

Efficiency and benefits of direct driven fans



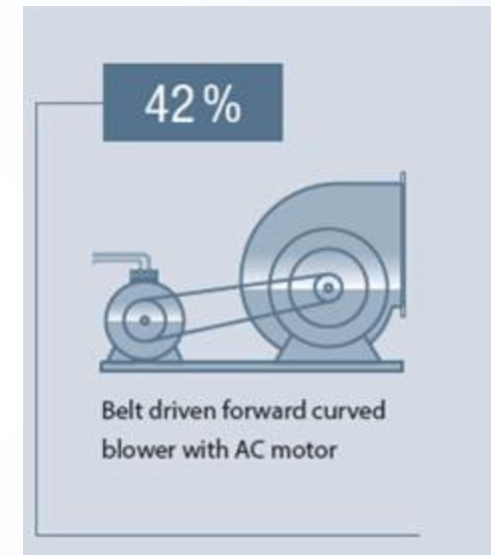
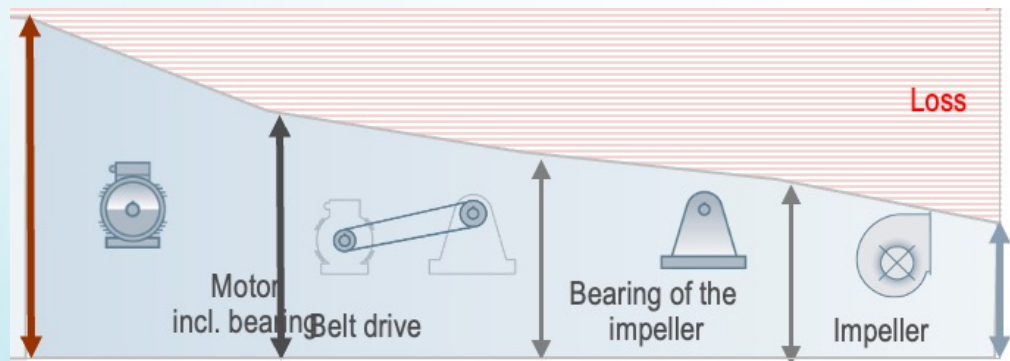
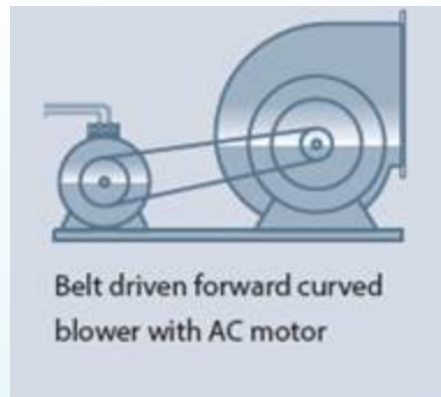
Mr Ramesh Swaminathan
General Manager Sales &
Marketing
ebm-papst

Overview

- Belt driven fans
- Direct driven fans
- Benefits of direct driven fans
- Fan efficiencies

