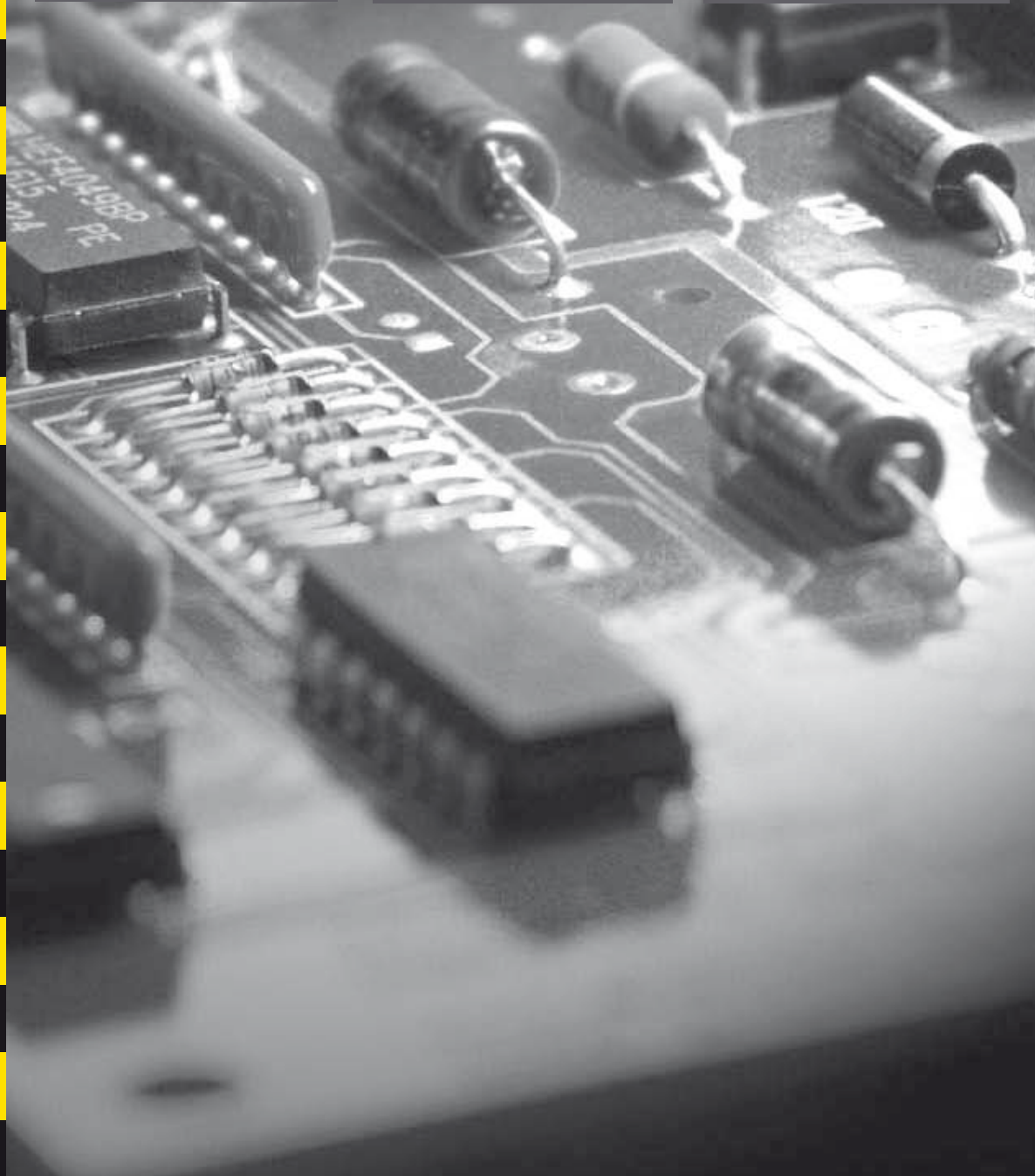
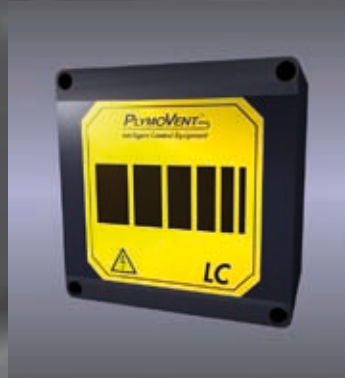


Intelligent Control Equipment

System solutions for Industrial applications





The right control equipment for every application.

