

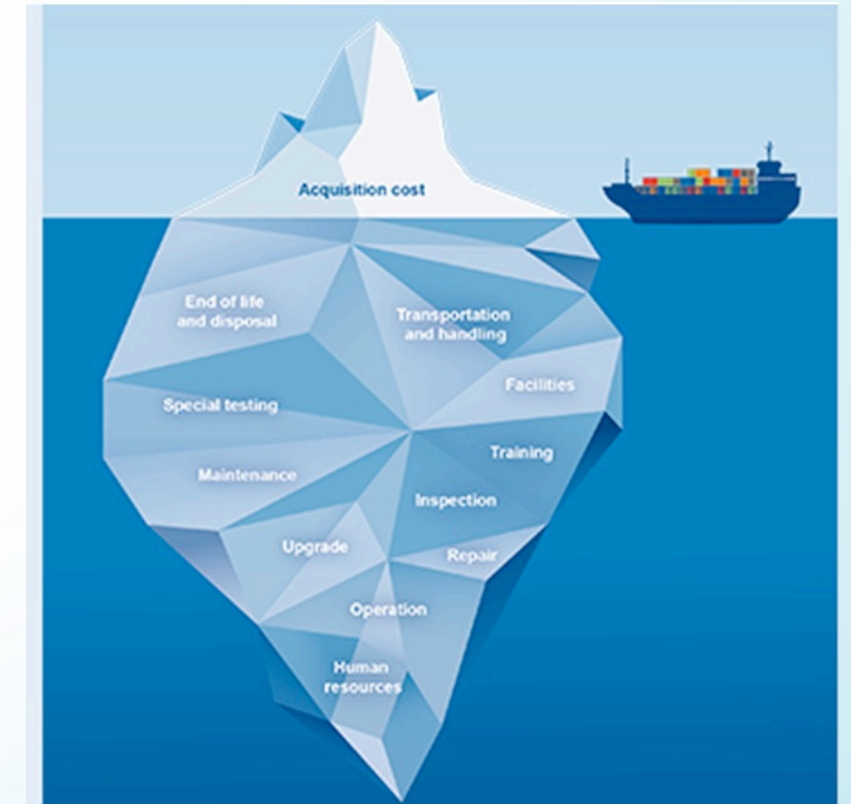
# Energy efficient fans for Air Handling Units



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# Known facts about HVAC

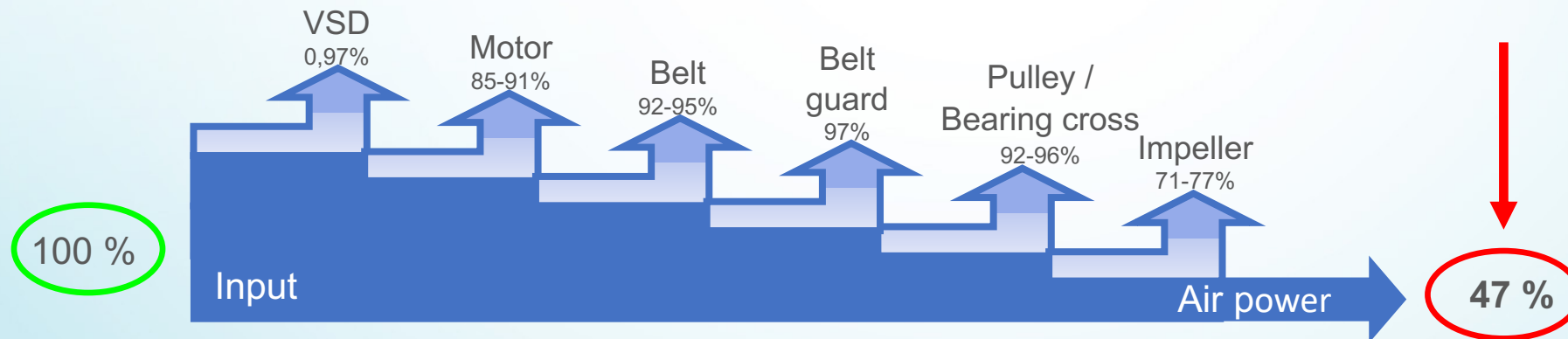
- Air-conditioning / Process Cooling in a building is a **major power consumer** (~ 50%), which includes chillers, airside equipment (**AHU**) and water circulating pumps.
- **Life Cycle Cost** is more **IMPORTANT** compared to the Capital / First Cost.