Belt driven fans

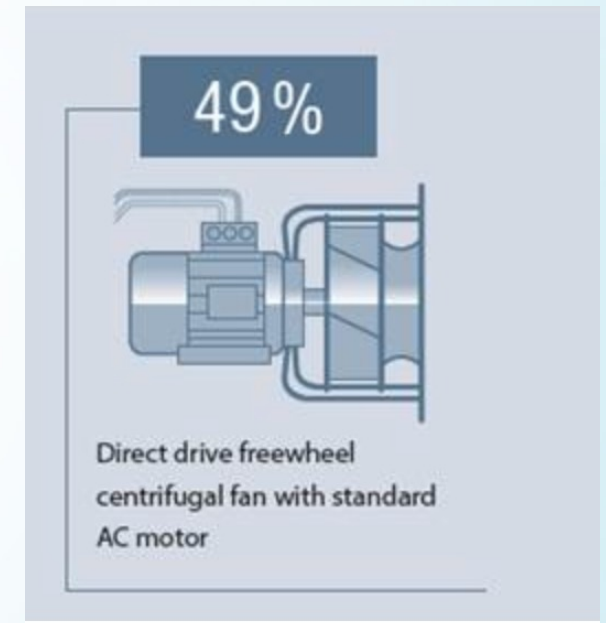
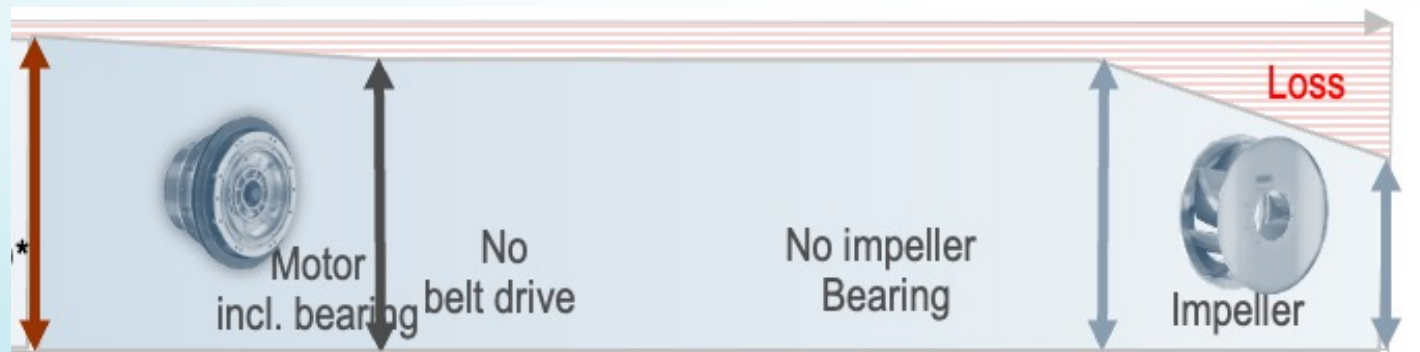
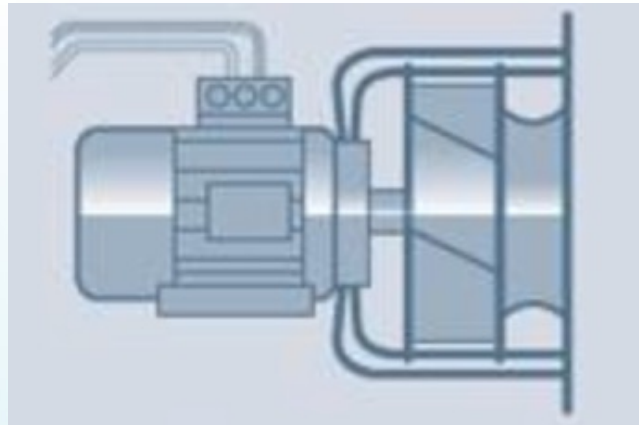
Belt driven fans



