

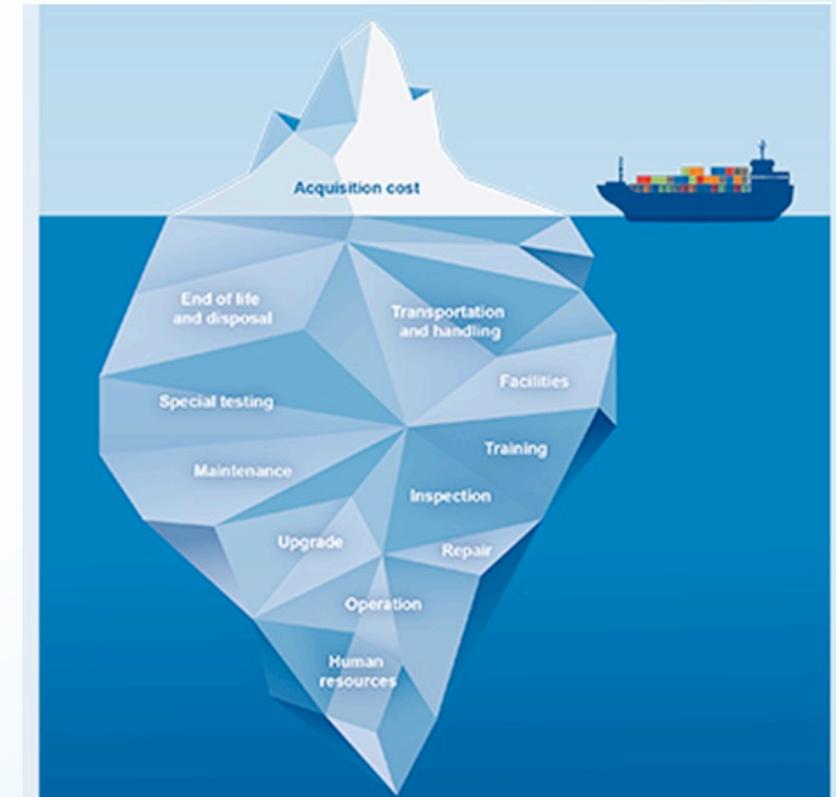
Energy efficient fans for Air Handling Units



Mr Prashant Gore
Manager Engineering &
Applications
ZIEHL-ABEGG

Known facts about HVAC

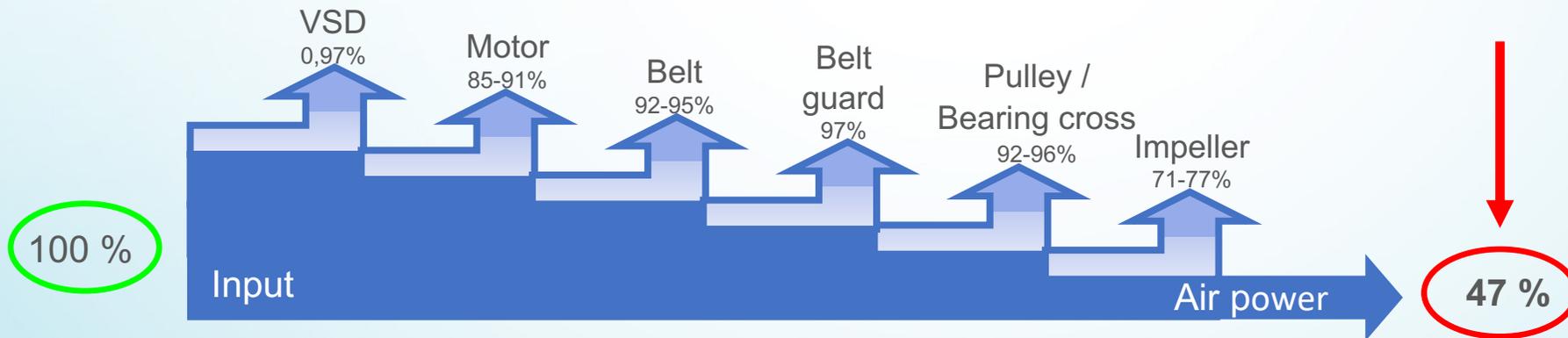
- Air-conditioning / Process Cooling in a building is a major power consumer (~ 50%), which includes chillers, airside equipment (**AHU**) and water circulating pumps.
- **Life Cycle Cost** is more **IMPORTANT** compared to the Capital / First Cost.