PlymoVent can offer the best control equipment solution for every application. It doesn't matter if it's for the one man shop or for the big workshop, we can supply an outstanding solution for every case.

Why control equipment?

Global warming and the increases in energy consumption worldwide have brought new concerns over airborne pollutants. For manufacturing companies, expensive electrical bills are a concern in a competitive global environment where increasing costs is a disadvantage. Reversing this negative trend requires using available techniques in an intelligent way. PlymoVent has a range of control equipment that enables you to substantially lower your use of electricity and overall energy consumption. Systems range from simple manual controls to fully automatic, state-of-the-art control panels. Investing in a PlymoVent control system is investing in the environment and in your competitive future. In this folder you can read about how our controls work and operates in different systems.

What can be achieved?

The most apparent benefits when using PlymoVent control equipment.

- ▶ **Simplicity**
Manual starters are a simple and cost effective way to operate smaller systems.
- ▶ **Automatic operation**
When installing automatic control equipment you don't have to worry about turning the system on or off the system will do it automatically when it needs to.
- ▶ **Energy savings on heating and power consumption**
A smaller fan with less power consuming can do the same job as a bigger one when using energy saving equipment. A smaller fan will also save you money by only extracting heated air when it's needed. Global awareness also calls for any energy savings possible.
- ▶ **Flexibility**
PlymoVent can customize your system to meet your needs.
- ▶ **Cheaper duct-, mechanical- and electrical installation**
Smaller filters, fans and duct make the total installation easier, faster and cheaper.
- ▶ **Better working environment**
Lower noise levels thanks to automation, fans only running as much as, or when, needed.
- ▶ **High efficiency at any given time**
Correct air volume at each extractor when you need it.

The equipment we use



ECMSO

Motor starter with built-in motor protection.



S-100/SK-300

Switch box positioned on extraction arms. To manually control motordriven damper and/or fan start.



SA-24

Fan Starter to manually operate a local or central fan. Activated by hood switch.



MCC-05

Inductive welding sensor. To activate motordriven damper and/or fan start. To be used with ICE-LC.



AD-160 (160mm)

Motorised damper 24V. Available in sizes 100-400 mm. Running time 8 seconds.



ICE-LC

Local Controller to operate a motorised damper. Built-in delay time.



ES-90

Fan Controller to automatically operate a local fan. Built-in delay time. Includes MCC-05. Can be operated manually.



M-1000

Fan Controller to automatically operate a central fan. Built-in delay time.

