HE 5750 / HE 5760

ENGINEERING
made in Germany

Cleaning control systems

for large industrial filter systems

HESCH
AUTOMATION

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TECHNOLOGIES MEMBER

Large fabric filter systems – The situation in practice

Save energy with a subsidy!

The use of large fabric filter systems with several hundred cleaning valves and many thousands of filter bags is used to comply with strict emission regulations, e.g. in waste-to-energy plants or cement works. This means that a high level of high functionality and continuous availability of this system must be ensured at all times.

If a large filter system is not operated at 100%, there are both legal consequences if emissions are exceeded and massive costs, e.g. due to additional energy consumption. By optimising the operation of a filter system, the savings potential is considerable, especially in view of the high electricity prices.

OUR SOLUTION – a 100-fold proven, efficient control and monitoring system monitoring system for large filter systems

An overview of the system's advantages:

- ✓ Stand-alone system without programming effort – Plug-and-Play
- ✓ Fast and flexible adaptation to the special features on site
- ✓ Remote monitoring through connection to the control technology
- ✓ Recording of all necessary parameters of the filter system including data logging
- ✓ Continuous monitoring of the valve functions and Fabric filter for hose breakage (HE 5750)
- ✓ Energy saving through dynamic adjustment of the cleaning pressure (reduction of compressed air consumption)
- ✓ Integration of additional system functions such as flap control of the filter chambers
- ✓ Maximum availability thanks to intelligent redundancy system possible

AREAS OF APPLICATION

- Waste-to-energy plants
- Coal-fired power station
- Biomass power plants
- Sewage sludge incineration
- Cement works
- Lime works
- Crude steel production
- Process plants

Old technology out – new technology in

30 % subsidy!

Bring your system up to date with the HE 5750 and reduce your energy consumption in the long term.

The support programme of the Federal Office of Economics and Export Control (BAFA) and the German Credit Institute for Reconstruction (KfW) support large industrial companies with 30% subsidy* to increase energy efficiency.

P.S. Funding only available in Germany

Contact us to learn more.

*Subject to legal changes. We do not guarantee the receipt of the grant.

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Calculation example:

By optimising the controllers, operators of dust extraction systems can reduce the power consumption by approx. 10%, when using a 500 kilowatt induced draught system.

At a kW price of € 0.08, you save approx. **€ 35.000** in energy costs per year.

The HE 5750 cleaning control unit is the perfect solution to make your processes more efficient and environmentally friendly.

Functionality at a glance

This is how it works!

The HE 5750 and HE 5760 are master-slave systems in which the required valve control units are connected to the main control unit (master) via fieldbus according to the system size.

Each valve control unit is assigned to a filter chamber locally and technically. This flexible concept can be adapted to almost any desired number of filter chambers and valves. This means that the system can be customised and pre-assembled right down to the valve pre-assembled right down to the valve connector.

This reduces commissioning times and costs considerably. Support is provided through remote diagnosis and maintenance via modem connection (remote access) (HE 5750).

The fact that the cabling between the components is limited to a two-core bus cable and a mains cable means that the cleaning system can be installed cost-effectively and with little effort. The controllers and valve control units are supplied in a metal wall-mounted cabinet with protection class IP54 (optionally IP65), depending on customer requirements.

Further detailed information such as technical data or versions can be found in the respective data sheets on our website
www.hesch-automation.com

1 MASTER-Main control unit
HE 5750
HE 5760

2 SLAVES
HE 5724 (for HE 5750)
HE 5725 (for HE 5760)

Process control technology

Parallel-Interface

Fieldbus communication

CAN

Compressed air supply

Central shut-off valve

System pressure

Master

Local Control

Remote-PC

SmartTool

Damper control unit additional I/O

Slave

Slave

Tank pressure

Dust

Dust

Volume flow

Central dust sensor

Differential pressure

3 **Damper controller**
(Up to 16 flaps, HE 5750)