Real efficiency of a DIDW fan (static pressure)



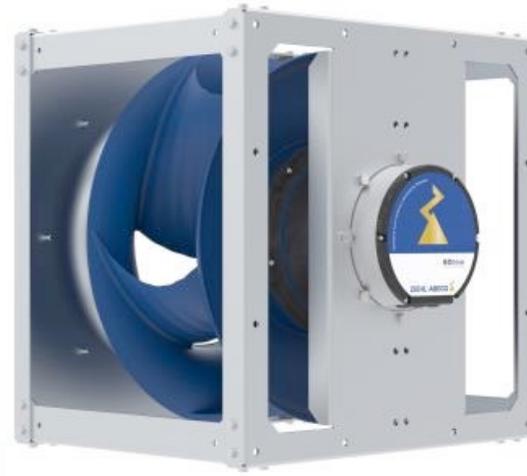
$$\eta_{\text{vsd}} * \eta_{\text{mot}} * \eta_{\text{belt}} * \eta_{\text{beltguard}} * \eta_{\text{pulley}} * \eta_{\text{fan}} = \eta_{\text{sys}}$$



Energy efficient 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

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

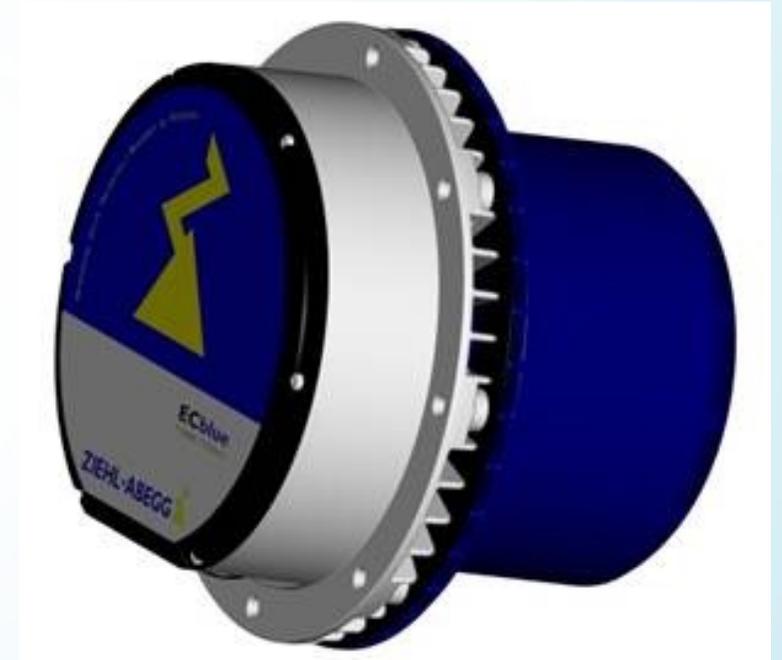
EC technology

What is an EC motor?