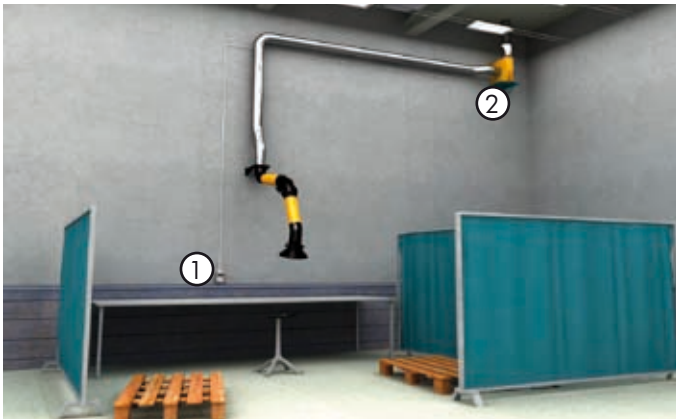


DCV/TG

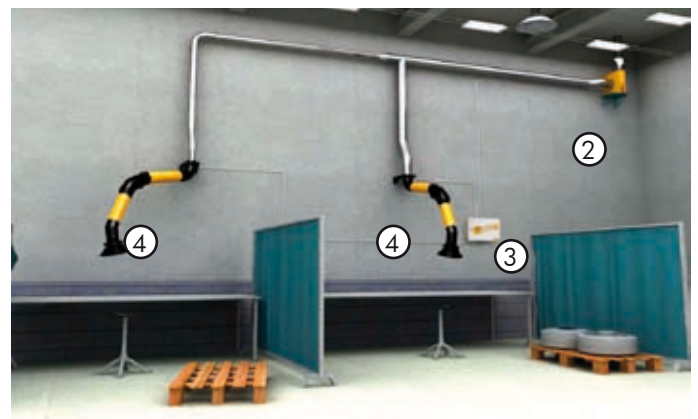
Inverter and pressure transmitter for demand controlled systems.

Manual controls

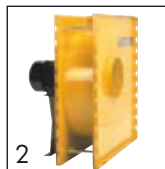
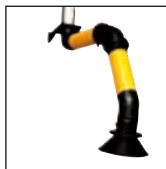
Suitable for small workshops with low frequency use where a manual operation of the extraction system can be acceptable. The fan is turned on and off manually.



Extraction arm, ECMSO fan starter and FUA fan.



Extraction arms, hood mounted switches, fan starter SA-24 and TEV fan.

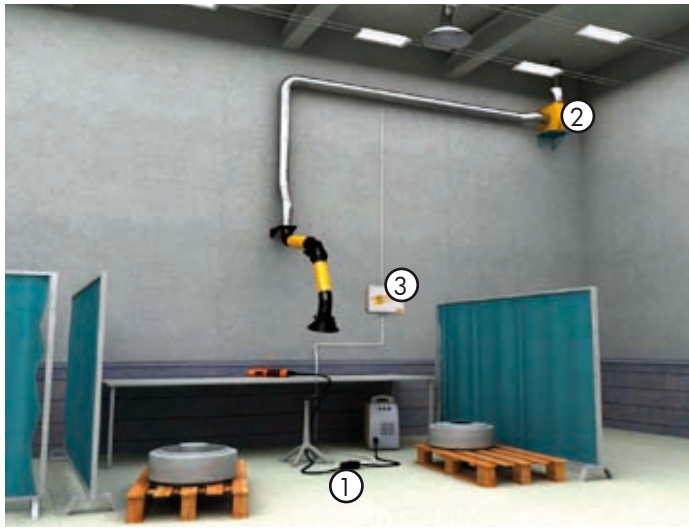


The motor starter ECMSO is recommended if you have an extraction arm and a fan that you would like to operate manually. The ECMSO starter has built-in motor overload, available in several amperage ratings. With the fan starter SA-24 you control the fan and working light from a switchbox conveniently positioned on the hood of the extraction arm. The fan will run as long as any of the fan switches on the extraction hoods are on

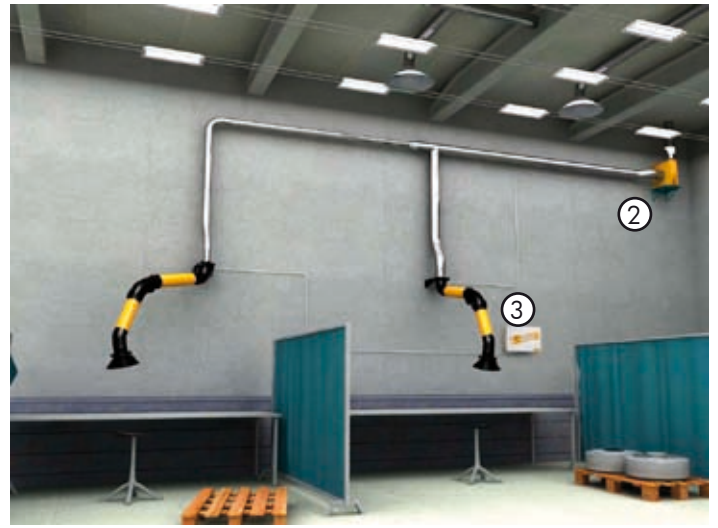
- ▶ Manual operation
The fan is switched on and off manually.
- ▶ For small workshops
This solution is suitable where only a few extraction arms are installed.
- ▶ For low frequency use
Suits application where the frequency of use is low.
- ▶ Simple operation
Easy to use and install.

