

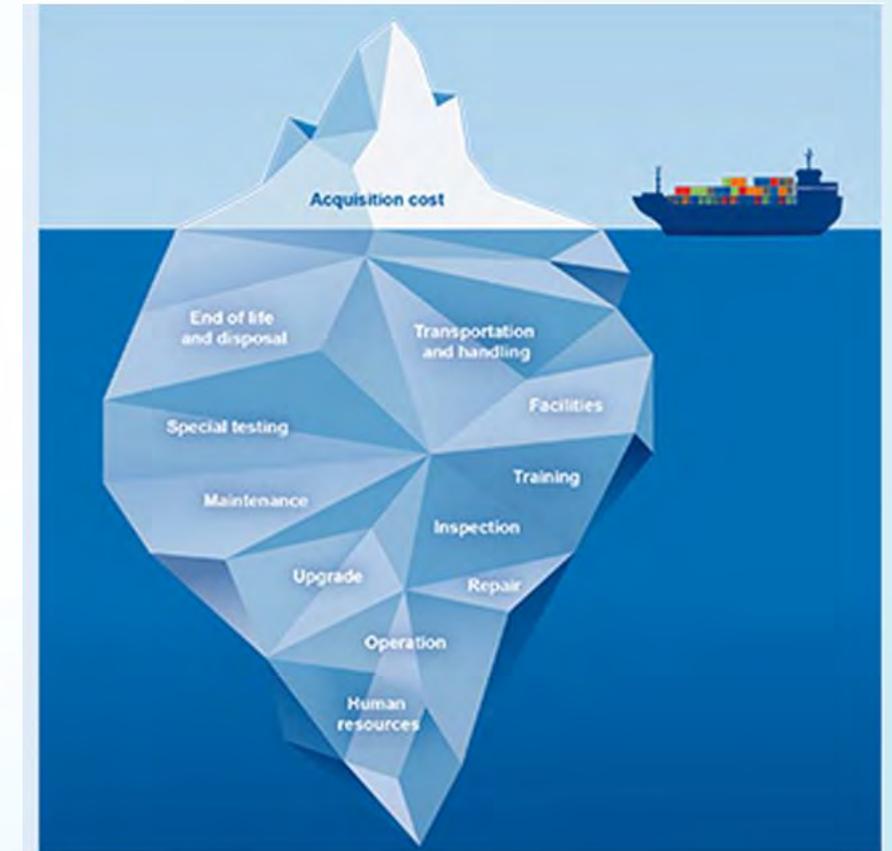
Efficiency and benefits of direct driven fans



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Known facts about HVAC

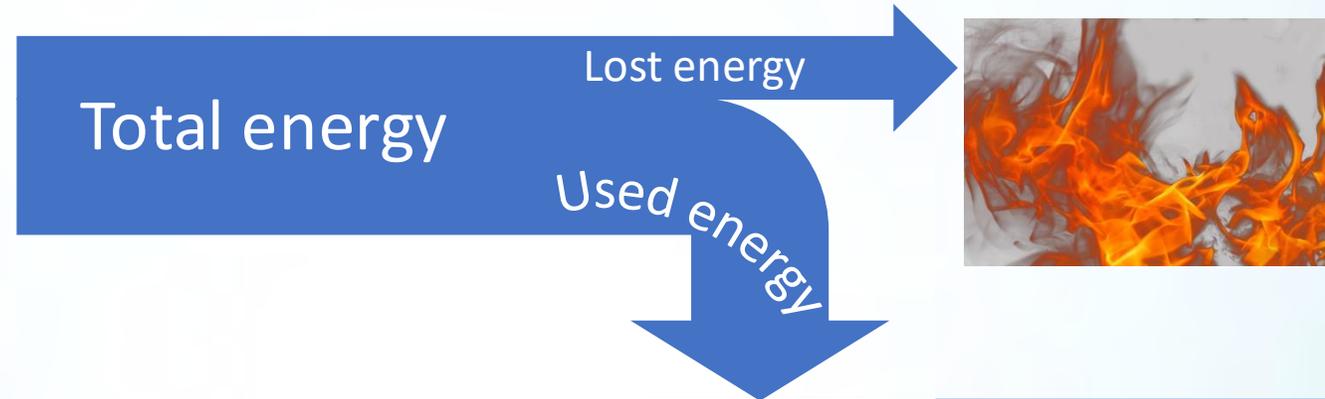
- Air-conditioning / Process Cooling in a building is a major power consumer (~50%) , which includes chillers, airside equipment (**AHU**) and water circulating pumps.
- **Life Cycle Cost** is more **IMPORTANT** compared to the Capital / First Cost.



