

# we make processes work



## Schenck Process

### Flexibilní systémy dávkování alternativních paliv

Ing. Leoš Voleský | Vedoucí obchodního oddělení a technického centra pro alternativní paliva | Schenck Process s.r.o.

# SKUPINA SCHENCK PROCESS

## SCHENCK PROCESS (DARMSTADT, NĚMECKO).



Vážení, dávkování a řízení procesů



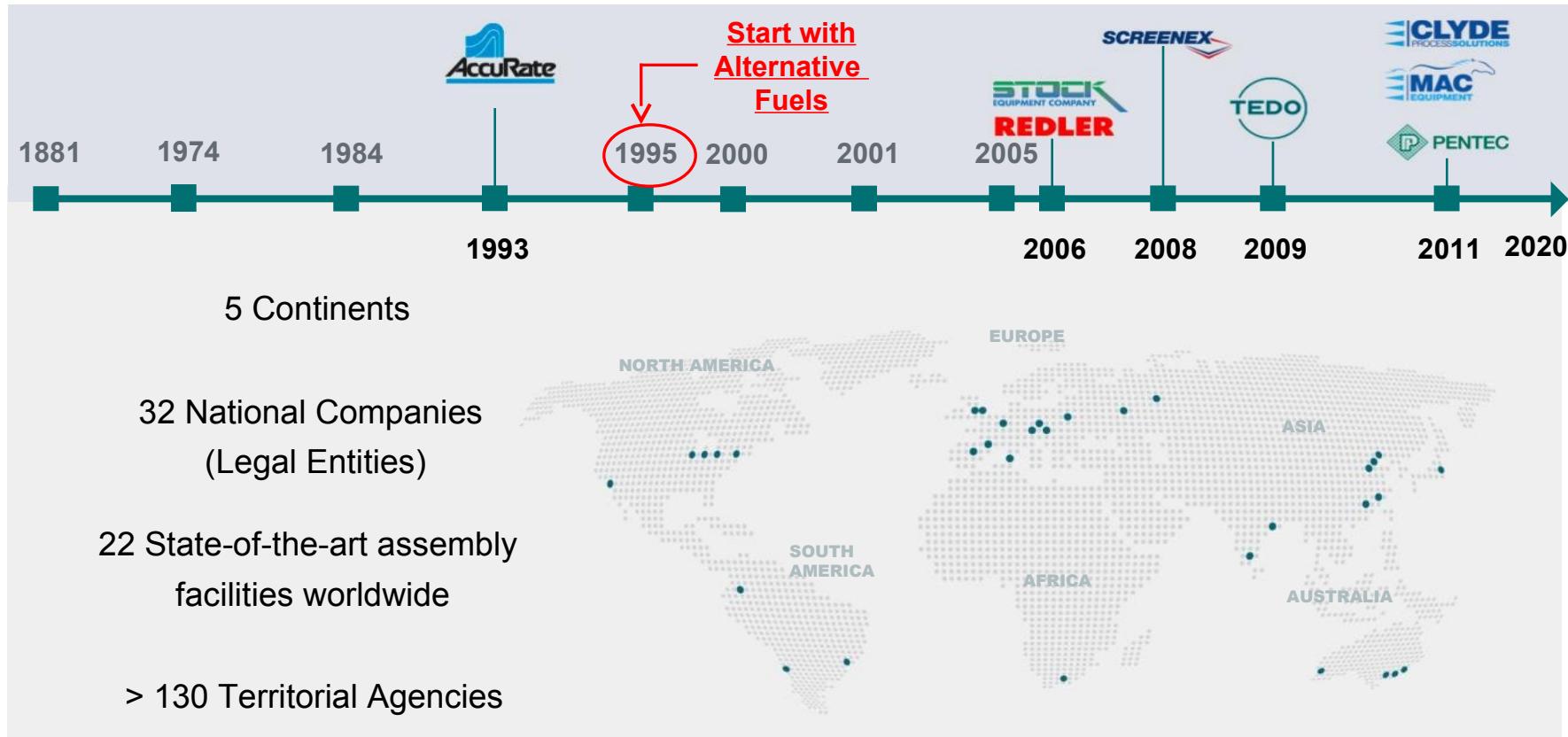
MULTICOR® K



MULTIDOS®



MULTIRAIL® kontinuální váhy



Od roku 1995 po současnost → více než **300** celosvětových referencí na dodávky technologií pro dávkování alternativních paliv

Navíc více než **2.000** celosvětových instalací na dávkování primárních paliv coal/petcoke systems

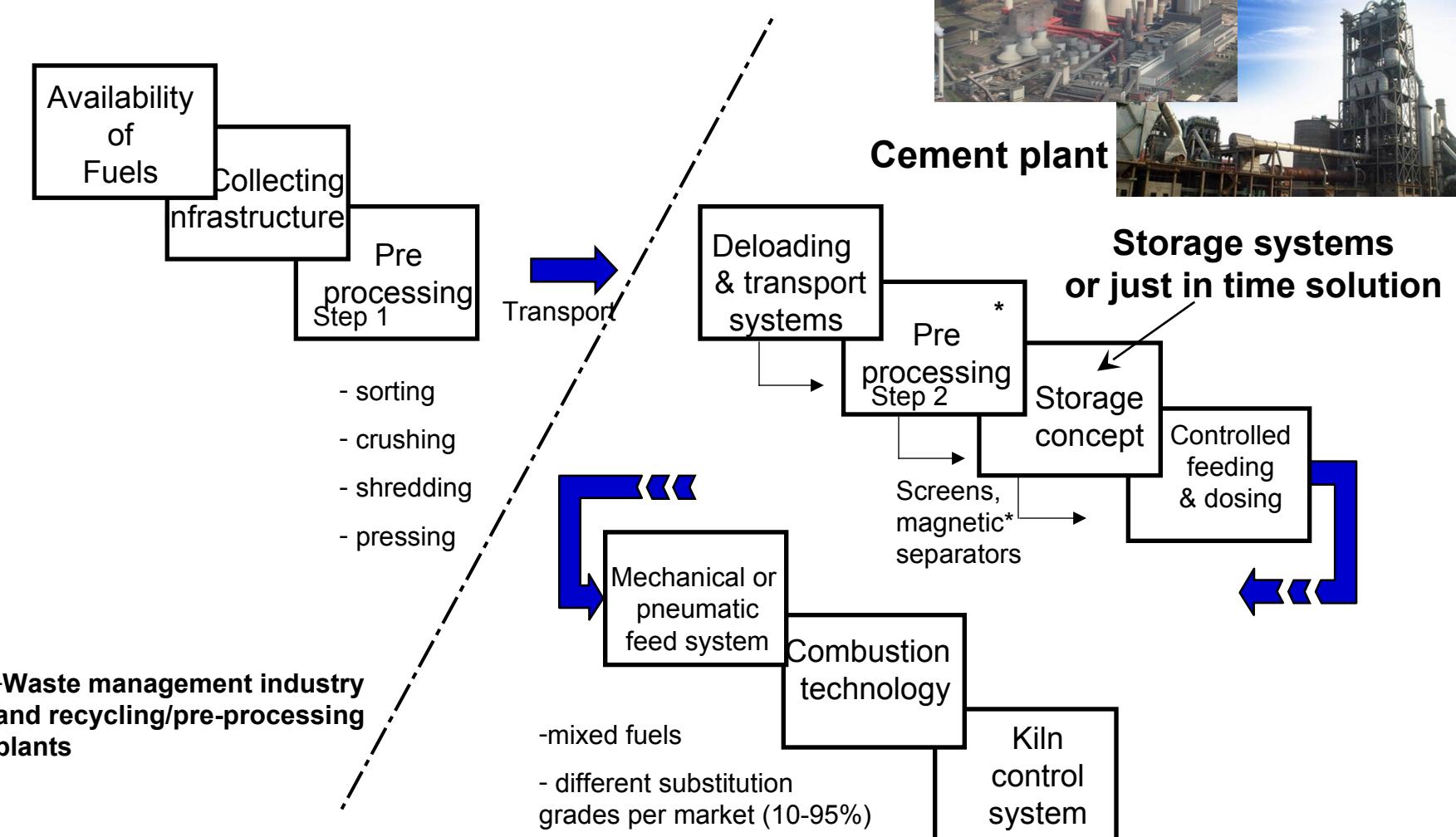
## ALTERNATIVNÍ PALIVA CO-PROCESSING

### VÝZNAMY A CÍLE

- Snížit provozní náklady substitucí primárních paliv (coal, petcoke, gas) za Alternativní (neboli sekundární) paliva
- Zajistit dostatečné množství paliv
- Neovlivnit kvalitu finálního produktu a řídit stabilitu spalovacích procesů a emisí



