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SWR engineering

Process guide
Waste incineration

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Process guide waste incineration

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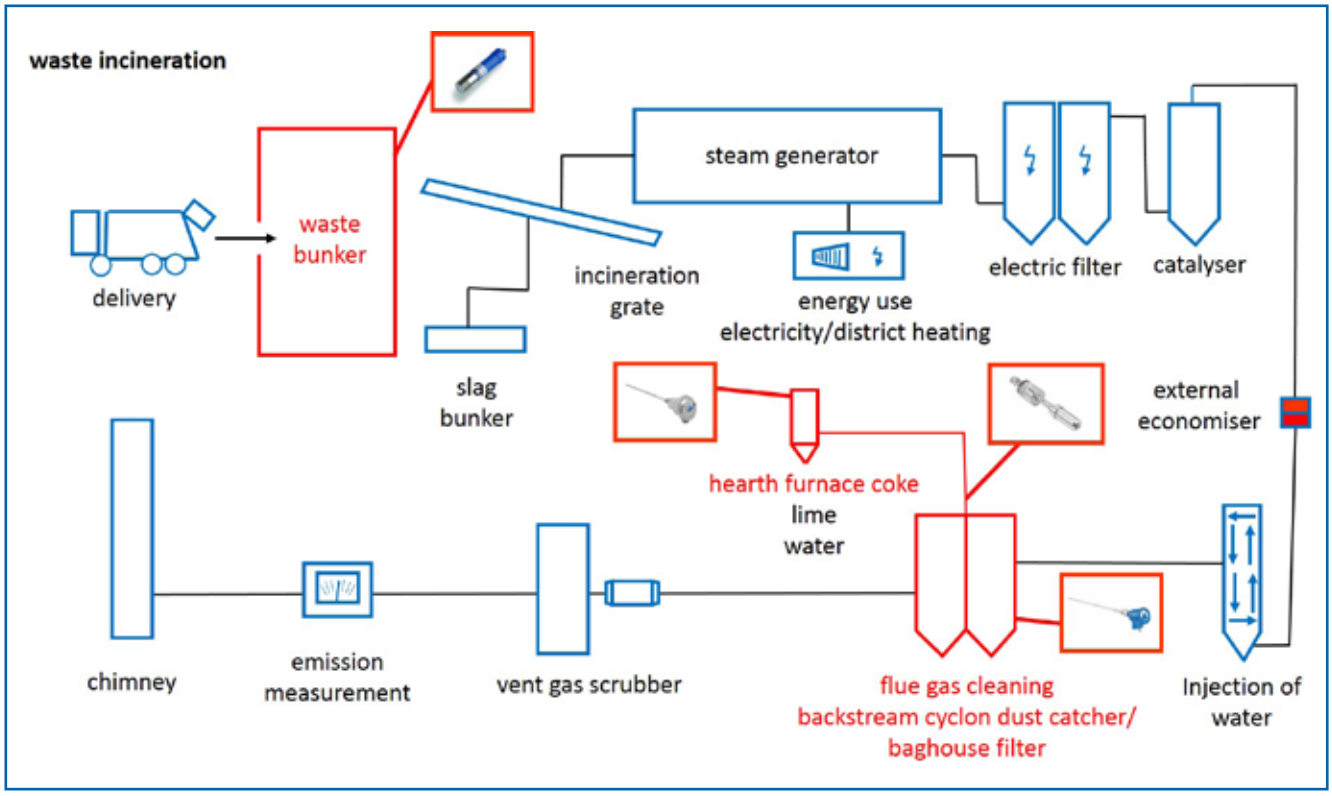

Process guide waste incineration

Process

During the process of waste incineration the atmospheric combustible parts of the waste get burned. The main intention during this process is a reduction of the volume of the waste by using the included energy. Remaining quantities are compacted for further use and dumping. After the delivery the waste is mixed in the waste bunker to guarantee a constant burning. After that it is transported with a conveyor ore a crane to an incineration grate. At the end of the grate the incineration residues fall into a water bath (deslagger), where they are slagged out with a ram or a chain scraper. Afterwards conveyors transport them to the slag bunker.