EC motor = **Electronically Commutated motor**

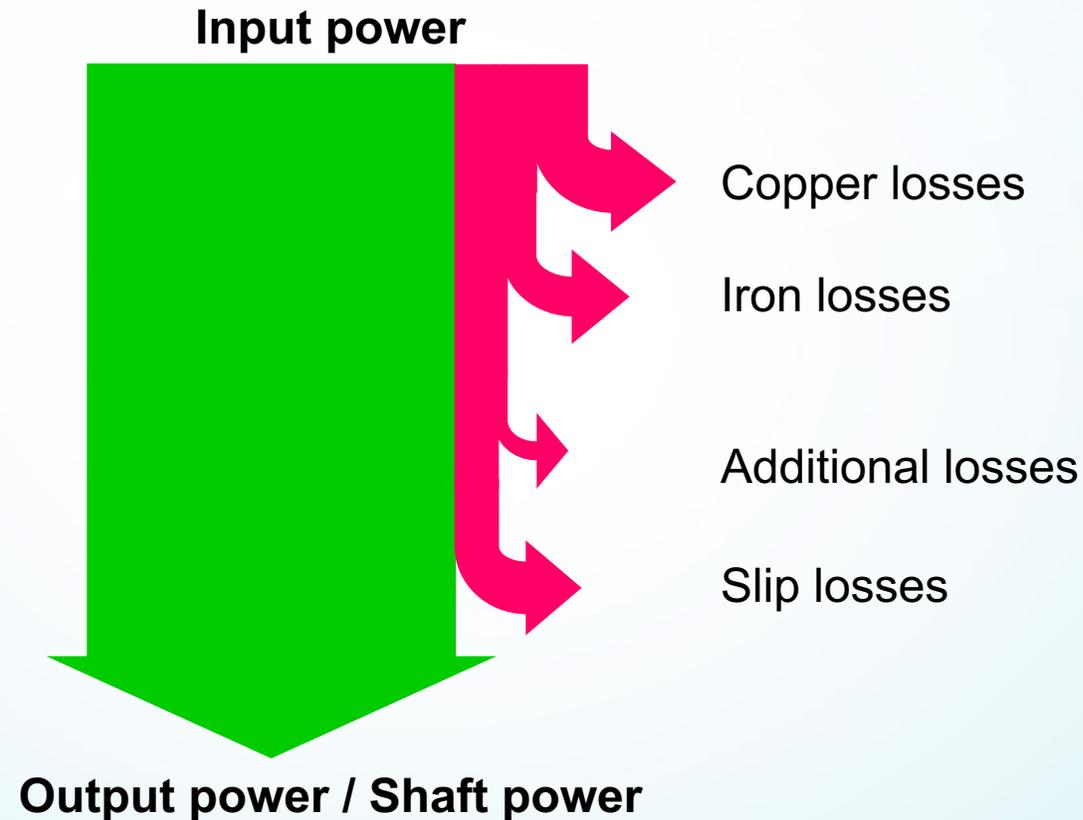
EC motors are...