# PROCES ZPRACOVÁNÍ DOPRAVY A DÁVKOVÁNÍ ALTERNATIVNÍCH PALIV





## Zařízení pro příjem materiálu



## Skladovací technologie

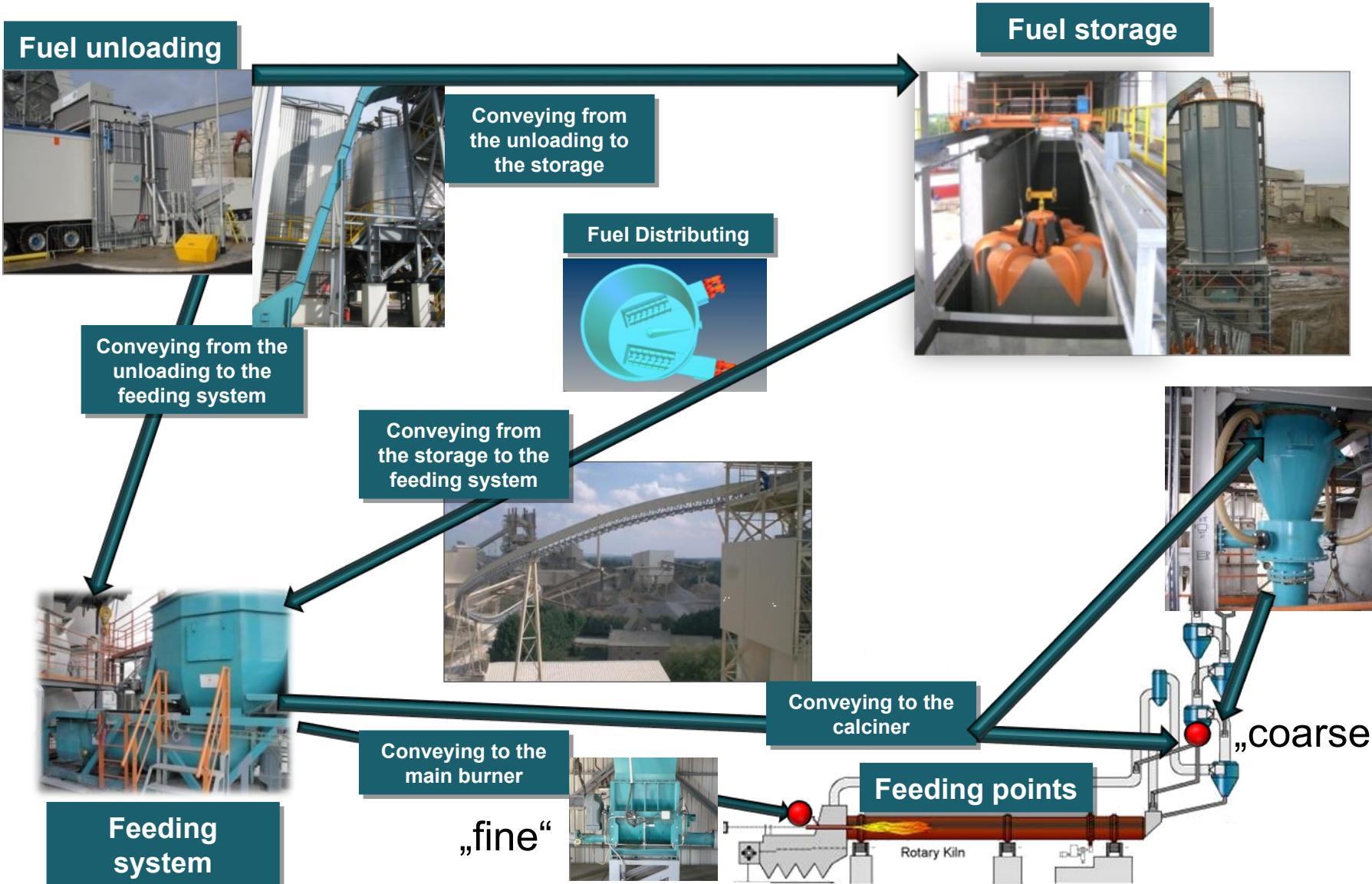


## Transportní systémy



## Dávkovací technologie

# Příklad dispozičního uspořádání technologie na dávkování alternativních paliv



# KLÍČOVÉ ZAMĚŘENÍ – TEST TEST TEST V TESTOVACIM CENTRU ZAMĚŘENÍ NA PROCES OPTIMIZACE TECHNOLOGII



Apply robust equipment despite the low bulk density !

- **ensures high availability**

Avoid bottlenecks – secondary fuels tend to bridging!

- **avoid down times caused by blockages**

Allow for varying bulk density and flowability !

- **ensure high flexibility in fuel usages**



# ŘEŠENÍ PRO FLEXIBILNÍ A EFEKTIVNÍ DÁVKOVÁNÍ ALTERNATIVNÍCH PALIV



Material knowledge is key factor for us



Own technology designed based on  
the experience and the innovation



# SYSTÉMY PRO DOPRAVU MATERIÁLŮ

## ŠIROKÉ PORTFOLIO VÝROBKŮ

Schenck process supply and produce most type of the conveyors



Helix  
Screw conveyors



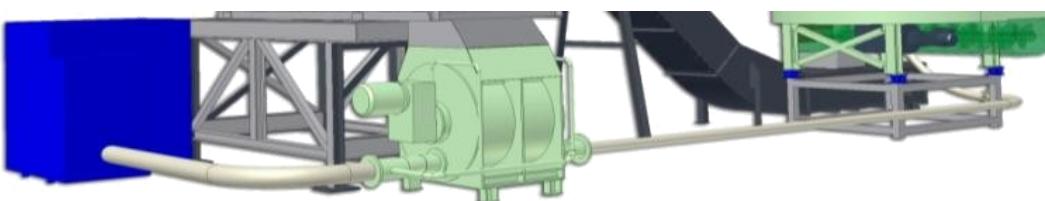
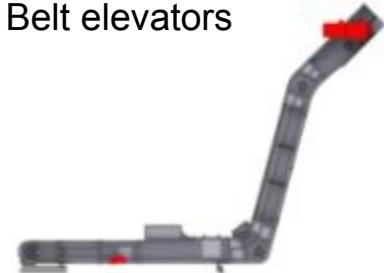
Chain conveyors  
Belt conveyors



Chain elevators  
Belt elevators



Pneumatic transport

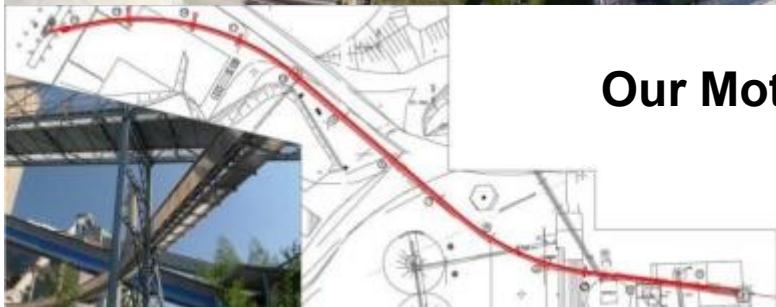


# CLOSED BELT CONVEYORS TEDO TUBE, U-TUBE CONVEYOR AND CBBC (FLEXOWELL)

Demands, Desire...



