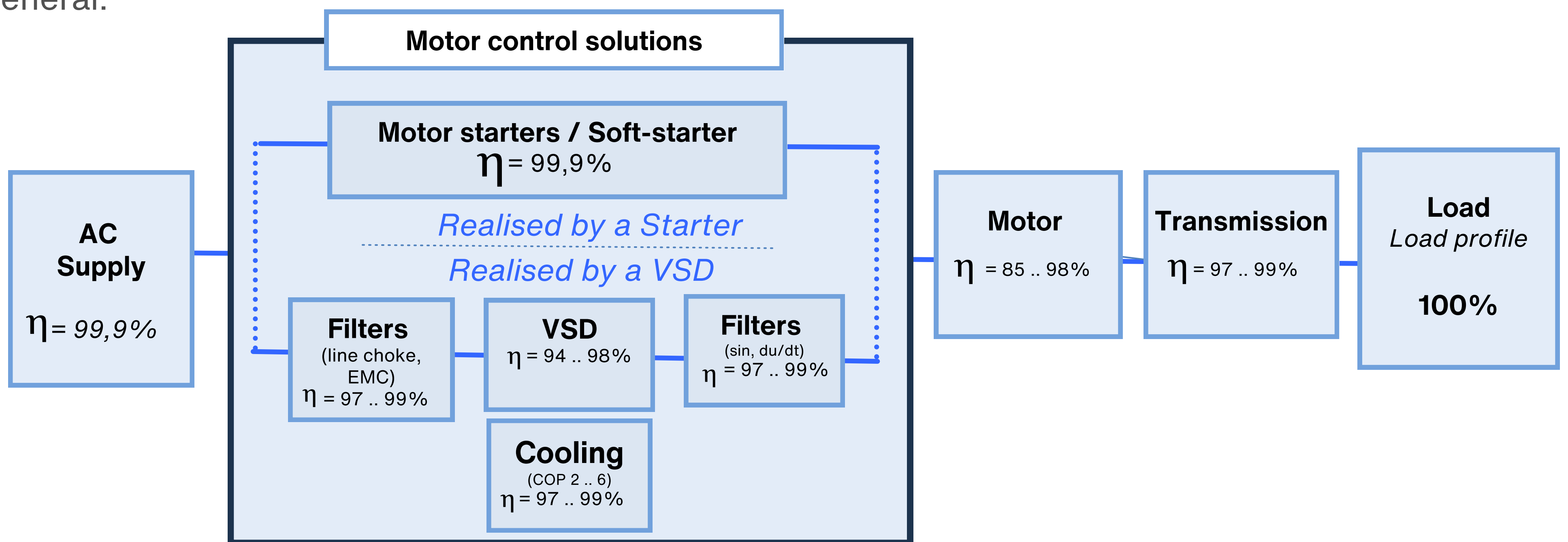


Motor-starters are the ideal choice for the vast majority of fixed-speed installations

Energy Efficiency aspects of motor-starters

Consider the whole system

The control solution has a significant impact on **system efficiency** which directly affects **CO₂ emissions**. For new fixed-speed installations, motor-starters incl. soft-starters are the recommended choice. Other control solutions require additional devices such as filters and cooling and need more installation space in general.