- Transmission loss
- Higher maintenance: belt and pulley
- Higher footprint

Direct driven fans

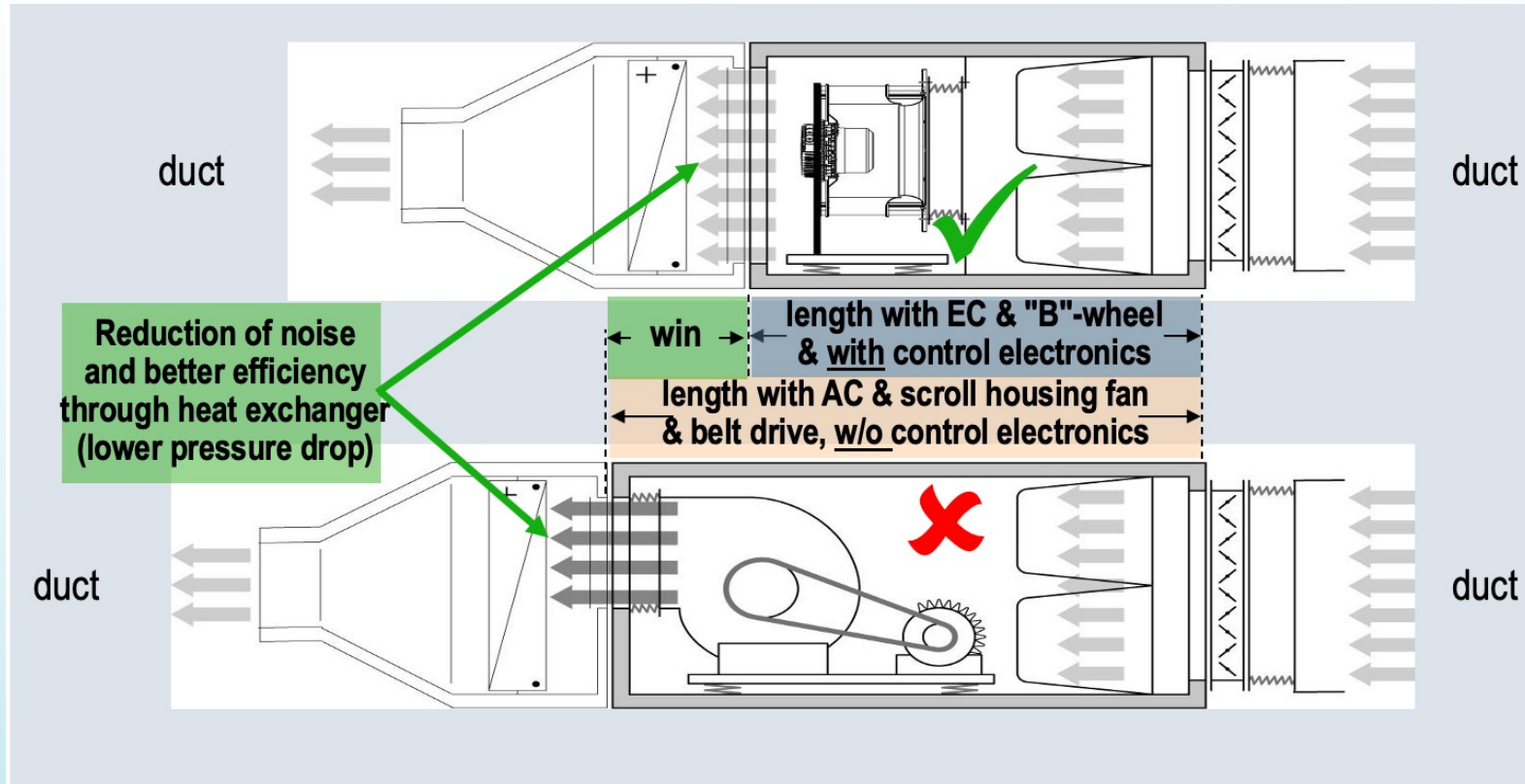
Direct driven fans



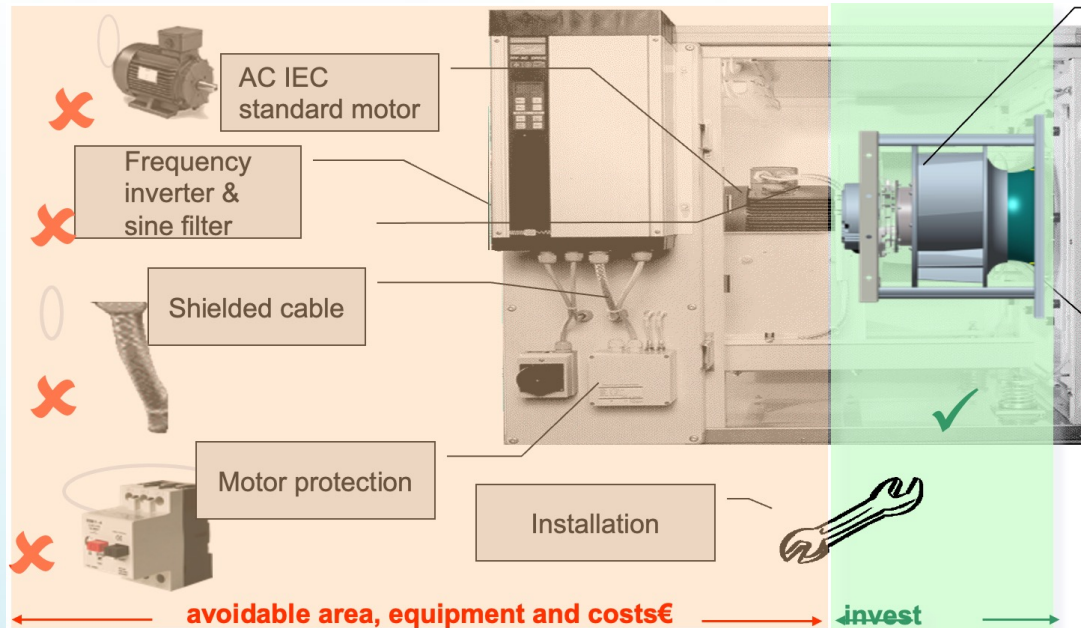
- Relatively lower losses
- Still high losses in the air side