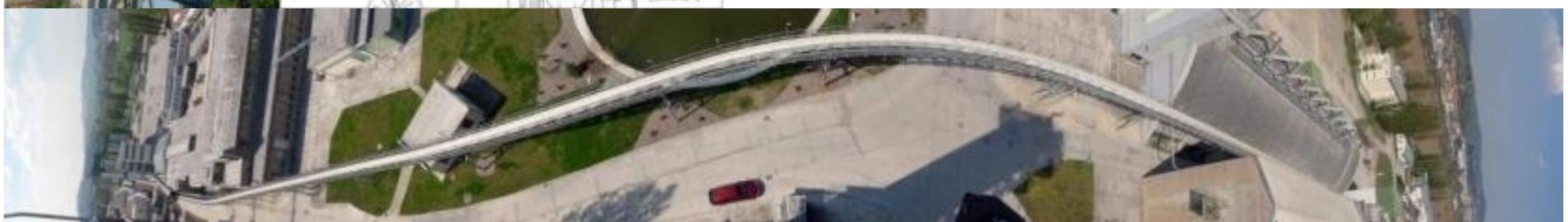
...and Real Installations



**Our Motto:**

**„We will either find a way,  
or make one.“**

**Hannibal**

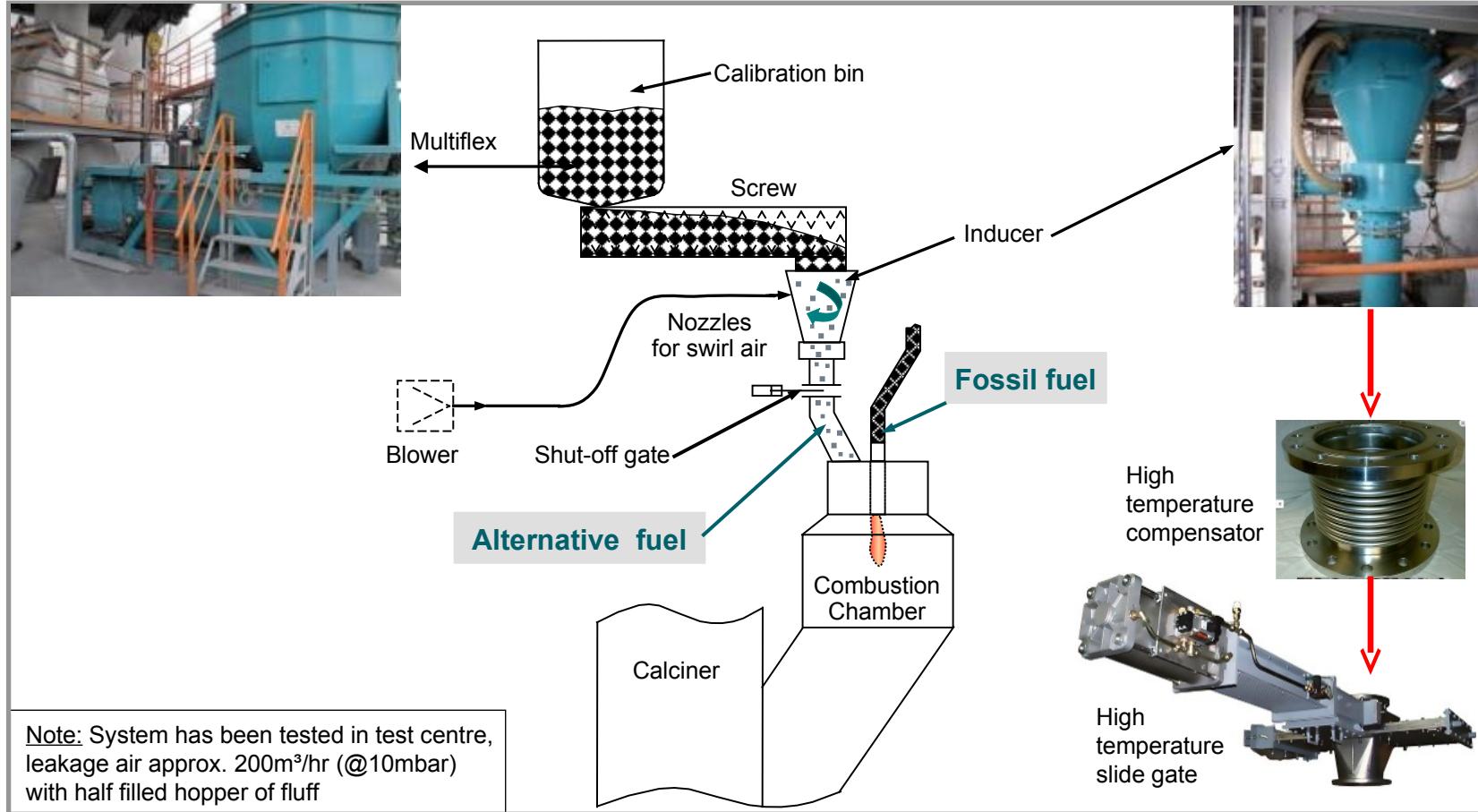


# TEDO Solutions – Basic Info

	<b>Description</b>	<b>Present Geographical Focus</b>	<b>Materials Handled</b>	<b>Typical Applications</b>		
<b>TEDO</b>	<b>Tube Conveyor</b>		<ul style="list-style-type: none"> <li>Tube formed conveyor system which enables transportation of goods without material spillage, of significant inclination angles and around horizontal curves</li> </ul>	<ul style="list-style-type: none"> <li>Cement</li> <li>Coal</li> <li>Alternative fuels</li> <li>Lime</li> <li>Minerals</li> <li>Chemicals</li> </ul>	<ul style="list-style-type: none"> <li>Transportation of bulk solids (sensitive materials) over difficult topographies (e.g. around corners or obstacles)</li> </ul>	
<b>TEDO</b>	<b>U-Conveyor</b>		<ul style="list-style-type: none"> <li>U-formed conveyor system mainly used for conveying powdery and granular materials horizontally</li> <li>Very little spillage</li> <li>Higher transport volume</li> </ul>	<ul style="list-style-type: none"> <li>Western Europe</li> <li>Eastern Europe</li> <li>North Africa</li> </ul>	<ul style="list-style-type: none"> <li>Lime</li> <li>Coal</li> <li>Minerals</li> <li>Chemicals</li> <li>Building products</li> </ul>	<ul style="list-style-type: none"> <li>Unloading at terminals and transportation of bulk solids (less sensitive materials) in less difficult topographies</li> </ul>
<b>TEDO</b>	<b>Corrugated belt conveyor</b>		<ul style="list-style-type: none"> <li>Mechanical elevator systems for industrial applications. A cross rigid base belt onto which cleats and sidewalls are cold-vulcanized to carry the material up an incline or vertically upwards</li> </ul>	<ul style="list-style-type: none"> <li>India</li> </ul>	<ul style="list-style-type: none"> <li>Cement</li> <li>Coal</li> <li>Alternative fuels</li> <li>Waste</li> <li>Fertilizers</li> <li>Biomass</li> </ul>	<ul style="list-style-type: none"> <li>Transportation of bulk material (less sensitive) up an incline or vertically upwards</li> </ul>