# Real efficiency of a DIDW fan (static pressure)



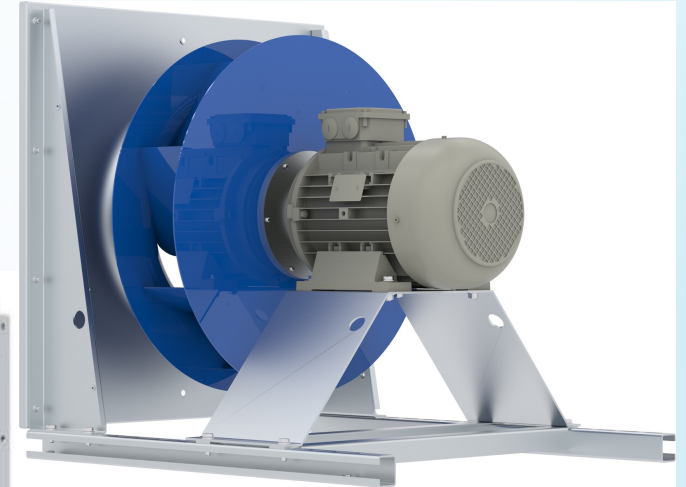
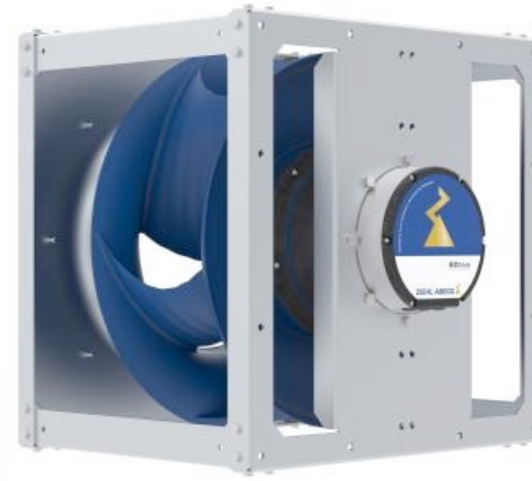
$$\eta_{\text{vsd}} * \eta_{\text{mot}} * \eta_{\text{belt}} * \eta_{\text{beltguard}} * \eta_{\text{pulley}} * \eta_{\text{fan}} = \eta_{\text{sys}}$$



# 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

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



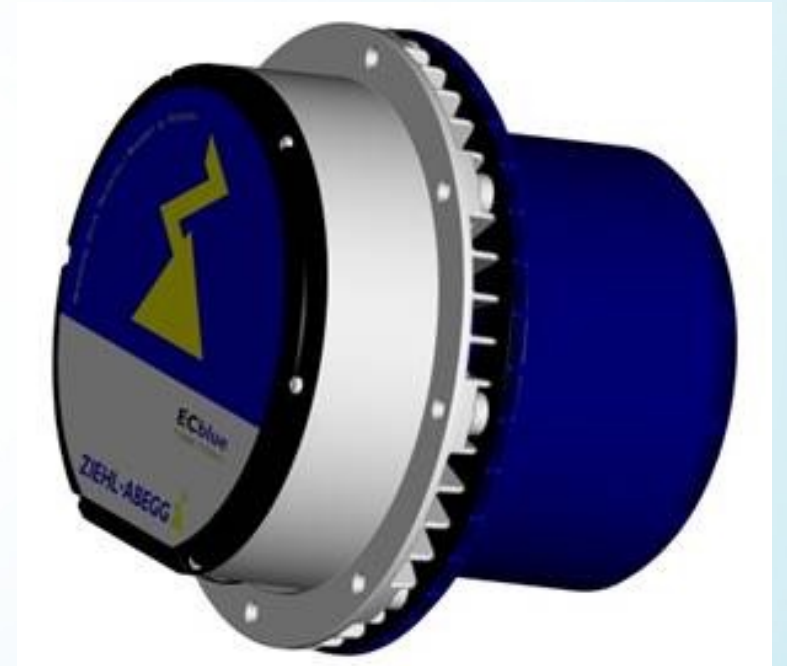
# EC technology

What is an EC motor?