Efficiency



P_{input}



P_{output}

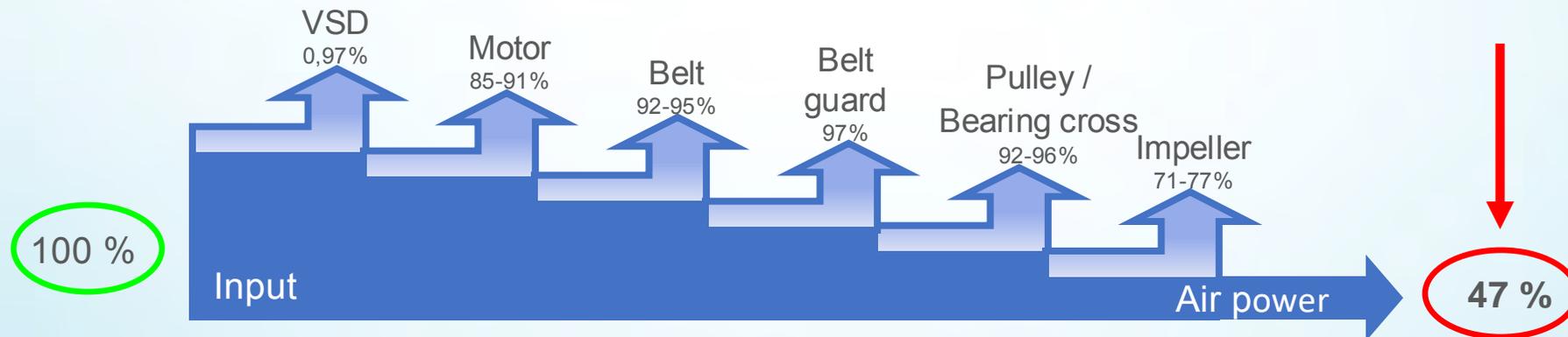
$$\text{(Efficiency) } \eta = \frac{P_{output}}{P_{input}}$$

Applies to every component in a system

Real Efficiency of a DIDW fan (Static Pressure)



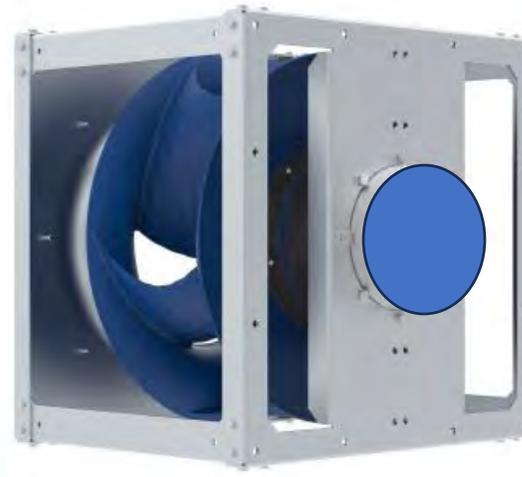
$$\eta_{\text{vsd}} * \eta_{\text{mot}} * \eta_{\text{belt}} * \eta_{\text{beltguard}} * \eta_{\text{pulley}} * \eta_{\text{fan}} = \eta_{\text{sys}}$$



Efficiency of Direct Driven Fans (Static Pressure)

- Less Number of Components
- No Belt = No loss of efficiency and No dust
- No Maintenance
- Compact design = Saves Space

EC Fan with IE5 Motor



Plug Fan with IE3 Motor

$$\eta_{fan} * \eta_{mot} * \eta_{vsd} = \eta_{sys} (> 65\%)$$

EC Technology

EC motor = **Electronically Commutated** motor

What is an EC motor?