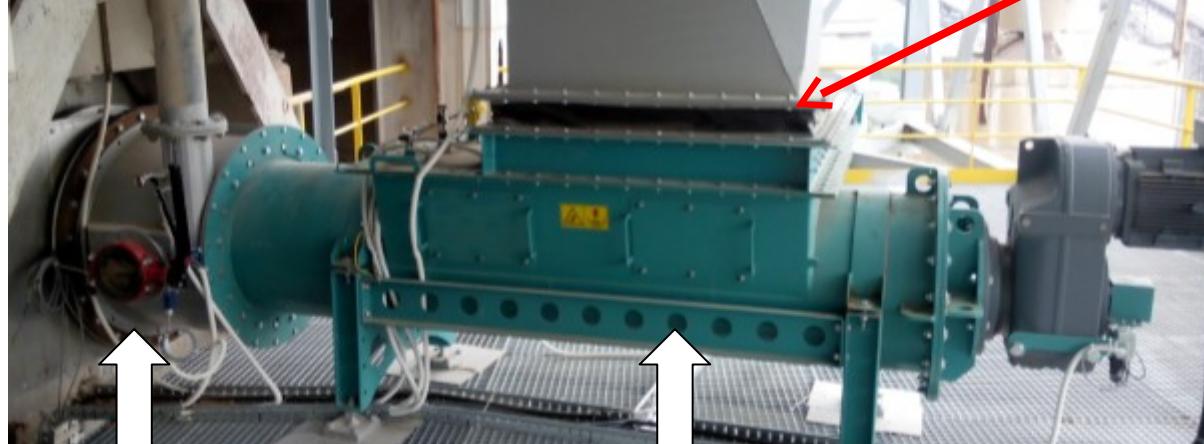
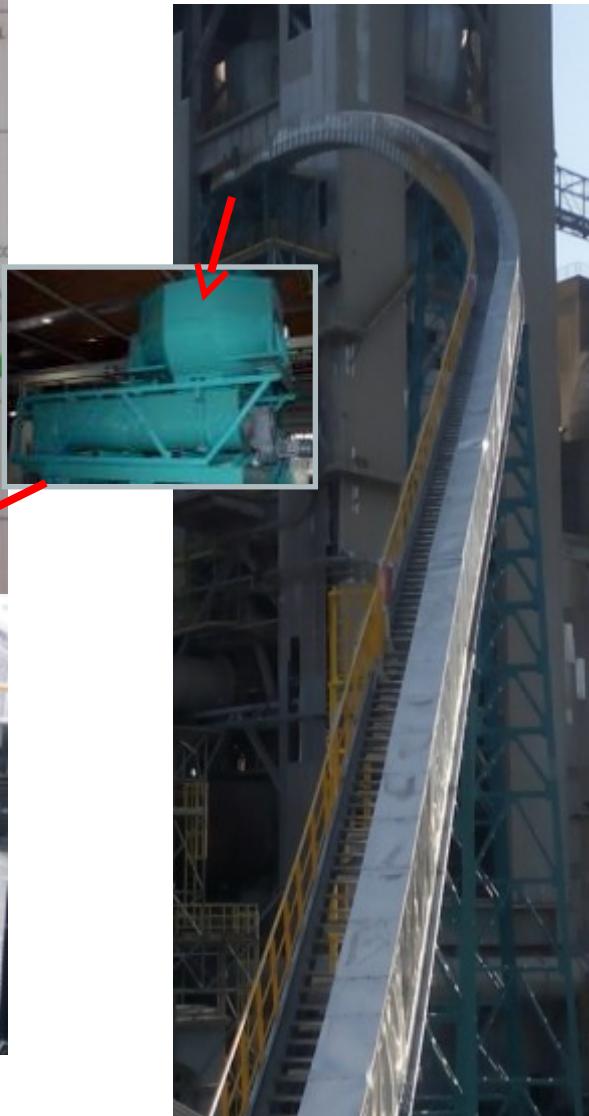
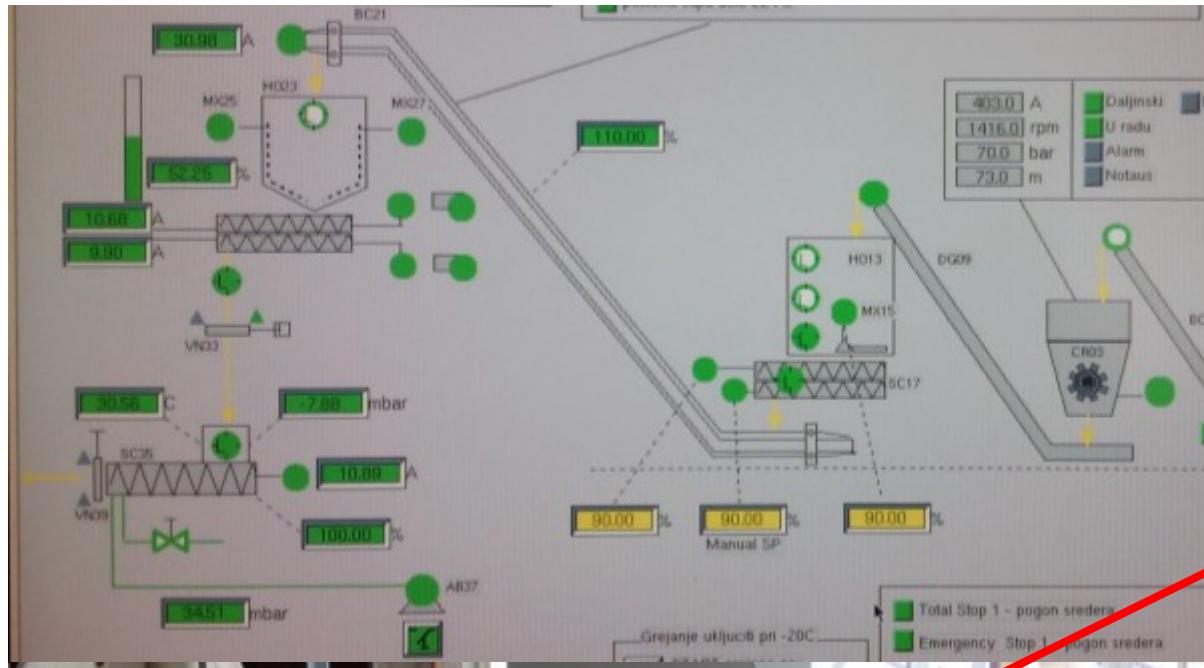
# DÁVKOVÁNÍ ALTERNATIVNÍCH PALIV DO KALCINÁTORU

Feeding by using inducer and air lock



# MULTILFEX for calciner feeding

Principle by using injecting screws



Swirl air chamber

Injecting screw = material piston

# EXPERIENCE WITH COARSE MATERIAL FEEDING

REACT TO THE MATERIAL PARAMETERS IS KEY TO THE PLANT RELIABILITY



Compressibility



Reference material parameters:

**2D (granularity without metal parts):**

95%            $\leq 200$  mm **DEFORMABLE**  
99%            $\leq 300$  mm **DEFORMABLE**  
Strips       only up to 80mm width and  
be           2.000mm length). Strips must  
                possible to tear and cut!

**3D (granularity without metal parts):**

99%            $\leq 100$  mm  
100%        $\leq 150$  mm (deformable as  
e.g.           plastic cans) 3D compressible  
                occasional lumps up to 10dm<sup>3</sup>