Benefits of direct driven fans

Compactness: Space saving



Benefits of direct driven fans



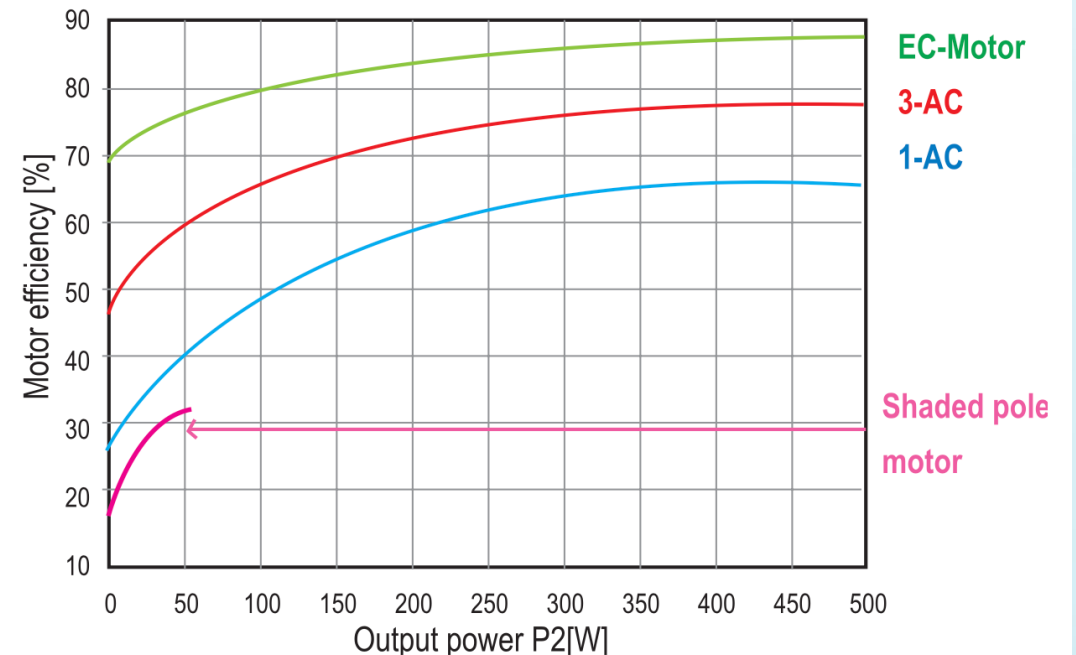
Direct driven fan

- Lower losses
- Better efficiency
- Easy installation (plug & play)
- Space Saving