4 **Pressure sensor** HE 1149
Dust sensor PFM 13 C

5 **Differential pressure measuring transducer** HE 5409 / HE 5411 / HE 5422 MR

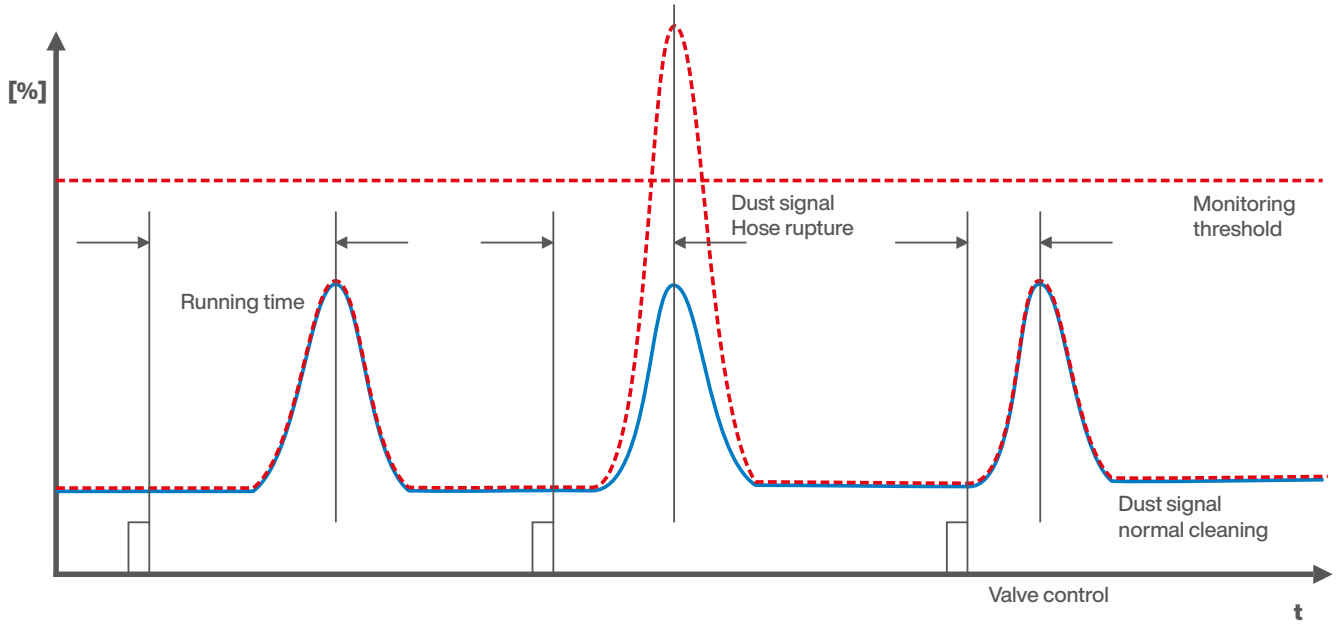
Particularly clever – the detection of hose ruptures

For this reason, the HESCH controllers in addition to comprehensive monitoring of the cleaning valve function automatic hose rupture monitoring integrated. This requires an optional central dust sensor, which is mounted to the clean gas duct at the filter outlet and controls the dust load of all chambers.

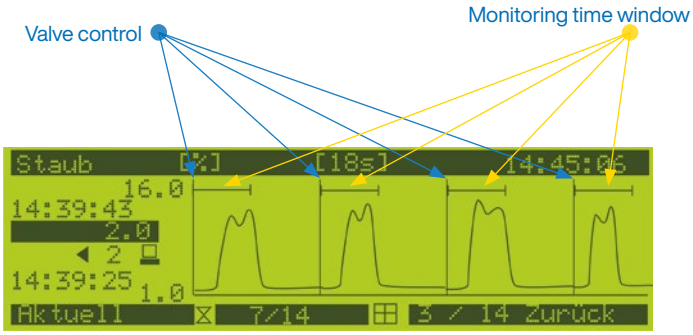
The process also requires a signal for the value of the volume flow. This can be supplied either as a current signal with 4...20mA from a measuring transducer or via the existing Profibus-DP interface. The controller can then calculate the current gas velocity from this value.

If the volume flow in the filter is not varied, a constant (max.) value can also be used as a parameter. In addition, the distances between the individual filter chambers and the dust sensor must be determined once as constant parameters and entered into the control unit before the monitoring function is commissioned.

From the combination of the gas velocity with the distance of the individual chambers to the dust sensor, the control unit calculates the time and the respective length of the monitoring window for each individual chamber.



The control unit also ensures that the individual monitoring windows do not overlap and modifies the pause between the cleaning cycles accordingly.



Immediate indication of the qualitative dust content during cleaning in the display

If, during the monitoring phase, one of three freely defined limit values for the dust load is exceeded, the control system automatically assigns this event to the respective chamber and triggers the corresponding reaction (e.g. an error message, an alarm or a system switch off).
Thus, not only is error-free operation guaranteed at all times, but in the event of a hose rupture, a message is also generated immediately with the exact position of the damaged hose row.

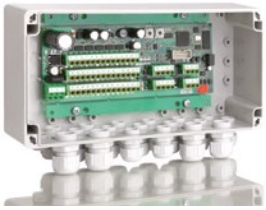
This significantly **minimises the time** required for locating adefective filter bag.