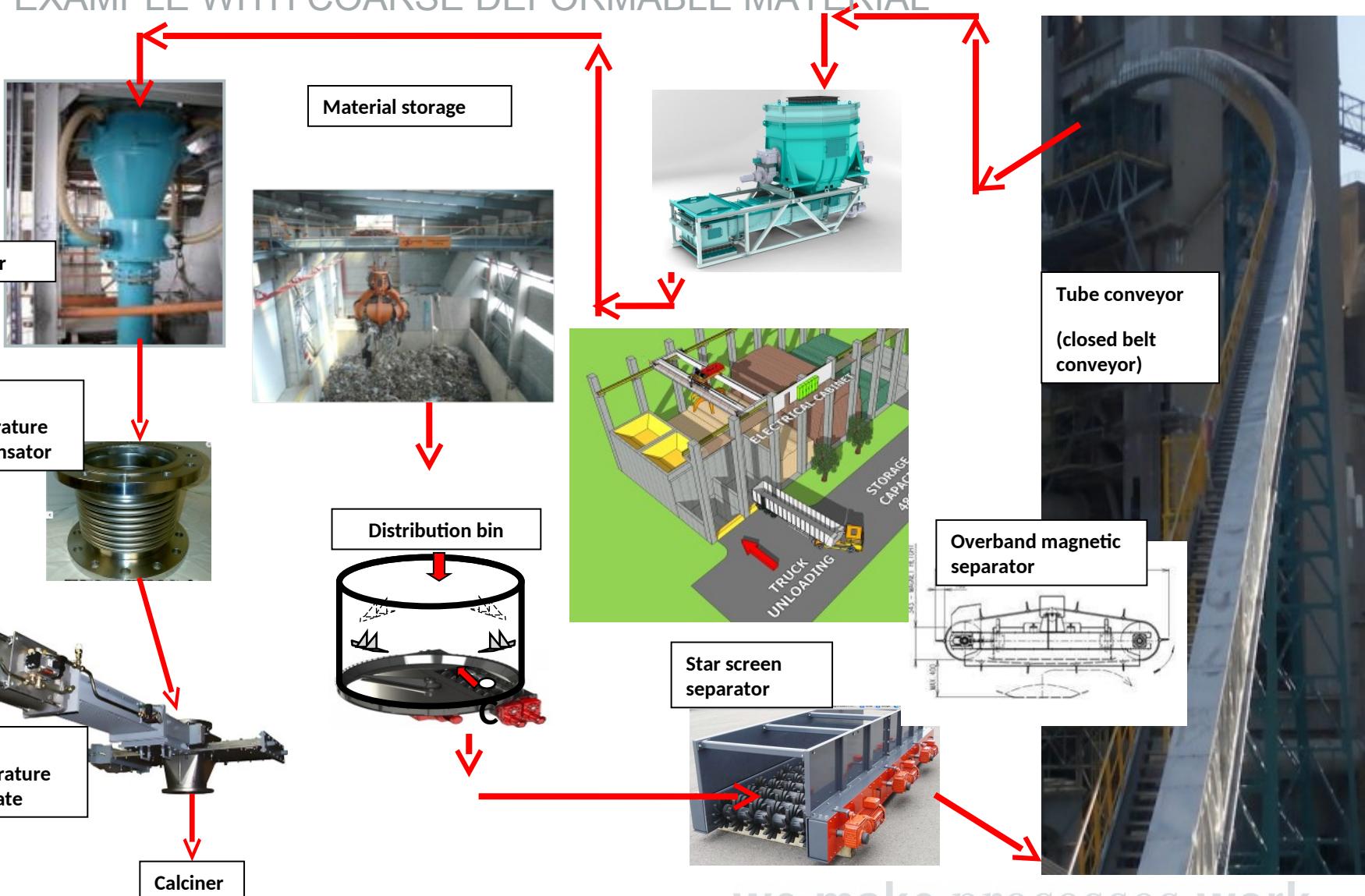
**metal parts:**

all            $\leq 50$  mm

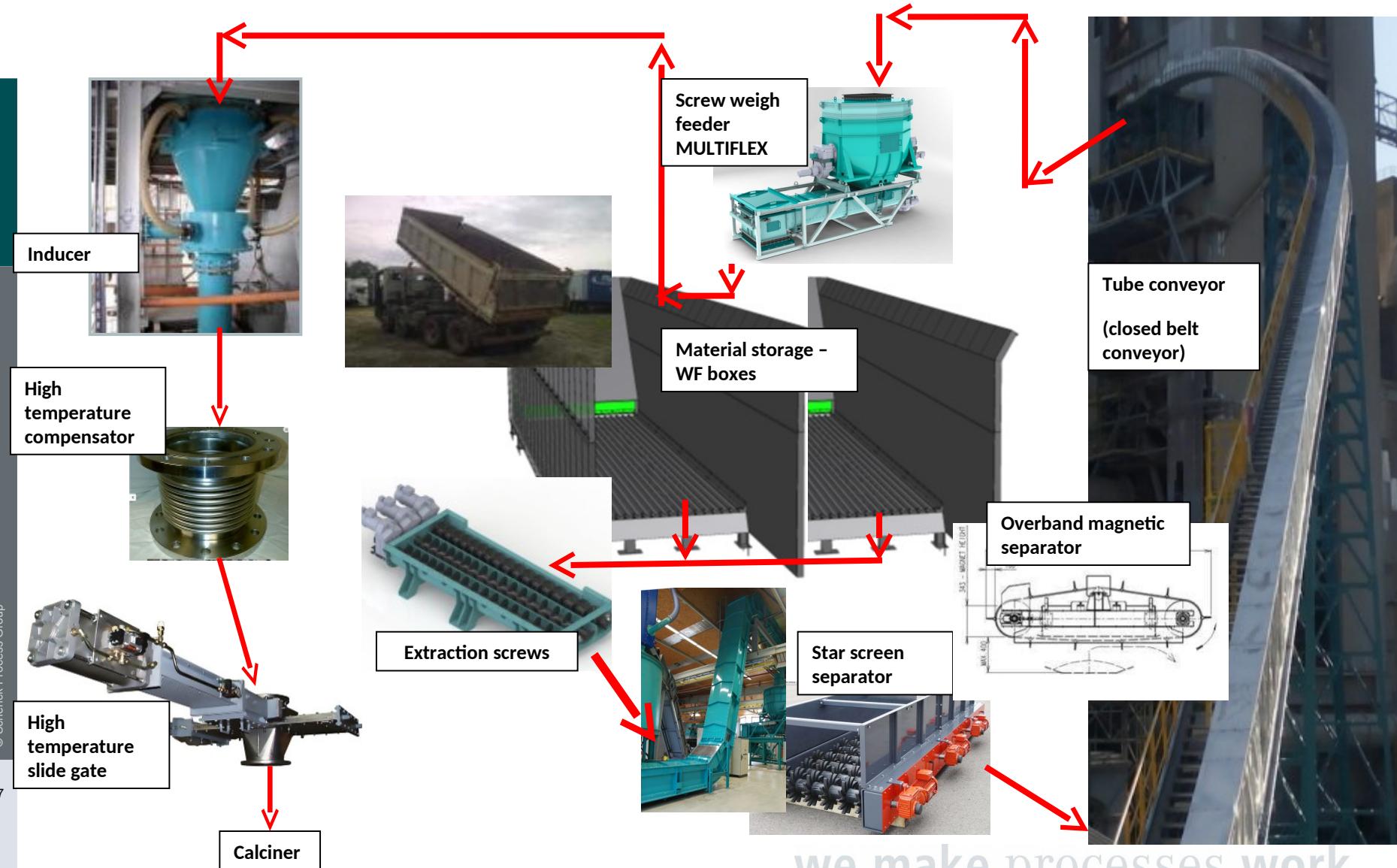
**Moisture:** Max. 40%

# AF FEEDING SYSTEM

## EXAMPLE WITH COARSE DEFORMABLE MATERIAL



# AF FEEDING SYSTEM EXAMPLE WITH COARSE DEFORMABLE MATERIAL



# EXPERIENCE WITH COARSE MATERIAL FEEDING

REACT TO THE MATERIAL PARAMETERS IS KEY TO THE PLANT RELIABILITY



## REFERENCE MATERIAL PARAMETERS:

### 2D (granularity without metal parts):

95%       $\leq 200$  mm **NON-**

#### **DEFORMABLE**

99%       $\leq 300$  mm **NON-**

#### **DEFORMABLE**

Strips      only up to 80mm width and  
                  2.000mm length). Strips must  
be              possible to tear and cut!

### 3D (granularity without metal parts):

99%       $\leq 100$  mm

100%       $\leq 150$  mm (deformable as

e.g.           plastic cans) 3D compressible  
                  occasional lumps up to 10dm<sup>3</sup>