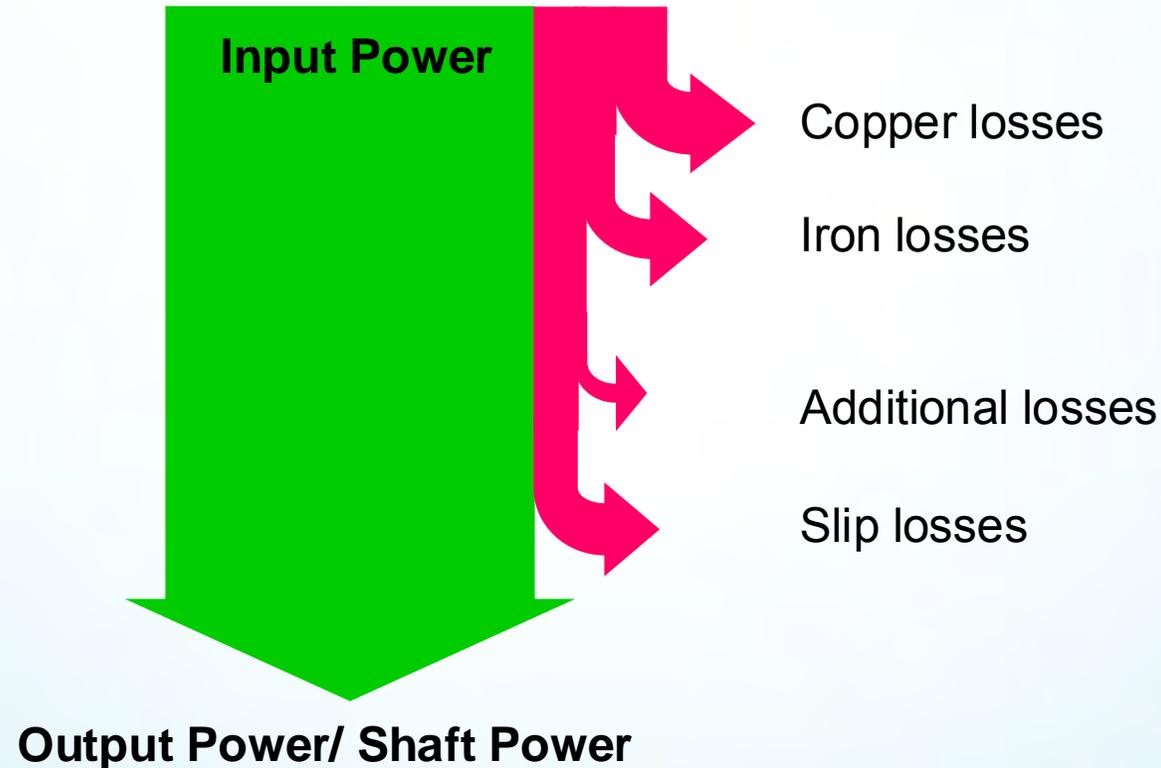
EC motors are

- brushless DC motors, electronically commutated
- permanent magnet motors
- synchronous motors
- speed controlled by an EC controller



