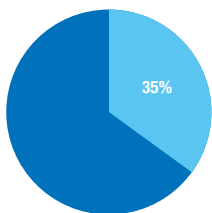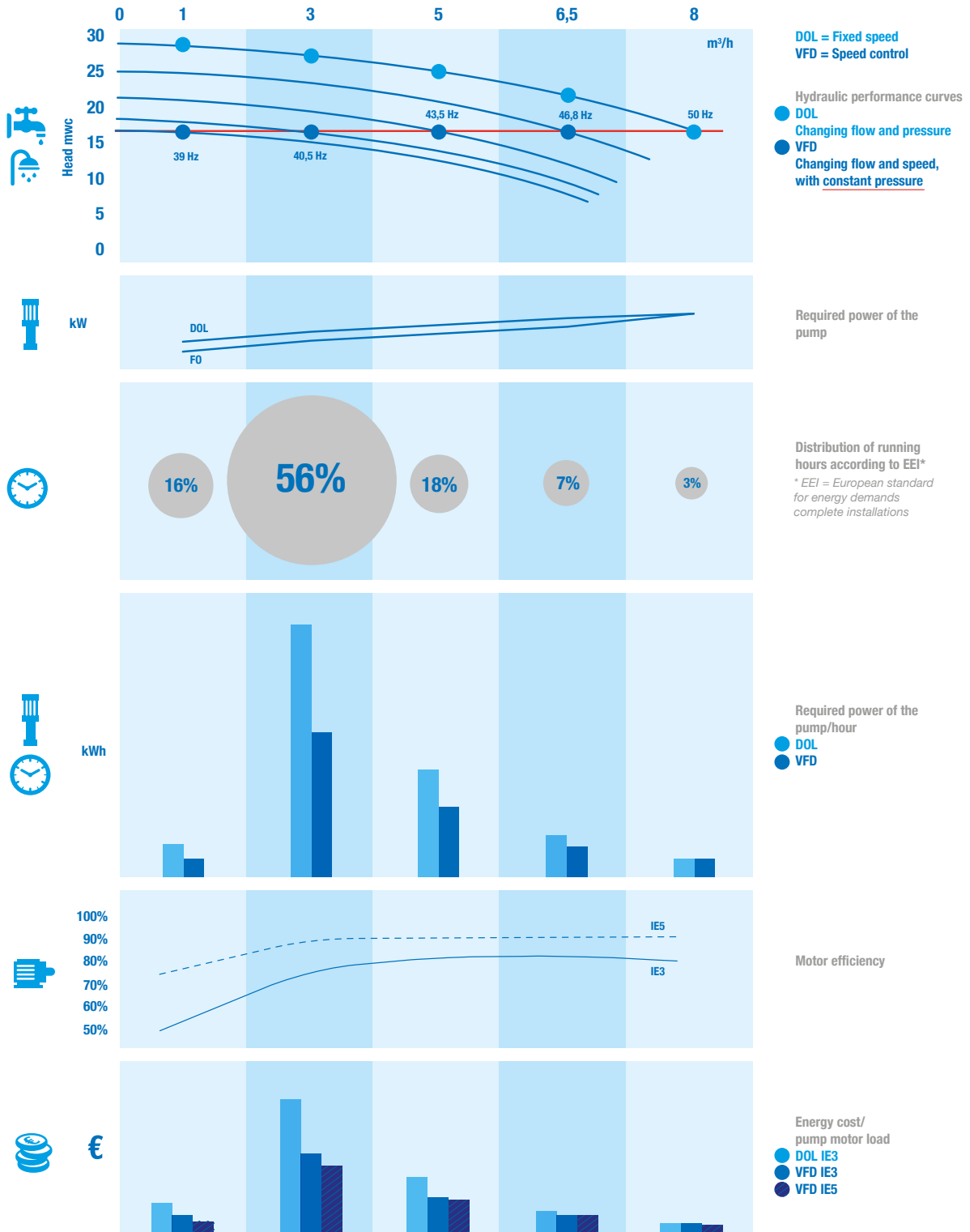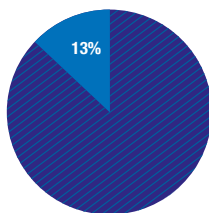# The effect of speed control and motor efficiency on energy use*

* based on a commonly used DPV pump as a pressure booster

DOL = Fixed speed
VFD = Speed control

Hydraulic performance curves
DOL
Changing flow and pressure
VFD
Changing flow and speed, with constant pressure

- 0, 1, 3, 5, 6,5, 8 m³/h
- Head mwc: 30, 25, 20, 15, 10, 5, 0
- 39 Hz, 40,5 Hz, 43,5 Hz, 46,8 Hz, 50 Hz

Required power of the pump

- kW
- DOL
- F0

Distribution of running hours according to EEI*

* EEI = European standard for energy demands complete installations

- 16%, 56%, 18%, 7%, 3%

Required power of the pump/hour
DOL
VFD

- kWh

Motor efficiency

- 100%, 90%, 80%, 70%, 60%, 50%
- IE5
- IE3

Energy cost/ pump motor load
DOL IE3
VFD IE3
VFD IE5

- €

Savings**

**Relative savings will increase in installations with multiple pumps as a result of the distribution of the pump motor load.

- 35% — VFD IE3 vs DOL IE3
- 13% — VFD IE5 vs IE3