**EC motor** = **Electronically Commutated** motor

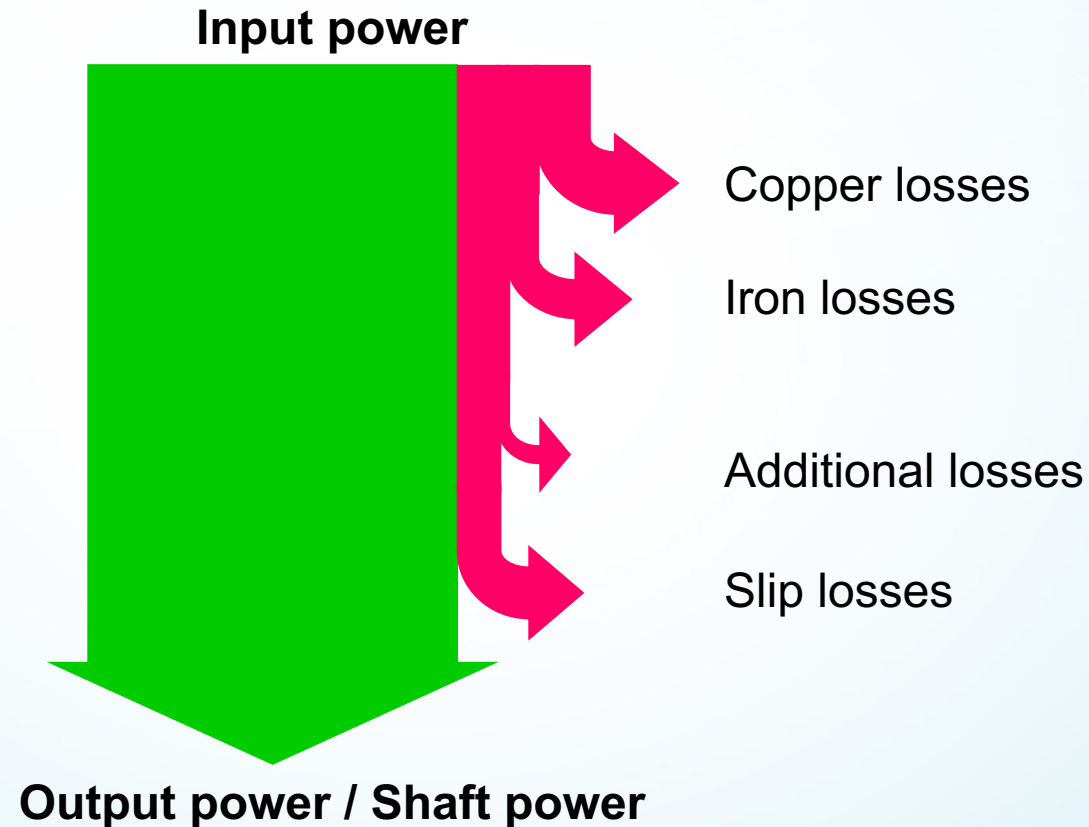
**EC motors are...**

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



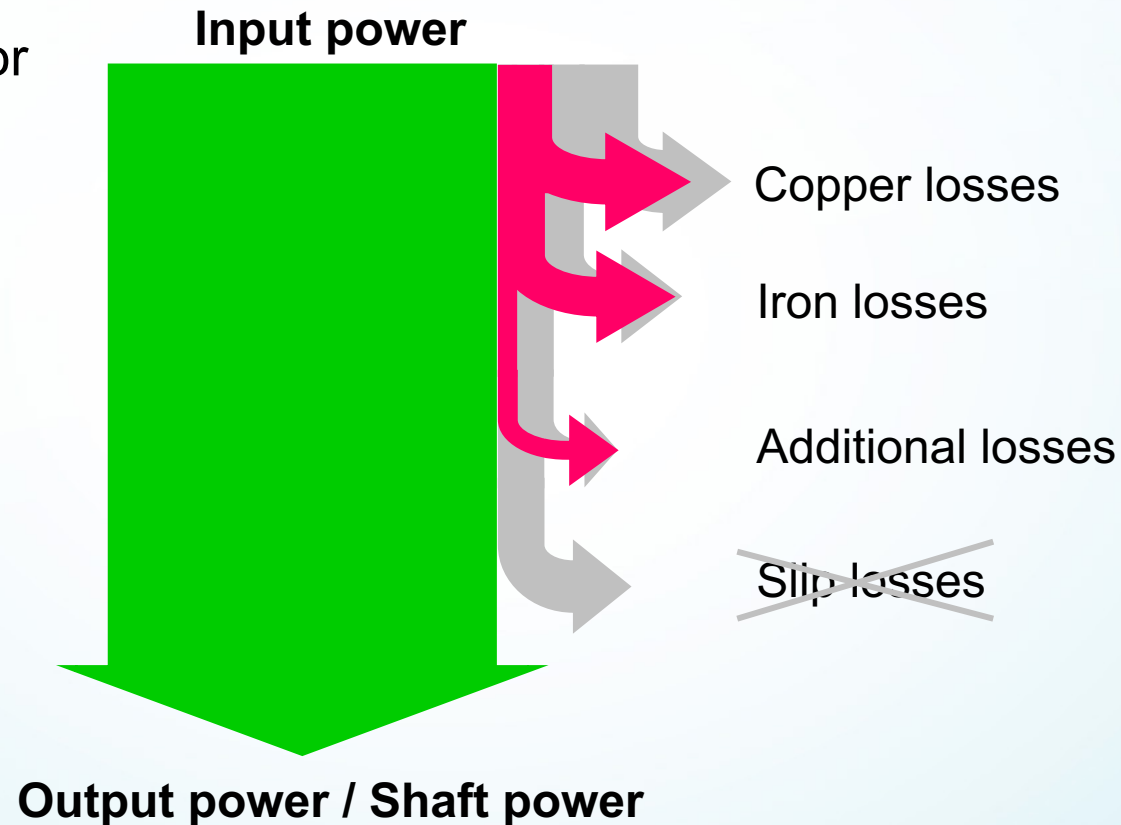