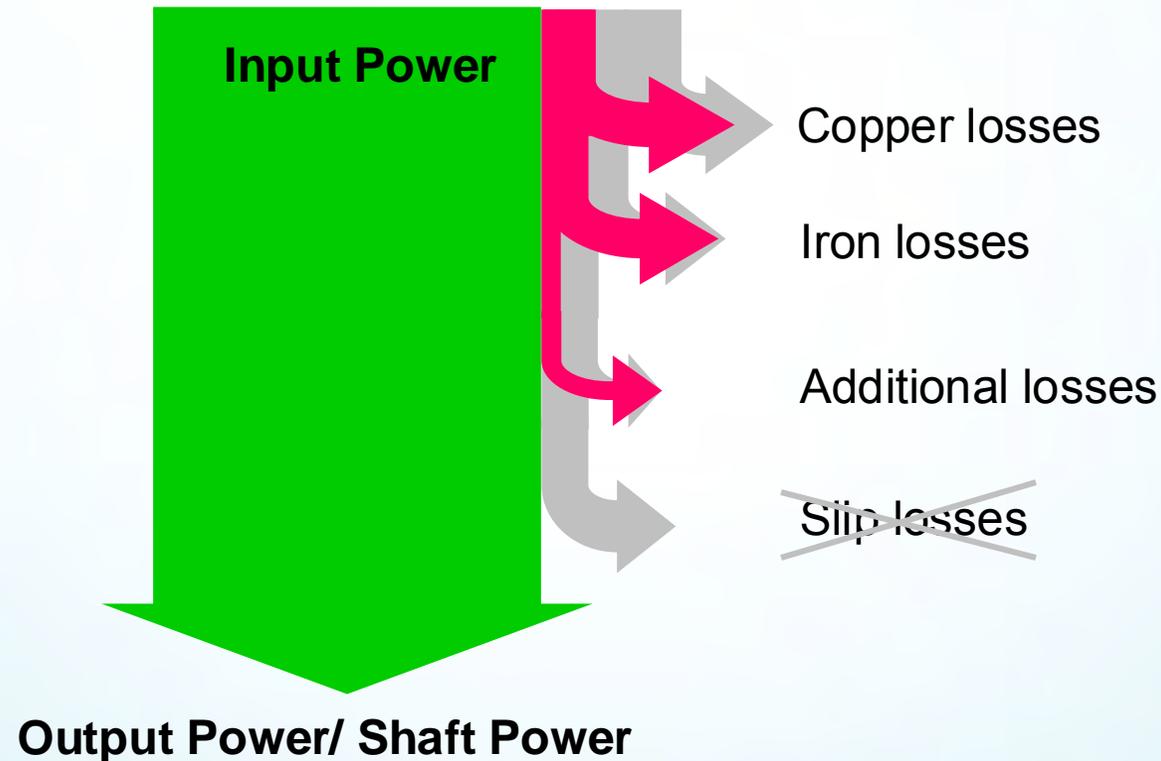
AC vs. EC Motors / Efficiency

Power losses of an AC asynchronous Motor

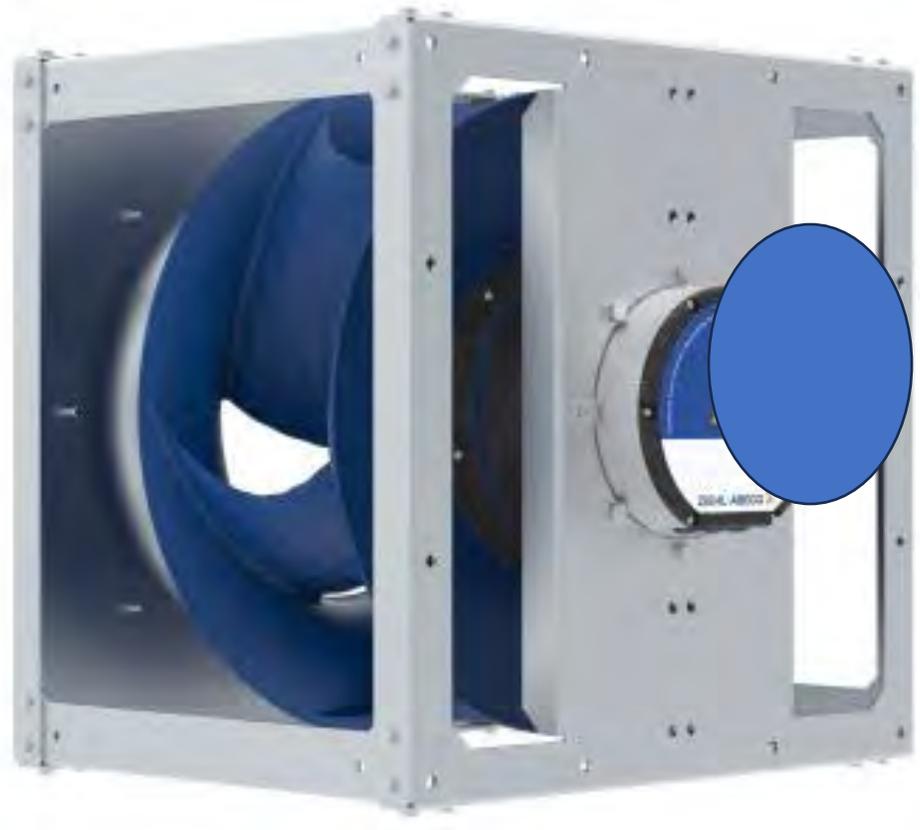


AC vs. EC Motors / Efficiency

Power losses of an EC Motor



EC Fans



Efficient

Simple

Flexible

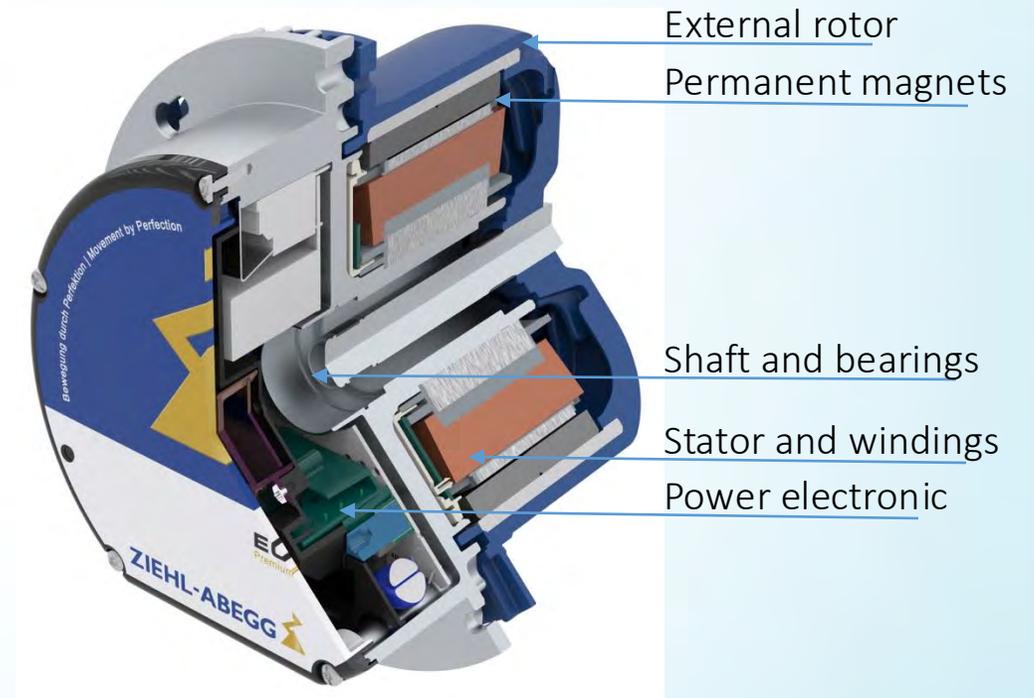
Reliable

Innovative

EC Motor Overview

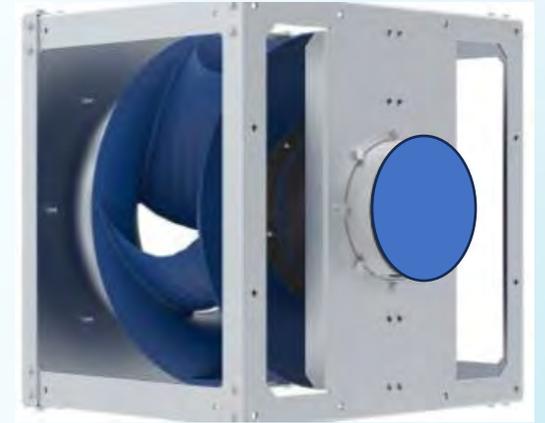
Highest Efficiency Compact Drive

- IE5 EC motor
- Inbuilt speed controller utilising EC technology: No VFD required
- IP55 rated EC motor



Key Features of EC Fan

- EC Motor has inbuilt MODBUS RTU for BMS Integration
- Optional BACnet MS/TP for BMS Integration
- Motor has inbuilt Vibration sensor
- 24/7 Indication via LED
- UL, CE, 3rd party Certification of EC Fan (AMCA), **Eurovent Certification.**



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