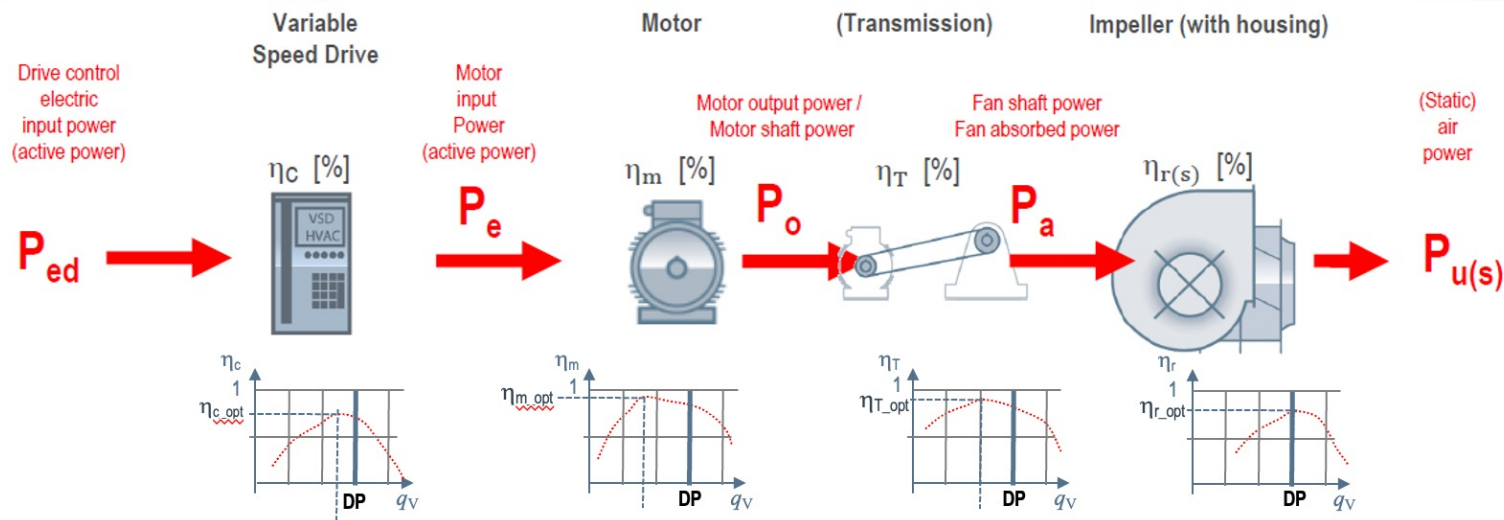
Fan efficiencies

Motor efficiency

$$\text{Efficiency (\%)} = \frac{\text{Output power (Watts)}}{\text{Input power (Watts)}} \times 100$$

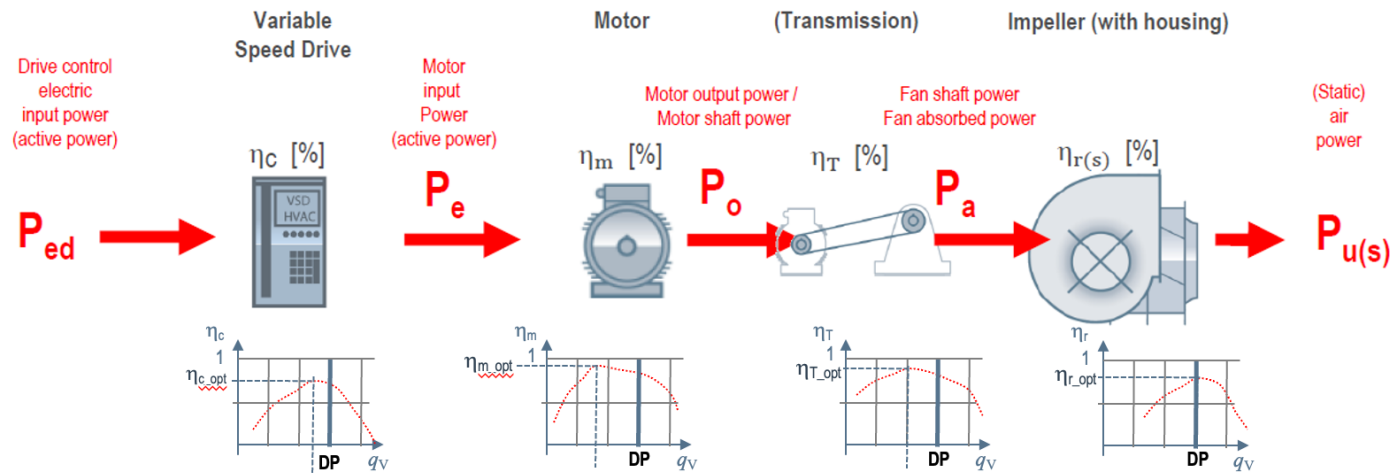


System efficiency



part load data for components are not available!

Wire-2-air efficiency vs. component efficiency



$$\eta_{(static) fan} \neq \eta_{c_max} \times \eta_{m_max} \times \eta_{T_max} \times \eta_{r(s)_max}$$

→ use tested data

ISO standard committee understands that all components bought individually are NOT capable of running in peak rated efficiency (ALL of them at the same time)

THANK YOU

Mr Ramesh Swaminathan
General Manager Sales & Marketing
ebm-papst