Automatic controls

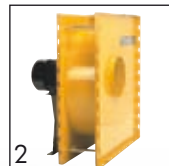
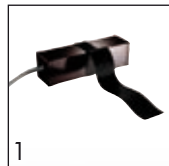
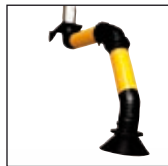
Suitable for small or medium sized workshops with low to medium frequency use where an automated control of the extraction system is desired. A sensor that detects electrical welding such as stick, Tig or Mig/Mag welding, or for gas welding a light sensor, activates the fan when welding is in progress. An adjustable after-run time will allow the fan to run to take care of any residual smoke



Extraction arm, a Fan Controller ES-90 activated by a welding sensor MCC-05 and TEV fan



Extraction arms, a Fan Controller ES-90 activated by dual welding sensor MCC-05 and TEV fan.

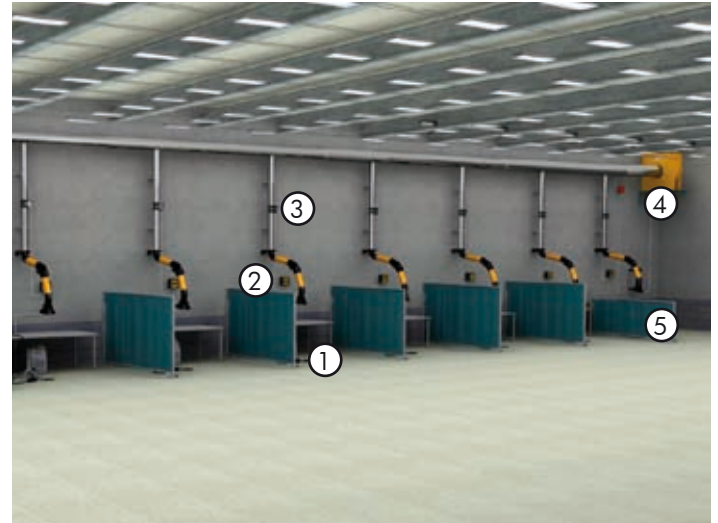
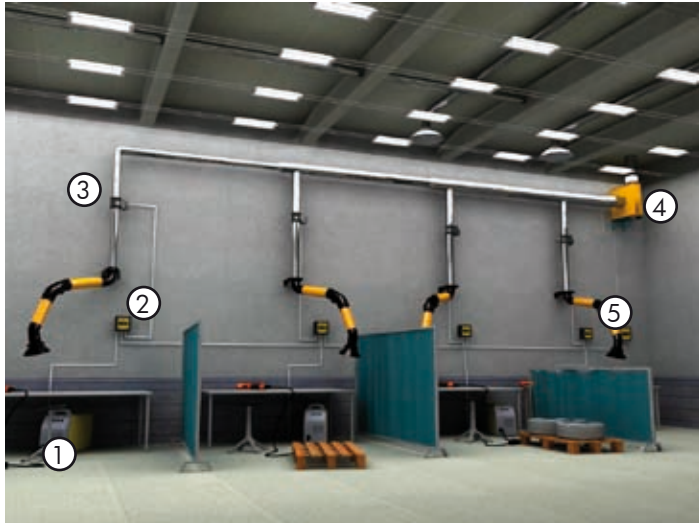


The welding sensor (MCC-05) will detect when welding is in progress and activates the Fan Controller ES-90. This means that the Fan Controller ES-90 starts the extraction fan automatically when welding starts, and then stops it after welding has stopped. The after-run time to capture residual smoke is adjustable. This solution gives an automated function, and savings of energy and money, the improved noise quality in your workplace is an extra bonus