### **metal parts:**

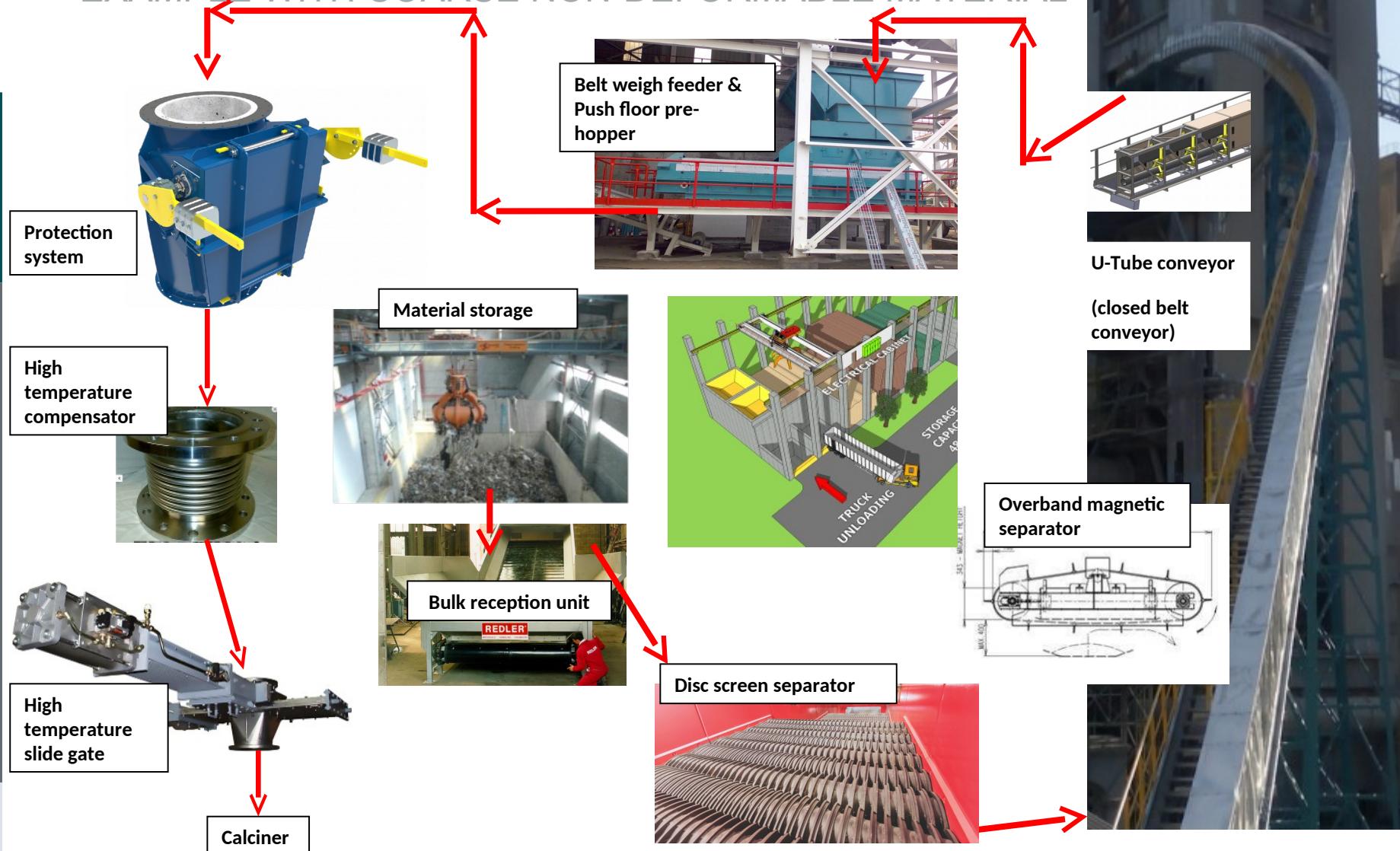
all             $\leq 50$  mm

**Moisture:** Max. 40%



# AF FEEDING SYSTEM

## EXAMPLE WITH COARSE NON-DEFORMABLE MATERIAL



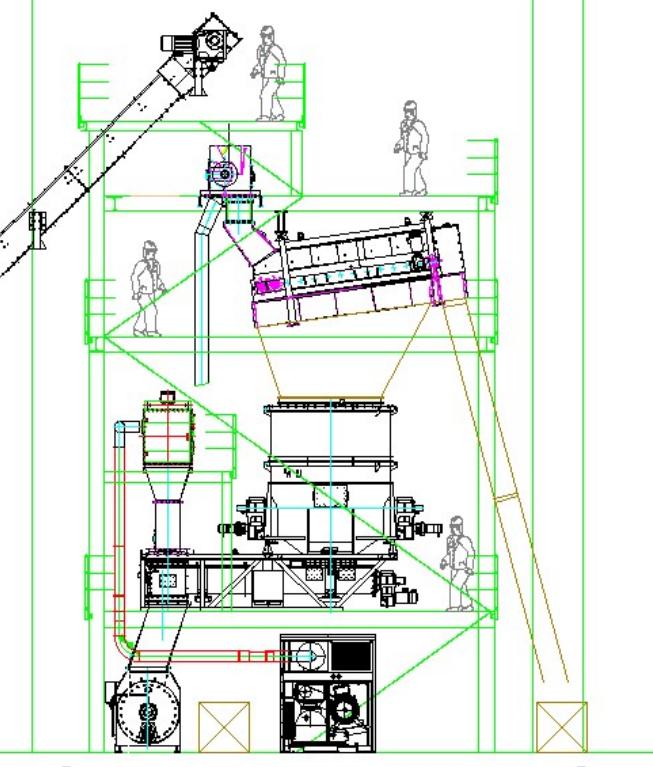
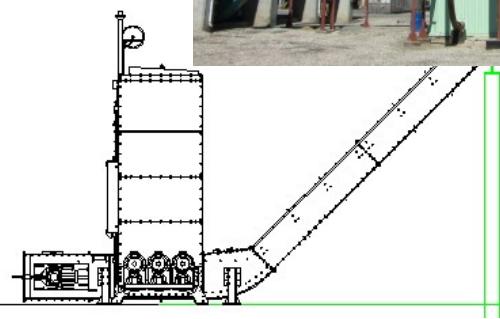
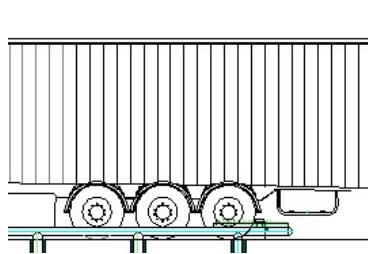
# AF FEEDING SYSTEM

## EXAMPLE WITH COARSE NON-DEFORMABLE MATERIAL



# STARTER KIT SOLUTIONS FOR RDF, ANIMAL MEAL, SEWAGE SLUDGE OR OTHER MATERIAL

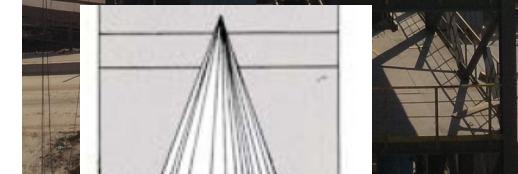
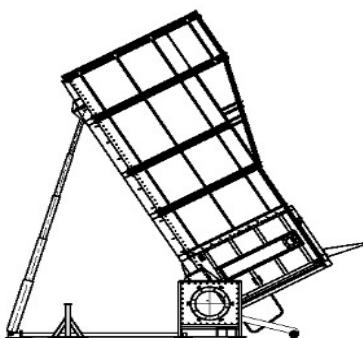
## COMPLETE TECHNOLOGY SYSTEM



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# RELIABLE SEWAGE SLUDGE FEEDING SYSTEM

