

PDC

ENERGY SAVING

IN INDUSTRIAL CENTRALISED AIR VENTILATION SYSTEMS

Traditional industrial air extraction systems make use of a big central extractor fan and a piping system connecting each station to the fan.

Industrial extraction is used all over the world in companies in which dust, fumes or mist are generated, such as metalworking, woodworking, food and pharmaceutical industries.

The systems are designed to allow extraction from all the machines installed at the same time, without distinction if the single machine is actually working or in stand-by.

The fan is calibrated on the base of an overall extraction capacity (100% or 75%) of the entire system.

However, the real data of the factories show that usually less than 50% of the workstations or machines work at the same time at a given moment and that therefore 50% of the machines do not produce dust (fumes, mists); despite this fact, the extraction continues to be 100% active.

The concept behind the MasterWeld MW11 PDC system (Process Data Control) is simple: provide the

extraction system with a sensor that detects when and how much extraction is needed without any need for other sensors, motorised shutters or wiring to each station.

Thanks to the MasterWeld MW11 PDC, the extraction system is completely automatic and autonomous in managing the energy consumed and allows maximising ENERGY SAVING in every situation.

Our MasterFlex suction arms are standard equipped with a butterfly shutter that allows the user to open or close the intake air flow autonomously and with extreme ease and speed.

When the shutter on the arms is closed, the volume of air drops but the pressure inside the ducts increases, then the PDC automatically "reacts" to this new configuration and immediately reduces the fan revs and the energy absorbed by decreasing the air flow at an ideal value for all the other workstations that are actually working.





Example of centralised extraction system with PDC.

HOW IT WORKS

Each work station is equipped with a shutter.

The PDC continuously receives information on the air pressure to determine the appropriate revolutions (speed) of the fan and, if necessary, reduce the energy absorbed by the extraction system.

PDC

The PDC is equipped with a PLC, a display, an inverter and many other components that are the heart of the system.

The function of the PDC, in addition to its main function of regulating the speed and power of the fan, includes managing the thermal overload of the motor, energy saving operation, and various other features.

It includes very advanced control and monitoring systems, providing the ability to have all the system operating data at hand, including the electrical power saved.

The system is also equipped with an auto-setting mode, developed by our R&D department.

It consists of a completely autonomous, simple and fast commissioning mode.

The installer or the service center will only have to follow the instructions on the display and will be guided in the initial setup of the system without needing aid of any tools.

The auto-setting mode lasts about 60 seconds and then the system is immediately ready to work.



ADVANTAGES

1) Savings in energy absorbed up to 75%, without jeopardising the extraction capacity.

2) Savings in heating. The PDC reduces unnecessary air intake and avoids extracting air from the previously heated room, thus reducing the waste of heating energy.

3) Saving in air conditioning. The PDC does not suck in air in excess of that actually required by the production processes, reducing the expulsion of cooled air during summer.

4) Saving of acoustic pollution. The PDC reduces the air speed in the ductwork, reducing the sound impact of the extraction system. The work environment will therefore be more pleasant and less noisy.

Furthermore, we supply a series of dedicated filters for all kinds of pollutants. These filters, integrating with the PDC, allow scheduled and predictive maintenance, avoiding unnecessary downtime and allowing maintenance and / or replacement of filters only when really necessary.

Example of Cost Saving:

If your extraction system is equipped with a 15kW motor and you work normally 8 hours a day and 5 days a week, you will achieve an approximate monthly electricity cost saving of £2,640.

With the PDC you can start immediately to save up to 50% of electric energy, thus also reducing the indirect and hidden costs of processing.