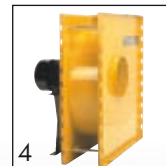
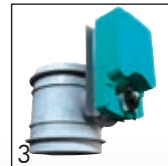
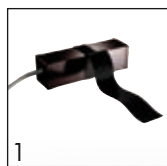
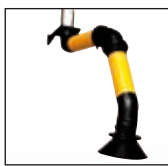
- ▶ Automatic operation
The fan is switched on and off automatically when either extraction arm is used.
- ▶ For small to medium sized workshops
Suitable for workshops with 1-3 workplaces.
- ▶ Medium frequency use
In applications where the extraction arms are used on a daily basis.
- ▶ Cost savings
Savings on extracted heated air and fan power consumption thanks to automation.

Automatic controls with energy saving functions

Suitable for medium sized workshops with medium to high frequency of use, where an automated control of the extraction system is desired. A sensor that detects electrical welding such as stick, Tig or Mig/Mag welding, or for gas welding a light sensor, opens the local motorized damper and activates the fan when welding is in progress. Adjustable after-run time will make the fan run to take care of any residual smoke. The system will shut down when the last local controller has closed the motorized damper



Extraction arms, Local Controllers ICE-LC with motorised dampers AD-160 and welding sensors MCC-05. A central TEV fan operated by a Central Fan Controller M-1000.



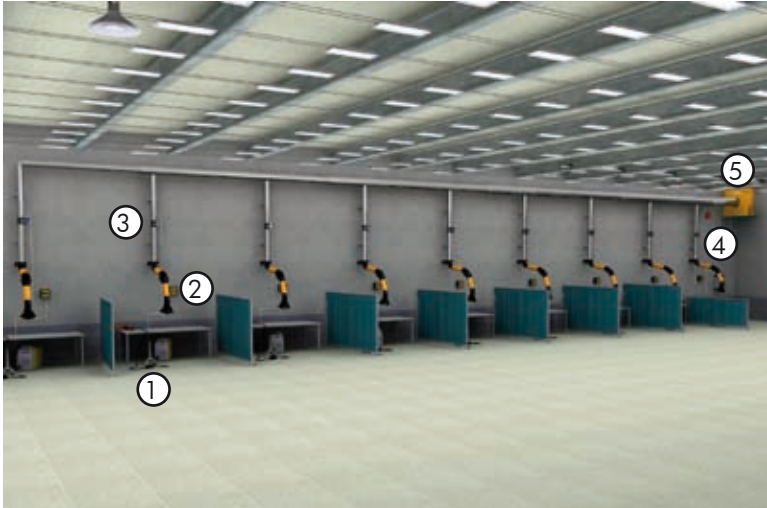
The welding sensor (MCC-05) will detect when the welding starts and activates the automatic damper ICE-LC + AD-160. At the same time, the ICE-LC signals to the central fan controller M-1000 to start the central fan. The fan capacity can often be downsized up to 50% by the use of automatic dampers. This gives big savings of energy and money, and improved noise quality in your workplace.

- ▶ Automatic operation, local and central
The local extractors will open and the central fan starts when the welding operation starts.
When the welding stops the local extractor will close after the delay time and the central fan will stop after the last local extractor has closed.
- ▶ For medium sized workshops
Suitable for workshops with 3-8 workplaces.
- ▶ Medium to high frequency use
In applications where the exhaust extractors are used regularly on a daily basis.
- ▶ Cost savings
Down sizing of fan and duct system.
Savings on extracted heated air and fan power consumption thanks to automation.