The heat, which is generated during the incineration, produces steam. This steam generates electricity or is used for district heating. The first step in the flue gas cleaning is the filtration of the dusts included in the flue in the form of fly ash. This process is realized in the electric filter. By addition of ammonia water the included nitric oxides in the catalyser are converted into eco neutral nitrogen and water. The hot burned gas is used by an economiser. Thereby the temperature oft he burned gas decreases.

In the back stream cyclon dust catcher with downstream baghouse filter gaseous chlorine- and sulfur compounds as well as dioxins and furans are bound by activated carbon, lime and water.

In waste incineration plants the SWR products SolidFlow, Dusty, ProSens and ProGap are used.

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Flue gas cleaning

Flue gases occurring during the process of waste incineration have to be cleaned. Thereby lime is given on a catalyser. This catalyser is streamed by the flue gas. Thereby takes a separation of sulfur dioxide (SO2) place. The measurement of the flue gas data after the process of separation determines the amount of lime which has to be put in to the separator and therefor represents the reference value.

The installed SolidFlow measures the amount of lime supplied by a screw conveyor. The necessary amount of lime can be regulated by the rotation speed control of the screw conveyor. After the freefall, where the amount of material is measured, the lime is transported into an injector, from there it is transported by an airstream to the correspondent filters.

The emission of the lime silo is measured by the Dusty.

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Customer:	waste incineration
System:	SolidFlow
Process area:	SolidFlow, lime silo, flue gas cleaning
Material:	lime
Conveying:	freefall after screw feeder
Transport Device:	screw feeder
Place of installation:	freefall after screw feeder before injector
Flow Rate:	up to 20 t/h

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Customer benefit:
Simple measurement and regulation of lime addition during the flue gas cleaning. Regulation of the rotation speed of a screw feeder through the amount of material measured by the SolidFlow depending on the measurement of the filtered gas.

Economic benefit:
Easy process control. The SolidFlow avoids an underfeeding (in that case the flue gas cleaning is not sufficient) or an overdosing (material consumption is to high) of the absorbent.

Technical benefit:
Through set in nozzles easy to mount and easy to retrofit into existing tubings. Applicable in the Ex area. Device causes no obstacles in the delivery flow.

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Customer:	waste incineration
System:	SolidFlow
Process area:	SolidFlow, lime silo, flue gas cleaning
Material:	lime
Conveying:	pneumatic conveying system after rotary feeder
Transport Device:	dosing through rotary feeder, transportation by airstream
Place of installation:	mass flow measurement in flow stream
Flow Rate:	approx. 1.2 t/h

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Customer benefit:

The admixture of lime during the flue gas cleaning is realized with different conveying systems. The already described conveying system with the use of a conveying screw is an exception, more common is the transportation by an airstream. Thereby the lime is admixed with the help of a rotary feeder, the amount of lime is constant and it is not regulated. In this case the SolidFlow transmits the measured quantity to a control room to control and display it.

The use of lime in the flue gas cleaning can be distinguished between recycled lime and fresh lime. Normally the process is fed by fresh lime. Recycled lime is excessive lime which is taken from the cleaning process and which is added continuously to the process.

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Customer: waste incineration

System: Dusty

Process area: Dusty, lime silo, dust control

Material: lime

Application: control of waste air of a lime silo

Place of installation: lime silo, detection of dust

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Customer benefit:
Safe control of waste air without time delay, avoidance of environmental damage during the waste incineration process.

Economic benefit:
Cost efficient through easy refitting. Excellent price performance ratio. Easy adaption to control process by enhancement to 4-20 mA signal (trend signal).

Technical benefit:
Different kinds of dust detectable. Device generates electronical alarm. Applicable in clean gas and dust circuits.
Easy refitting is possible in an easy and fast way. Uncomplicated launching through plug & play.