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



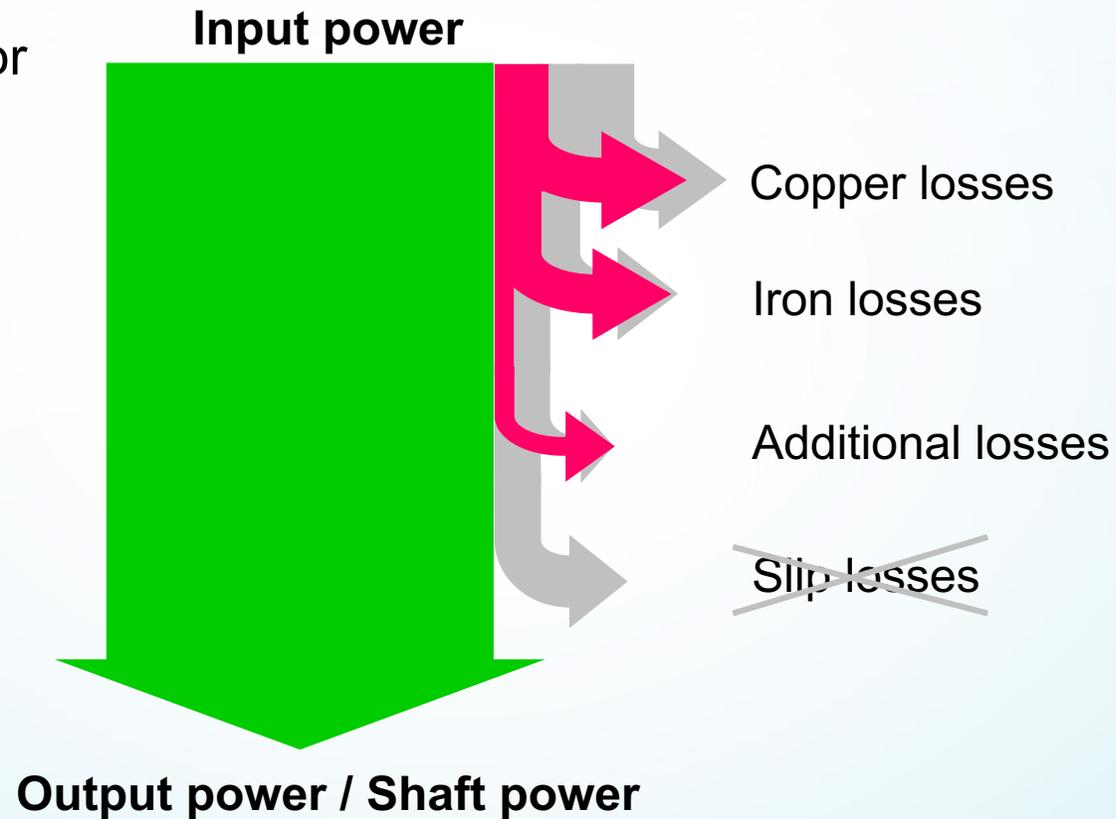
AC vs. EC motors / efficiency

Power losses of an AC asynchronous motor

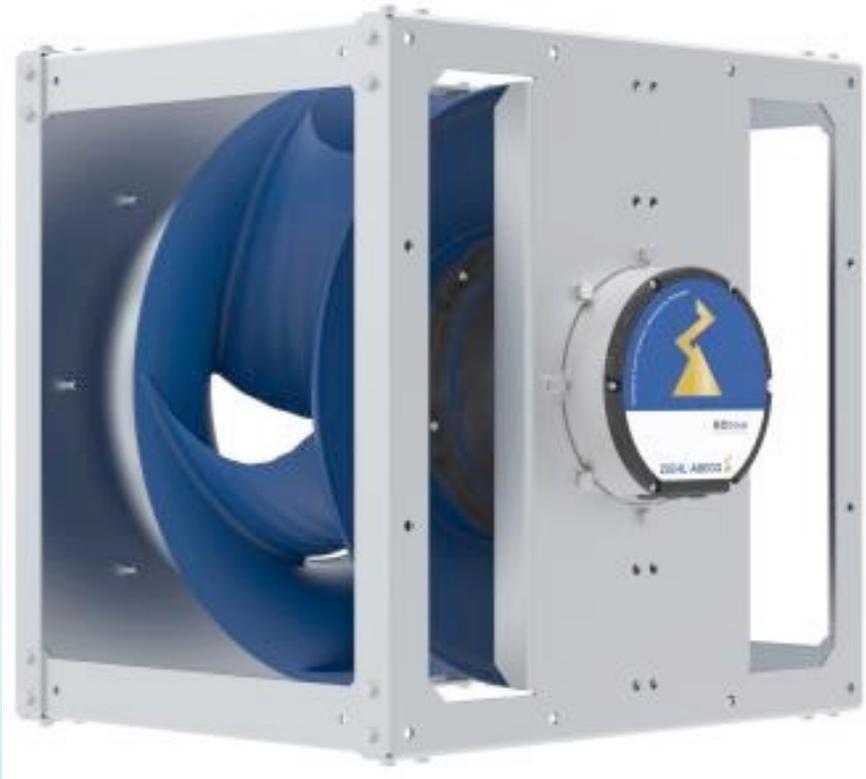


AC vs. EC motors / efficiency

Power losses of an EC motor



EC fans



Efficient