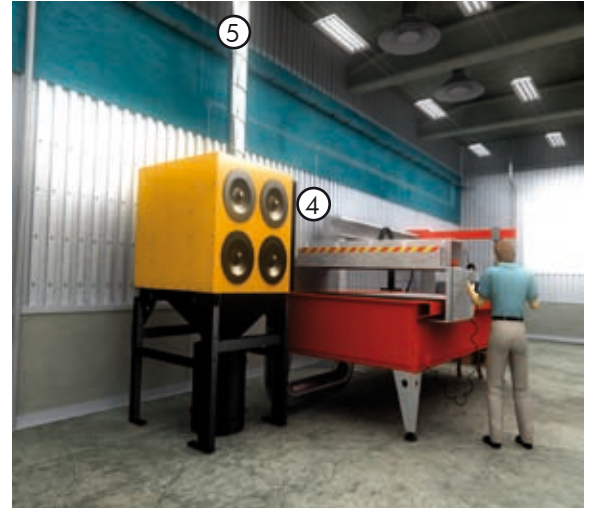
Fully automated with on demand controls

Suitable for medium or big sized workshops with high frequency use. The system will automatically monitor and adjust the air volume needed depending on how many workplaces are being used at any particular time.

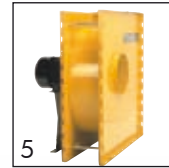
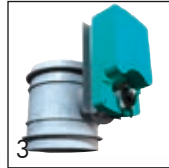
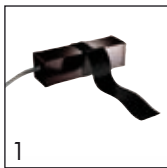
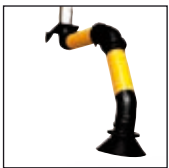
This system will also automatically adjust to increasing pressure drop in mechanical filters and maintain the air volume performance at each fume extractor. The process can also be used to maintain constant air volume in mechanical filter systems.



Extraction arms, Local Controllers ICE-LC with motorised dampers AD-160 and welding sensors MCC-05, DCV/TG controller and TEV-fan.



Cutting table, MultiDustBank filter, DCV/TG controller and TEV-fan gives constant air volume over filterlife.



The welding sensor (MCC-05) will detect when the welding starts, and activates the automatic damper (ICE-LC + AD-). When the damper opens, the system pressure set point will fall, and the pressure transmitter will signal to the DCV- Controller to increase the fan rpm to reach the set point. At an adjustable time after the welding stops, the automatic damper will close, and the duct system pressure will increase above the set point. The pressure transmitter detects this, and signals to the DCV-Controller to reduce the fan rpm until the set point is met. The system will constantly monitor how many automatic dampers are open and run capacity on demand. The fan capacity can often be downsized up to 50% by the use of automatic dampers. This gives a dramatic saving of energy and money, and improved noise quality in your workplace.

- ▶ Fully automatic operation on demand
The local extractors motorised damper will open when welding starts and the DCV/TG controller will monitor and run the fan as much as needed at any particular time depending on how many extractors are being used, and also compensate for increasing filter pressure loss automatically.
- ▶ For big workshops
This solution is most suitable for workshops with 5 or more workplaces.
- ▶ High frequency use
In applications where the extractors are used regularly on a daily basis.
- ▶ Saves money, power and energy
Down sizing of fan and duct system.
Savings on extracted heated air and fan power consumption thanks to automation.
- ▶ Improved working environment
Fans will only run as much as needed.

Case Study

Customer

IPP, Industriell Plåt Produktion in Lyrestad, Sweden

Problem

The welding shop had 50 work stations creating lots of dangerous welding fumes. The customer also needed to reduce the heating costs for the building.

Solution and how we did it

The welding smoke is collected at source via extraction arms KUA, MSA and FlexMax, depending on the work station. Each extractor has an automatic damper which opens only when welding is in progress, and by this the total air volume capacity can be down sized. A delay time on the automatic damper will take care of residual after smoke. The DCV controller will run the fan capacity according to the actual demand at any given time. The collected welding fumes (also some ambient air intake) are filtered in a MultiDustBank cartridge filter, and in this case extracted to atmosphere via a heat exchanger to collect the energy in the heated extraction air.

PlymoVent equipment supplied:

KUA-, MSA- and FlexMax arms in total of 50 pieces.

Automatic dampers with welding sensors, ICE-LC, AD-160 and MCC-05 on each extraction arm. DCV-controller and TG- pressure transmitter.

One 22,5 kW fan. Modular MultiDustBank filter with 48 polyester cartridges and pressure activated filter cleaning.