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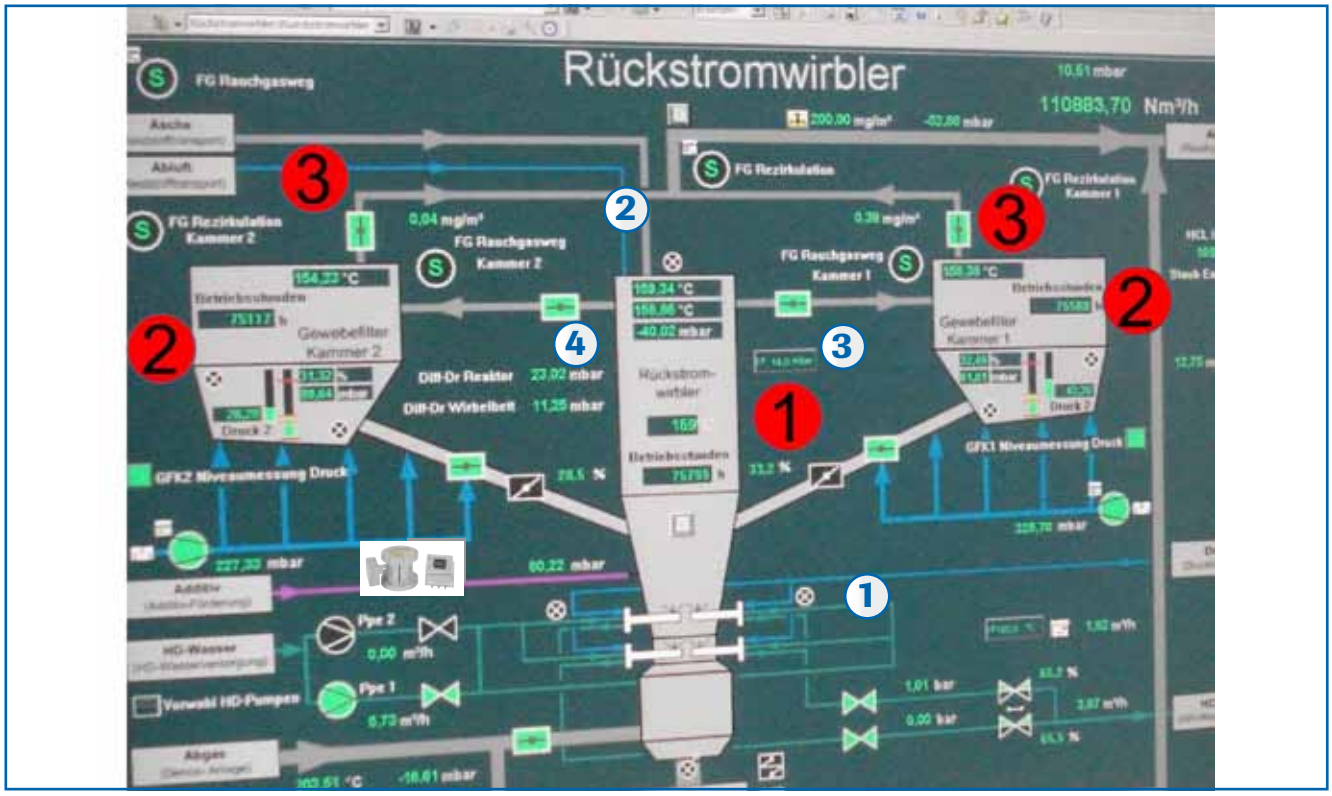

Backstream cyclone dust catcher

Separation of heavy metals, dioxins and furans. By the addition of so called absorbents (in this case hearth furnace coke, lime and water) gaseous chlorous combinations, heavy metals, dioxins and furans are bound and released by the baghouse filter (2).

The ProSens (3) measures the amount of dust after the baghouse filter and thereby measures the emission on the clean side of the baghouse filter.

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Customer: waste incineration

System: ProSens

Process area: ProSens, dust measurement after baghouse filter, cleaning of waste air

Material: dust

Place of installation: baghouse filter after backstream cyclone dust catcher

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Customer benefit:
Reliable and safe dust measurement on the clean side oft he baghouse filter, generation of a reliable and continuous absolute value.

Economic benefit:
Flexible adaption to the control process by generation of a trend value or an absolute value.

Technical benefit:
Measurement of dust concentration at high temperatures. Exact measurement of dust concentration even at big pipe diameters. Generation of a trend signal ore an absolute value for dust emission measurement. Device is applicable in Ex area.