Simple

Flexible

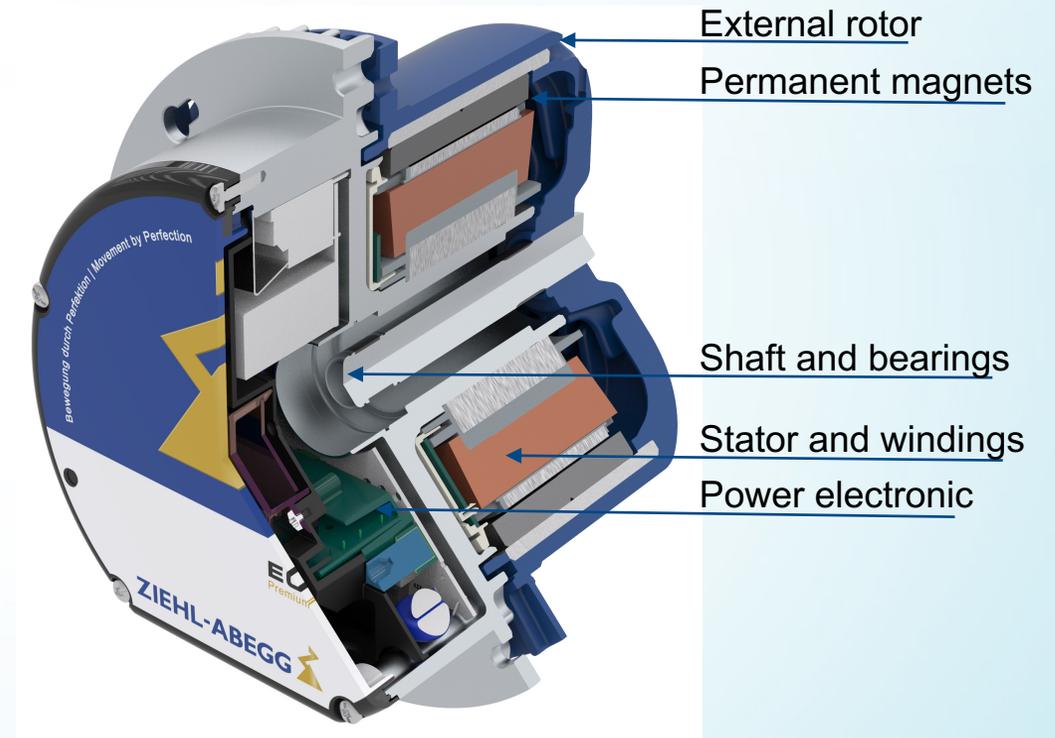
Reliable

Innovative

EC Motor Overview

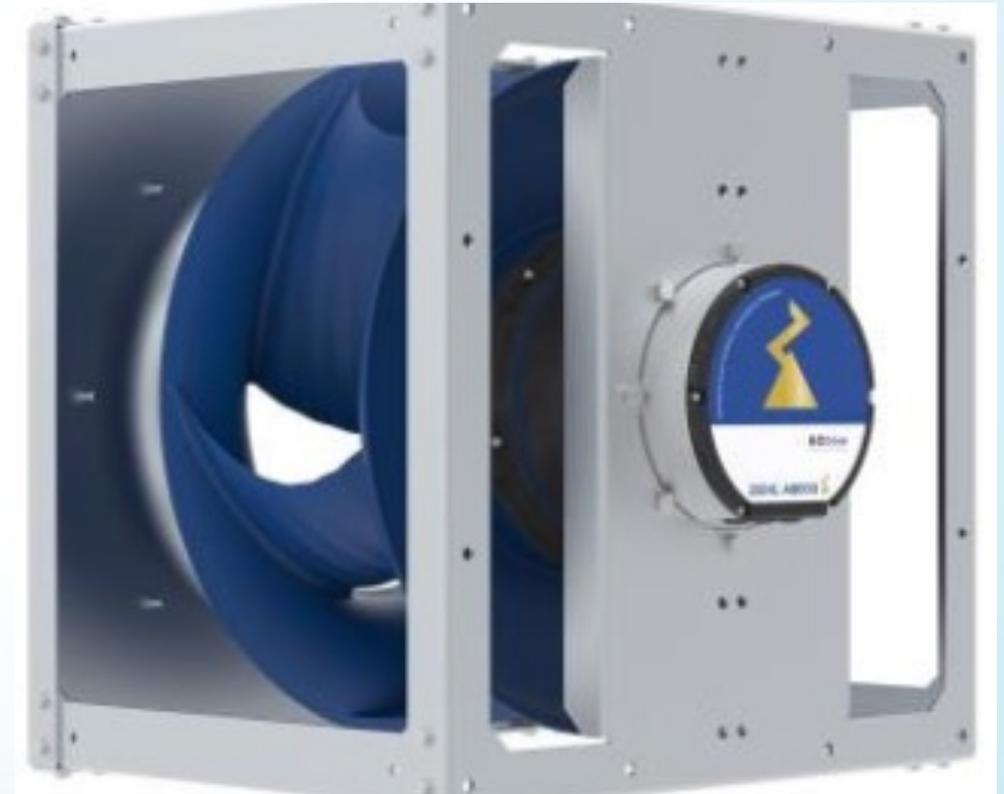
Highest Efficiency Compact Drive

- 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)



THANK YOU

Mr Vikas Kundra
Managing Director
ZIEHL-ABEGG