Energy saving calculation

This example shows an application in Helsinki, Finland where the energy cost can be reduced by 50%!

System facts:

* Average winter temperature -2,2°C degrees and average summer temperature is 11,7°C

* 12 extraction arms

* 1000m³/h each arm

* 16 working hours per day

* 220 working days per year

* Usage rate set to 50%. The system usage rate can be reduced to 50% thanks to control equipment so that the extractors are only open during arc time which is normally 10-25% of the working hours.

* 100% supply air

* Inside temperature 19°C

If we run this size system 100%, the power for the electric motor and the heating cost would be approximately 10,000 Euros per year.

When we on the other hand install intelligent control equipment and on demand controls, the running cost can be reduced by half to 5,000 Euros.

This is how the calculation sheet looks.

Energy Saving Calculation

Quick guide

City	System	Average temp. Winter -2,2 °C	Cost for ...	At source extraction
Finland, Helsinki	Heating	Average temp. Summer 11,7 °C	Heating	8 379
Finland, Jyväskylä	Cooling	KwH, Heating 0,04 EUR	Fan electricity	1 690
Finland, Jomantsi	Heating & Cooling	KwH, Electricity 0,05 EUR	Total	10 069 EUR
Finland, Jyväskylä				
Finland, Järvenpää				
Finland, Kuopio				

Number of extraction points	Air volume per extraction point		Cost for ...	At source extraction with DCV
12 units	1000 m ³ /h		Heating	4 189
			Fan electricity	844
			Total	5 033 EUR

Working hours / day	Working days / year		Solution 1 less Solution 2 = Savings	
16 h	220 days		Heating	4 190
			Fan electricity	846
			Total	5 036 EUR

Solution 1 At source extraction	Solution 2 At source extraction with DCV
Extraction with hoods	At source extraction with DCV
At source extraction	At source extraction with filtration
At source extraction with DCV	At source extraction with filtration and DCV

Make your own energy calculations at www.plymovent.com



MultiDustBank, TEV fan and DCV/TG-controller connected to a cutting table

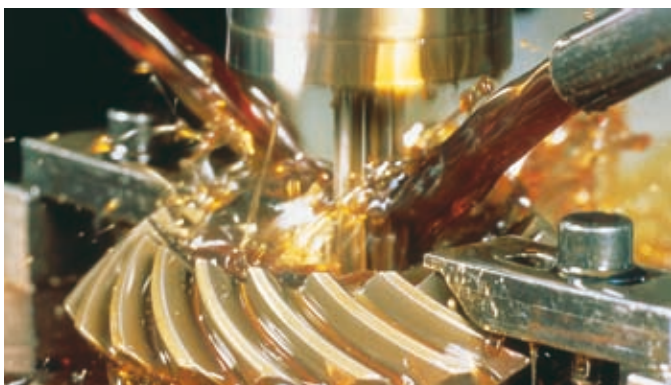


KUA extraction arm, ICE-LC with AD-160 and MCC-05 on a manual welding station



Products within the Industrial line

- Extraction arms in many diameters and lengths.
- Oil mist filters for the metal working industry.
- Mechanical filter for dry fumes and dust, disposable or self-cleaning models.
- PlymoVent offers a range of central fans as a complement to your exhaust system.



At source capture - Intelligent process ventilation

Our mission is to protect people all over the world from airborne contaminants. We have developed a unique technology to capture the pollution directly at the source, instead of allowing it to spread into the local environment. A more intelligent ventilation solution that gives you a safe and healthy working environment for your employees - and minimal investments and energy consumption

For more information, visit us at www.plymovent.com.

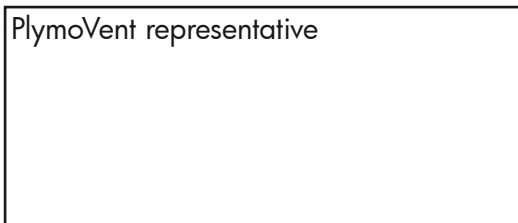


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