COMPLETE TECHNOLOGY SYSTEM, FEED RATE 10 T/HOUR

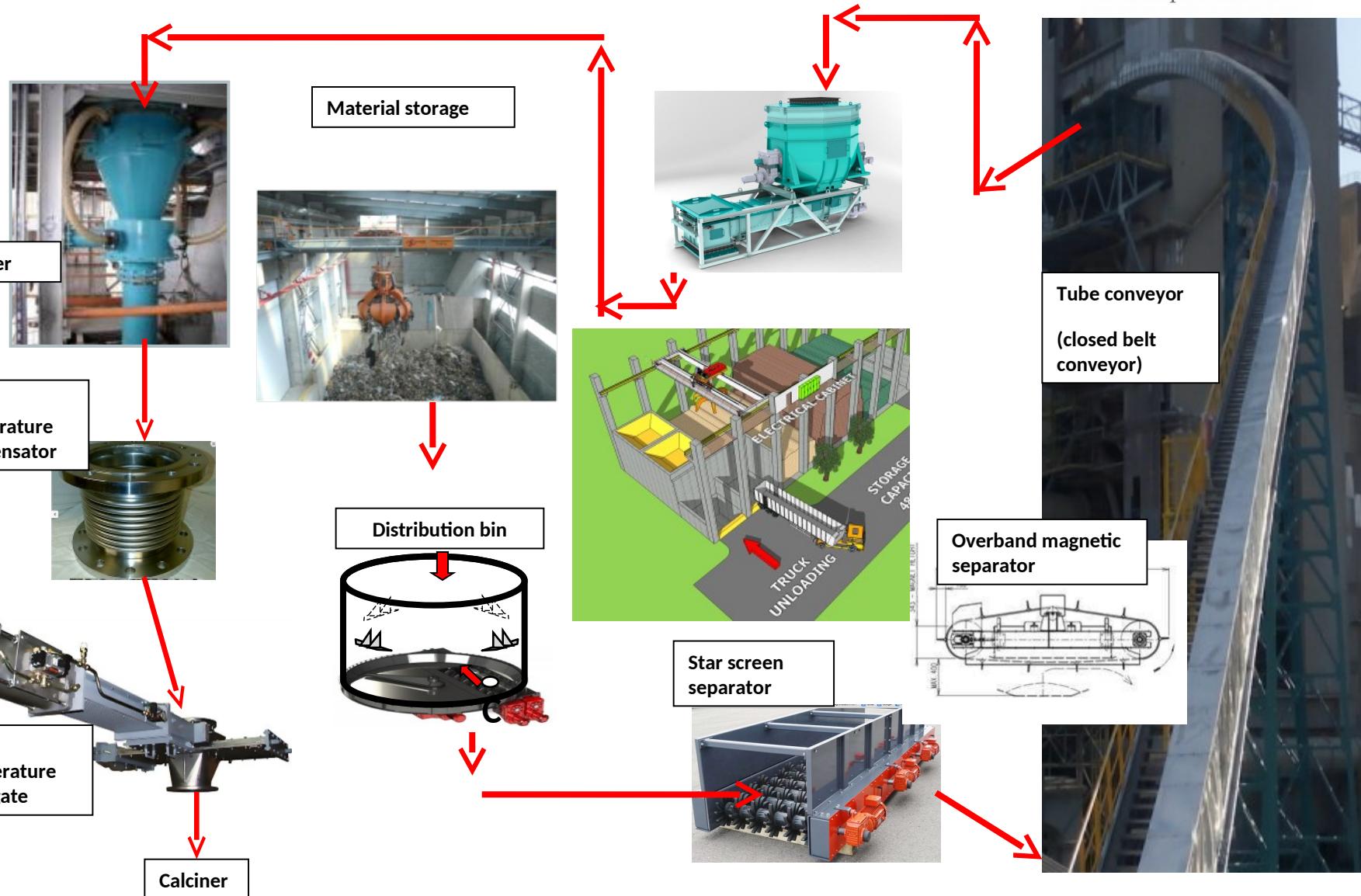


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# AF FEEDING SYSTEM IN TITAN ALEXANDRIA

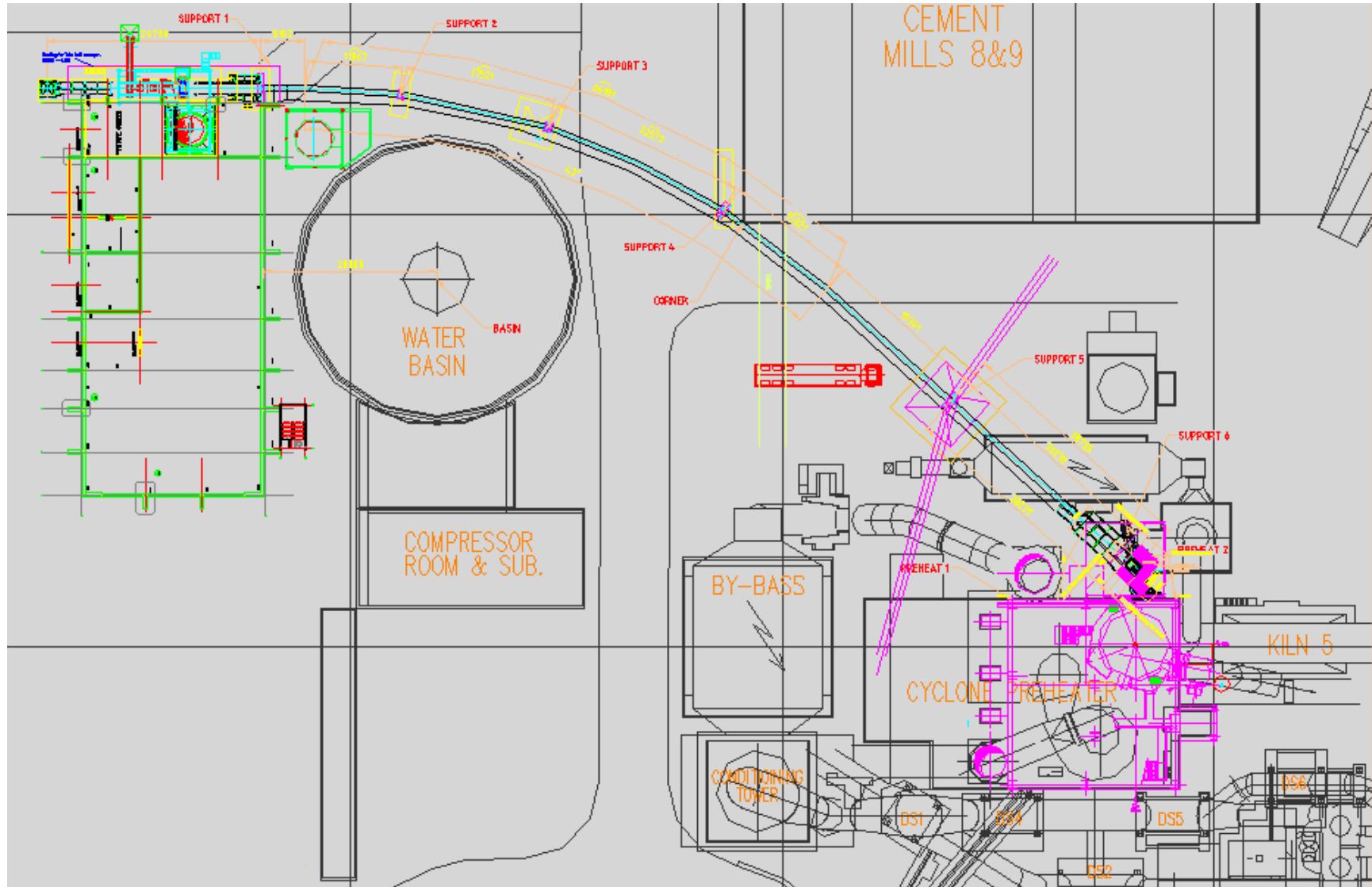
## COMPLETE TECHNOLOGY SYSTEM, FEED RATE 25 T/HOUR

schenck process

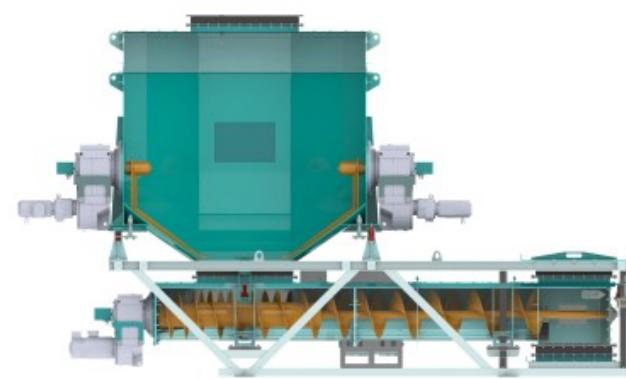
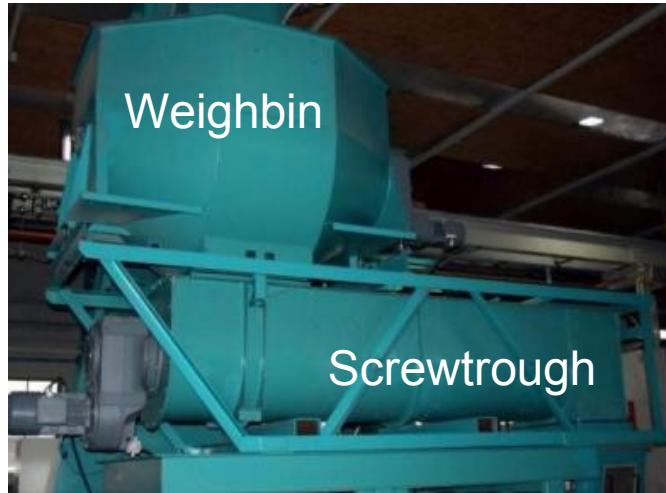
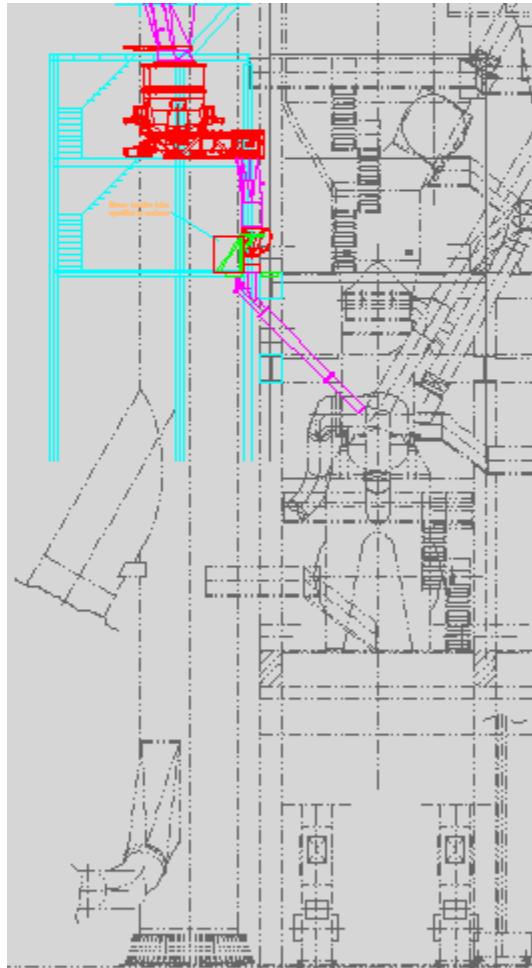