# AC vs. EC motors / efficiency

Power losses of an AC asynchronous motor

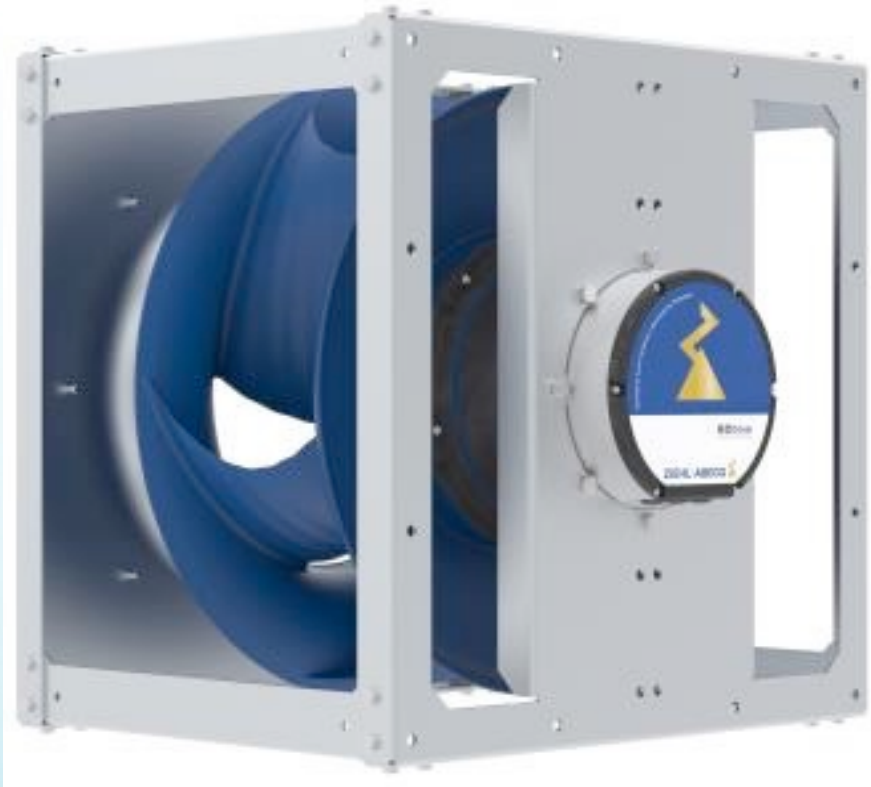


# AC vs. EC motors / efficiency

Power losses of an EC motor



