

Fan Optimiser. Less energy, more comfort.

> We set standards.

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5
year warranty
SWISS QUALITY



MP-BUS
TECHNOLOGY BY BELIMO

Fan control based on demand.

Thanks to the new Belimo Fan Optimiser, fans can in future be controlled based on demand according to the damper positions of the downstream VAV units. Supply pressure regulation – presently the standard method – can thus be dispensed with and fan energy consumption cut by as much as 50%. Costs will be cut substantially and the convenience for users increased.

Unnecessary energy consumption

Until now, constant regulation of the fans has ensured that even the most inaccessible VAV unit receives sufficient supply pressure. Since the remaining units are provided with too much air as a result, they have to eliminate the excess pressure by closing the dampers. This means noisy operation, inferior control characteristics and a lot of unnecessary energy consumption.

Demand based system solution

Belimo MP technology allows fan output to be selectively controlled based on actual demand. The actual damper positions of the VAV controllers and the demand signals of the room temperature

controller are transferred to the COU24-A-MP Fan Optimiser via the MP-Bus. They are then passed on to the fan control.

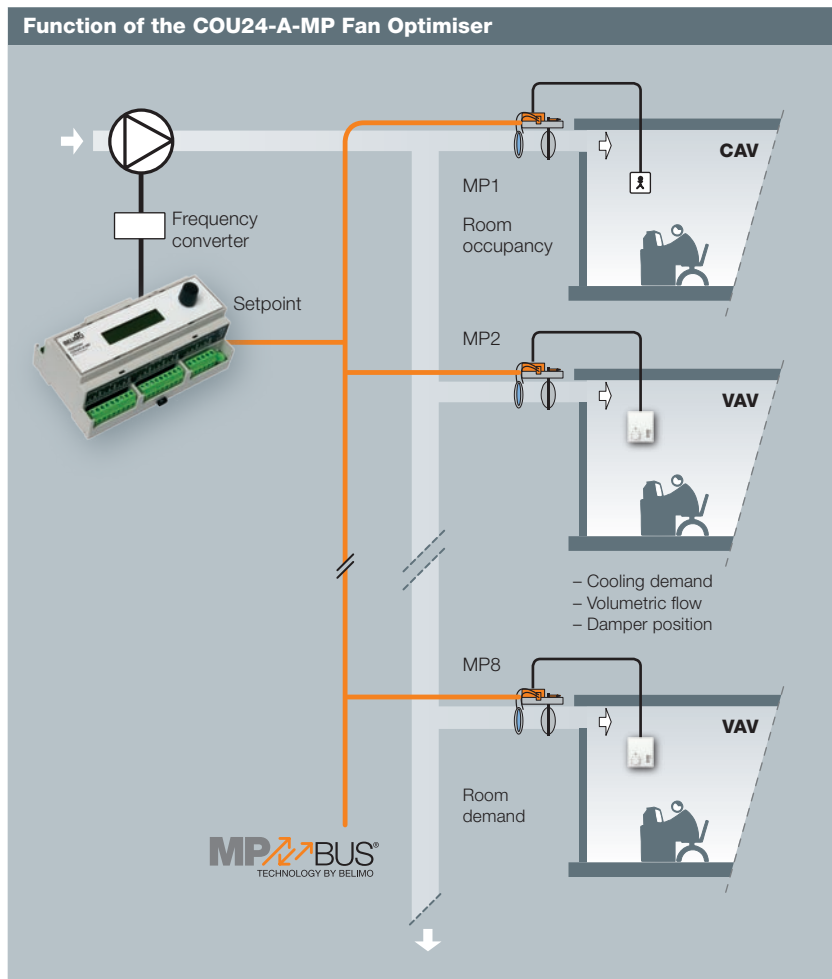
Energy and cost savings

The massive energy savings are a practical way to achieve better values with regard to the new EU energy efficiency directives. By additionally doing away with the costs for the pressure regulation system and significantly reducing wiring expenses through networking via the MP-Bus, this solution guarantees rapid payback – in new, retrofitted or renovated systems.

BELIMO[®]

Fan Optimiser.

Simple, reliable and instantly efficient.



Where Belimo Fan Optimisers are used

Variable and constant volumetric flow systems in the room ventilation field with fans that are controlled by a frequency converter.

Function

The damper position of each VAV unit is transferred to the Fan Optimiser via the MP-Bus. It is used there as a control variable to facilitate energy efficient operation of the frequency converter controlled fans. The damper which is open the widest serves as a reference.

Advantages

- Fan energy consumption reduced by up to 50%.
- Cost saving because supply air and outgoing air pressure controls are eliminated.
- Reduced flow noise thanks to the lower pressure in the air duct system.
- Automatic compensation of pressure losses due to filter contamination guarantees supply regularity.
- Rapid payback – even in small or medium-sized buildings.
- Flexible system concepts (CAV, VAV or combined CAV/VAV).
- Reduction in cabling thanks to networking via MP-Bus.
- Simple engineering and efficient commissioning thanks to pre-configuration, LCD display and adaptive control characteristics.

Proportionality laws

The proportionality laws form the basis of the volumetric flow transport.

- The **volumetric flow** is proportional to the speed

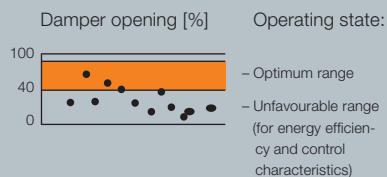
$$\left(\frac{V_1}{V_2}\right) = \left(\frac{n_1}{n_2}\right)$$
- **Pressure increases** change to the second power with the volumetric flow ratio

$$\left(\frac{\Delta p_1}{\Delta p_2}\right) = \left(\frac{V_1}{V_2}\right)^2 = \left(\frac{n_1}{n_2}\right)^2$$
- The **power consumption** changes to the third power with the volumetric flow ratio

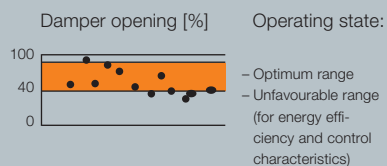
$$\left(\frac{P_1}{P_2}\right) = \left(\frac{V_1}{V_2}\right)^3 = \left(\frac{n_1}{n_2}\right)^3$$

Damper diagrams

Pressure controlled system



Fan optimised system



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