# AF FEEDING SYSTEM IN TITAN ALEXANDRIA

## COMPLETE TECHNOLOGY SYSTEM, FEED RATE 25 T/HOUR



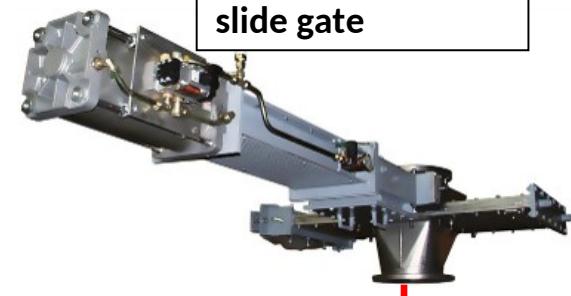
## AF FEEDING SYSTEM IN TITAN ALEXANDRIA COMPLETE TECHNOLOGY SYSTEM, FEED RATE 25 T/HOUR



High temperature compensator



High temperature slide gate

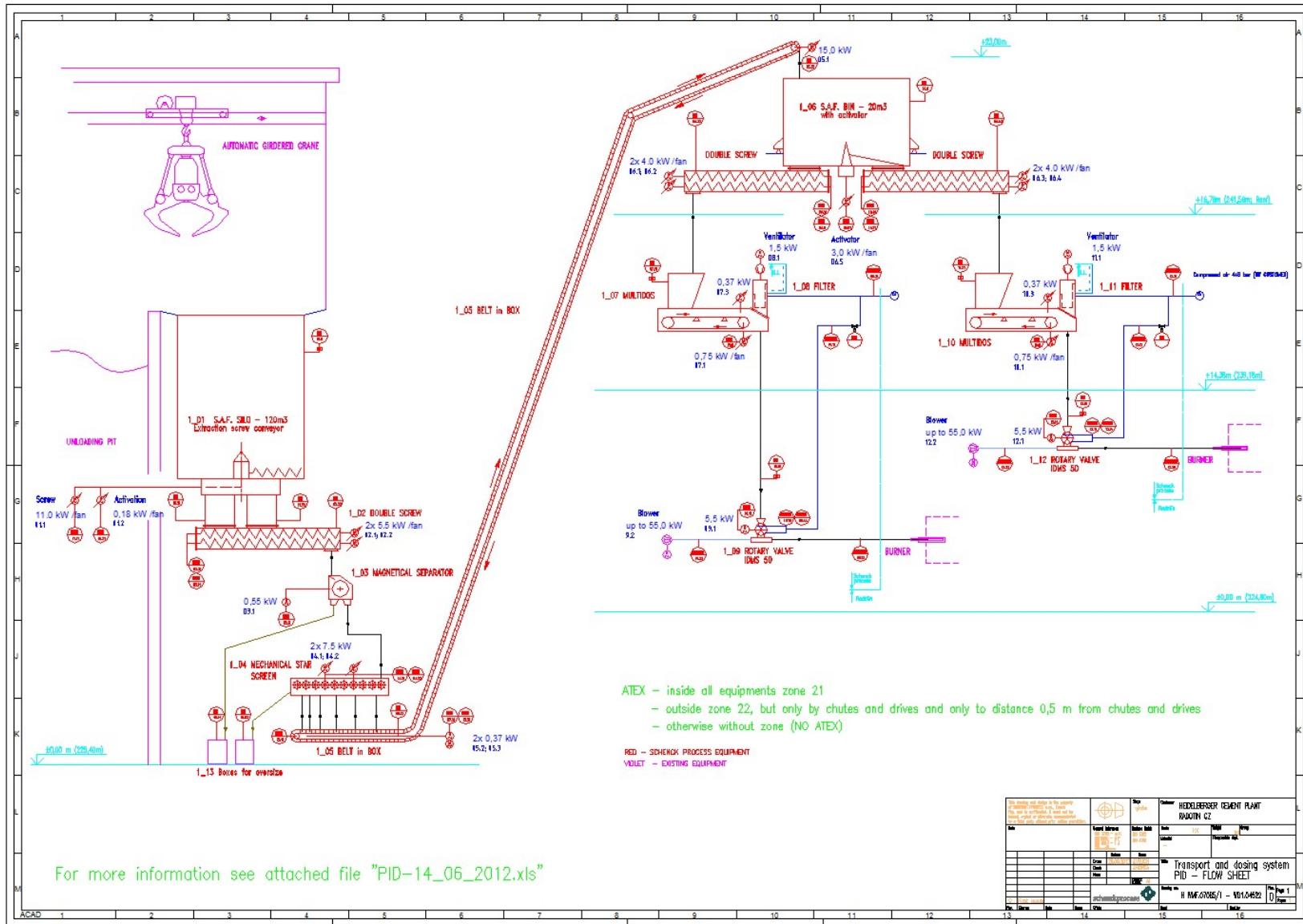


Calciner

# Heidelberg Cement plant Radotín

Feeding RDF to main burner – two lines 5 t/hr

schenckprocess 



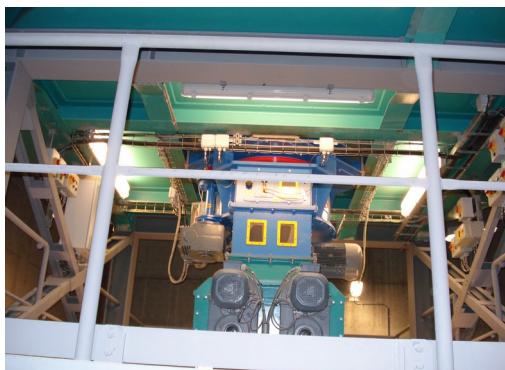
For more information see attached file "PID-14\_06\_2012.xls"

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# Heidelberg Cement plant Radotín

Feeding RDF to main burner – two lines 5 t/hr

schenck process



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## Plzeňská teplárenská

Turnkey project: material reception, separation, storage,  
Conveying and feeding of Biomass, feed rate 10 t/hour

schenck process



# Plzeňská teplárenská

Turnkey project: material reception, separation, storage,  
Conveying and feeding of Biomass, feed rate 10 t/hour

schenck process



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## Plzeňská teplárenská

Turnkey project: material reception, separation, storage,  
Conveying and feeding of coal sludge, feed rate 5 t/hour

schenck process



we make processes work

## Plzeňská teplárenská

Turnkey project: material reception, separation, storage,  
Conveying and feeding of coal sludge, feed rate 5 t/hour

schenck process



we make processes work

## Plzeňská teplárenská

Turnkey project: material reception, separation, storage,  
Conveying and feeding of coal sludge, feed rate 5 t/hour

schenck process



we make processes work

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Turnkey project: material reception, separation, storage,  
Conveying and feeding of coal sludge, feed rate 5 t/hour

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processes  
work

Děkuji za pozornost

[www.schenckprocess.cz](http://www.schenckprocess.cz)

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