# EC fans



**Efficient**

**Simple**

**Flexible**

**Reliable**

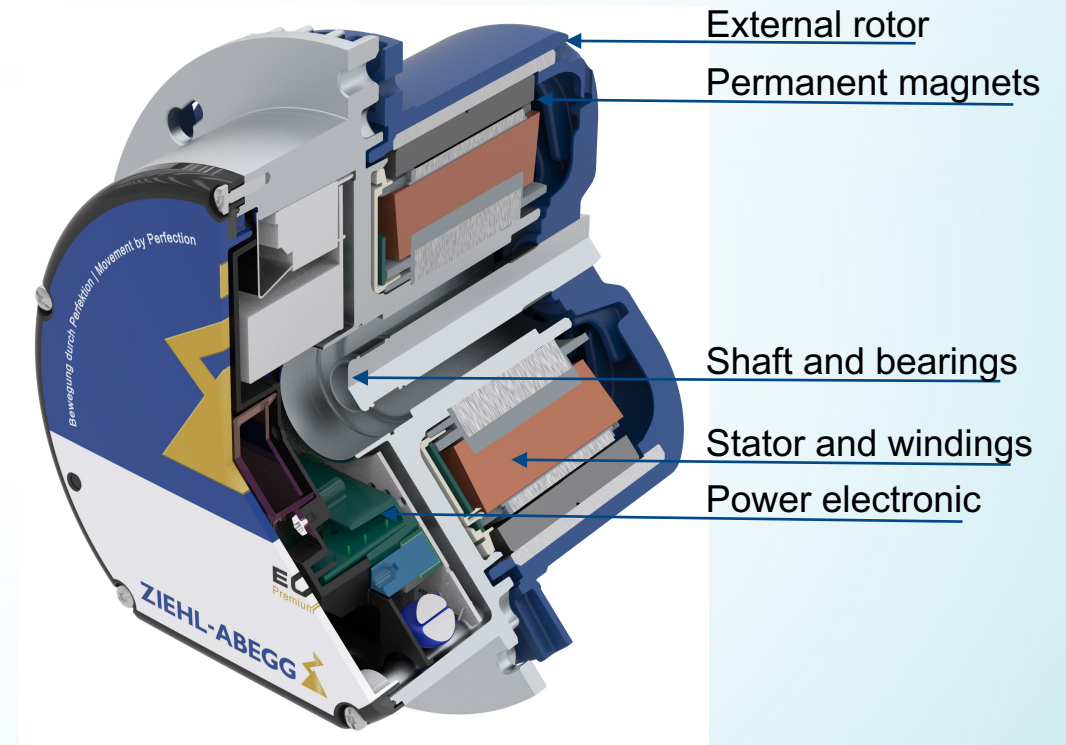
**Innovative**



# 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, 3<sup>rd</sup> party certification of EC fan (AMCA)