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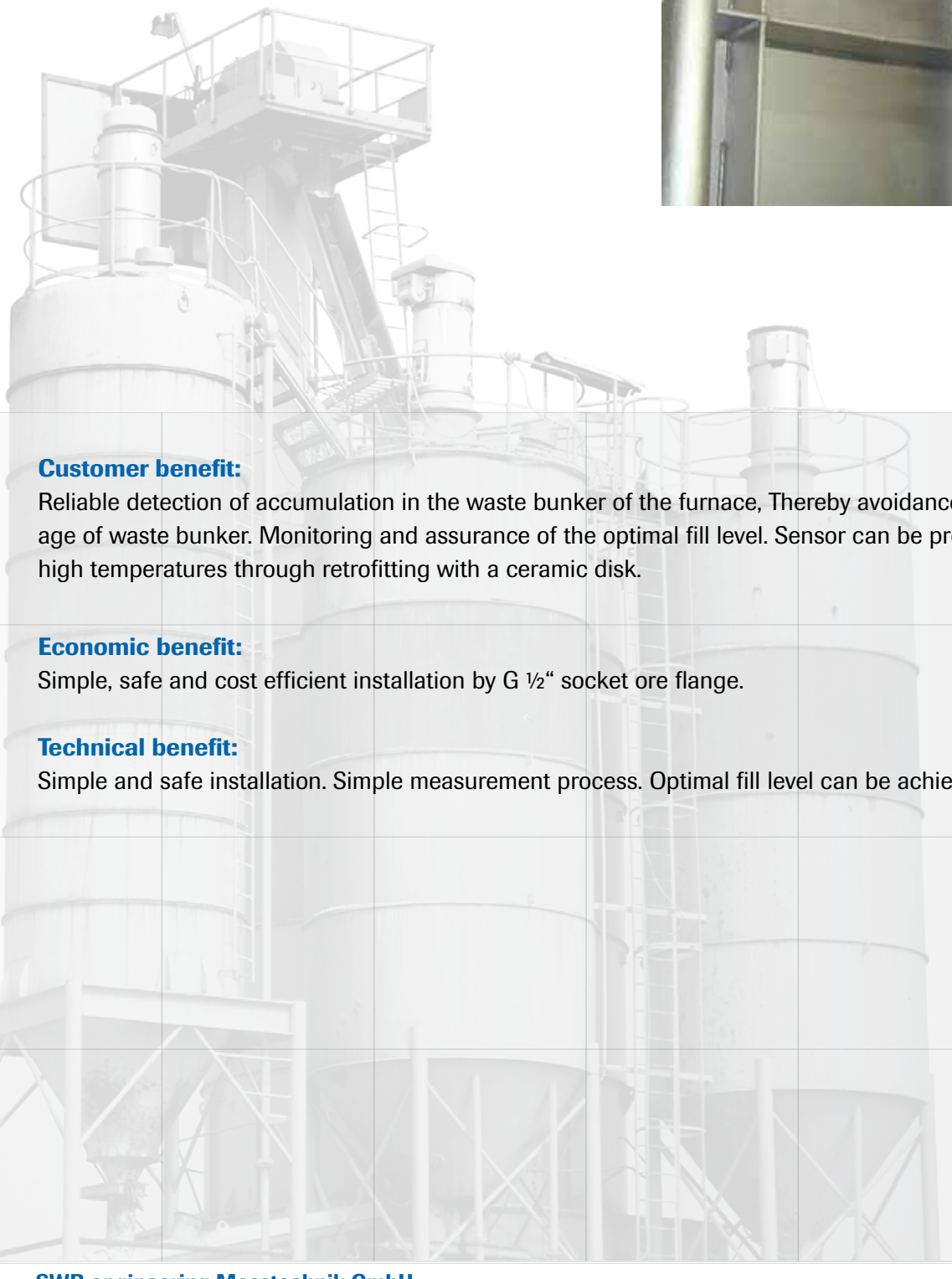
Customer: waste incineration

System: ProGap

Process area: level control in waste bunker

Material: waste

Place of installation: waste bunker, avoidance of accumulation



Customer benefit:
Reliable detection of accumulation in the waste bunker of the furnace, Thereby avoidance of fire and damage of waste bunker. Monitoring and assurance of the optimal fill level. Sensor can be protected against high temperatures through retrofitting with a ceramic disk.

Economic benefit:
Simple, safe and cost efficient installation by G ½“ socket ore flange.

Technical benefit:
Simple and safe installation. Simple measurement process. Optimal fill level can be achieved and kept.

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