially using two feeders to enable varied feed rates, the plant discovered it could manage the variety through one feeder by adding the Pfister® FEEDflex to their DRW 3.12 weighfeeder. This allowed them to handle feed rates as low as 60 kg/h and maintain the flexibility for higher feed rates when needed.

The upgrade resulted in stable dosing, reduced conveying air volume by 25%, and decreased energy consumption, all without increased wear. FEEDflex also enables further reductions in coal feed rates, offering a 1:100 range. This system has provided a fast ROI, enabling Schwenk Zement to reduce coal usage and enhance productivity.

**FULLER**<sup>®</sup>  
TECHNOLOGIES



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