HE 5750 – Cleaning control for bag filters

The system components in comparison

	HE 5760	HE 5750
Number of valve outputs	12 ... 576	768 (24 chambers with 32 valves each) 1024 (16 chambers with 64 valves each)
Valve extension	Valve control unit HE 5725 with 12 valve outlets	Valve control unit HE 5724 with 32 valve outlets
Damper control	-	Damper control unit HE 5740
Control shut-off valves Pressure tank	-	yes
Display + operation	Graphic display - illuminated keys (external)	Graphic display - illuminated keys (external)
Differential pressure measurement	external, 4 ... 20 mA (option)	external, 4 ... 20 mA (option)
Dust monitoring	via max. 1 dust sensor	via max. 3 dust sensors
Volume flow determination		0 ... 100%
Valve diagnosis electrical	yes	yes
Ventildiagnose pneumatisch	with pressure sensor (option)	with pressure sensor (option)
Pre-pressure control	-	yes (using Delta-p and pressure sensor)
Volume flow control	-	yes
Multiple pulse	yes	no
Inputs	Start, stop, post-cleaning, fault acknowledge-ment, remote control, 2 × 4 ... 20 mA	Master: 4 × 4 ... 20mA; 8 × digital inputs, valve control: 4 × 4 ... 20mA; additional inputs via HE 5910
Outputs	Operation, cleaning active, fault	Master: 8 × digital outputs Additional outputs via HE 5910
Communication process control	Profibus DP, Modbus RTU	Profibus DP, Modbus RTU, Modbus/TCP, Parallel Interface
Remote maintenance	-	yes (option)
Service interfaces	USB	RS232
Configuration software	SmartTool	SmartTool
Pause time regulation	yes	yes
Differential pressure thresholds	Δp cleaning, Δp alarm 1, Δp alarm 2	Δp cleaning, Δp alarm 1, Δp alarm 2 volume flow-dependent Δp control
Redundant operation	-	2 × master + switching unit
Housing versions	Control unit panel installation; control unit HE 5725 - each installed in control box	Control unit panel installation; control unit HE 5724 - each installed in control box
Pilot valves	via external pilot valve box HE 5700	via external pilot valve box HE 5700
Supply voltage	24 V DC / 100 ... 240 V AC	24 V DC / 100 ... 240 V AC

Further products & services
can be found online at
hesch-automation.com



MAIN CONTROL UNIT HE 5750 / HE 5760

- Central system control
- Graphic display, illuminated
- Ready mounted in the control box (wall mounting)
- Operation with switch / indicator lights possible
- Preconfigured according to customer specifications
- Completely ready for connection in the switch box

HE 5724 (for HE 5750)

- for 16 or 32 valves
- Metal wall-mounted cabinet (IP55)

HE 5725 (for HE 5760)

- for 12 valves
- Compact housing
- Control cabinet installation

- Control via the master via CAN bus
- Power supply via the master
- Valve function monitoring, tank pressure measurement
- Completely connected and pre-assembled cable with valve plug available

CONFIGURATION SOFTWARE SmartTool

- Saving a main control unit configuration and „duplicating“ a main control unit (replacement control unit) in non-licensed „loader mode“
- Simple and clear editing of parameters
- Simplified commissioning by „simulation“ of the control technology interface
- „Monitoring“ of the process control communication to check the signal exchange
- Generating signal exchange lists from the current configuration

ACCESSORIES: **Δp transducer/controller**

HE 5409 – 4...20mA-output in 2-wire technology

HE 5411 – selectable measuring ranges; Analogue output; LED display (Basic); Relay output (Premium)

HE 5422 MR – with integrated measuring line cleaning, ideal for condensate accumulation or high dust loads

ACCESSORIES: **Sensors**

Pressure sensor HE 1149

- Alloes for pneumatic valve function monitoring
- System pressure, tank pressure 0 ... 6 bar / 0 ... 10 bar
- Connection to valve controller unit HE 5725 / HE 5724

Dust sensor PFM 13 C

- For detecting filter breakthroughs
- Optimised for use with HE 5750 / HE 5760

References

Major project in Dubai with the participation of HESCH

The **world's largest** waste incineration plant for energy generation will go into operation in Dubai in 2024. For cleaning the fabric filters of the 5 incineration lines, one HE 5750 is used for each line.

- **A main control unit in the electrical cabinet,** which communicates via fibre optic technology (FO) with the process control
- **12 slaves HE 5724**, which control 13 valve rows (156 valve rows in total)
- **One damper control** for 12 dampers
- **One dust sensor** on the clean gas side
- **13 HE 1149 pressure sensors** for recording system and tank pressure
- The control system supplies values for volume flow and differential pressure to the HE 5750
- **12 temperature sensors** for recording the chamber temperature and forwarding it to the control system

A **special feature** is the **integration of dust hopper** level monitoring for each chamber, which closes the chamber flaps when triggered.

FACTS ABOUT THE PLANT:

- **5 lines for domestic and industrial waste**
- **Max. throughput per line 47t/h - approx. 5.600 tonnes of waste per day**
- **Thermal line 124 MWth per line**
- **Mass flow of steam of 160t/h per line at 77bar and 432° C**
- **Exhaust gas volume flow 220.000m^3/h per line**
- **Supplies electrical energy for approx. 135.000 households - 193 MWel**

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„We are delighted to participate in this flagship project for environmentally friendly energy generation with our state-of-the-art cleaning control systems“

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