System Efficiency



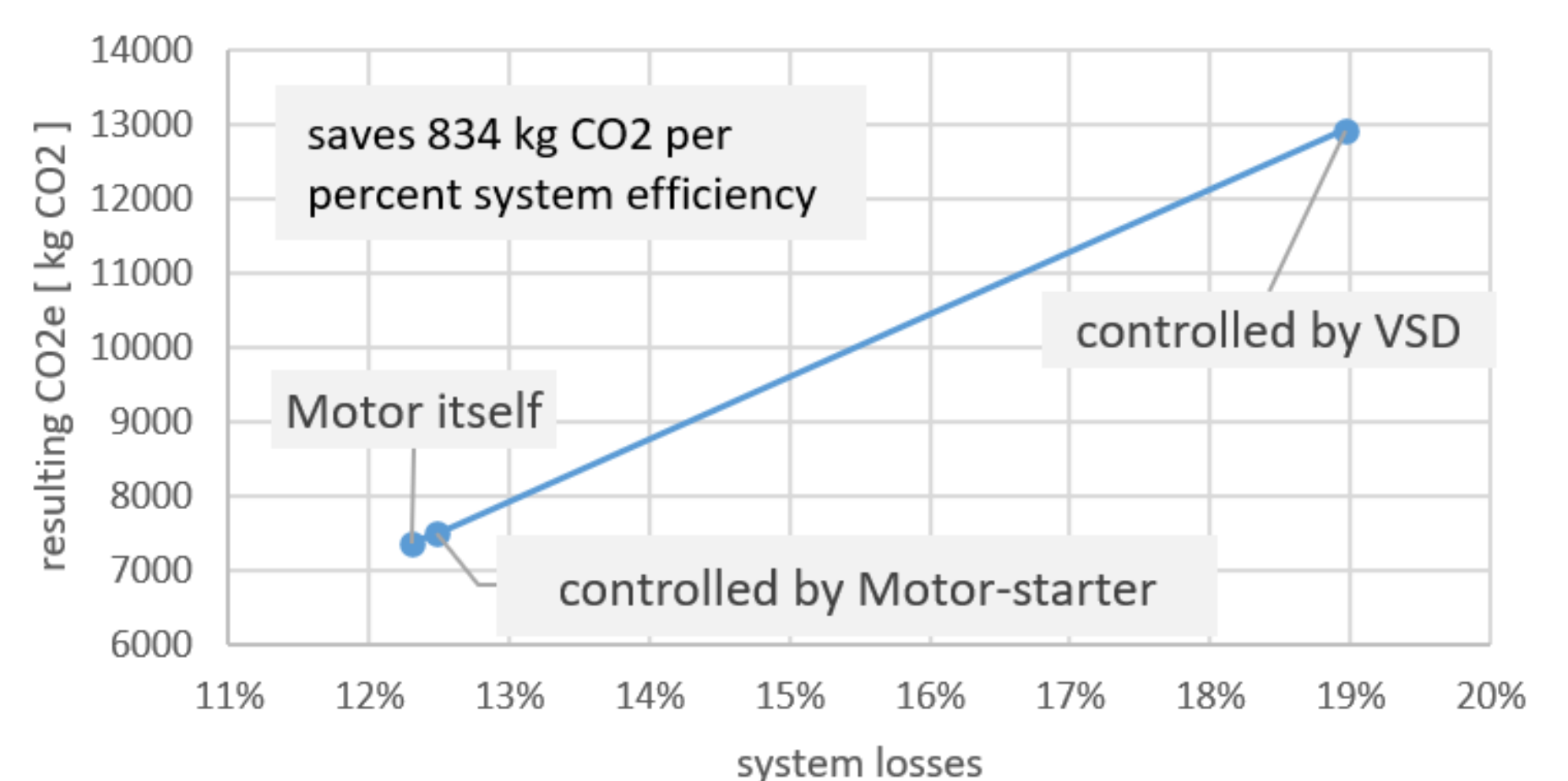
Switchgear energy losses remain minimal at 0.1% compared with 4.5–11% for variable-speed drive (VSD) solutions, due to cumulative losses from multiple components (chokes, filters, cooling, controls).

CO₂ Emissions

For a 3kW (20 years, 50% duty) rated motor full-time in rated condition with an energy mix of 200g CO₂e / kWh:

Component	Losses	Emissions (CO ₂)
Motor	12,3% (87,7% efficiency)	7400kg
Starter	0,1% (99,9% efficiency)	60kg
VSD	3.1% (97% efficiency)	2920kg
Filters and accessories	4% (96% efficiency)	2460kg

System losses and resulting CO₂ equivalent



CO₂ emissions caused by starter losses during rated-speed operation are marginal compared with those associated with the motor and VSD. Even small differences in system efficiency can lead to **significantly higher** CO₂ emissions over the lifetime of an installation. Therefore, a comprehensive assessment of the application should be carried out to determine the most appropriate control solution.

Motor-starters are the ideal choice for the vast majority of fixed-speed installations

Environmental aspects of motor-starters

Why choose motor-starters?

- ✓ Simple and reliable solution
- ✓ Most energy efficient
- ✓ Lower device and installation cost



Repairability

Switchgear and controlgear solutions are designed to keep systems **simple, reliable and cost-effective** throughout their lifecycle. By relying on standard components and modular design, they reduce complexity while making maintenance and repairs easier and more affordable.

Durability

Switchgear devices are built for **long-term safety**, with a typical lifetime of 20 years (IEC 63058). Electromechanical solutions can last even longer—up to twice the lifespan of most VSDs.

General Footprint

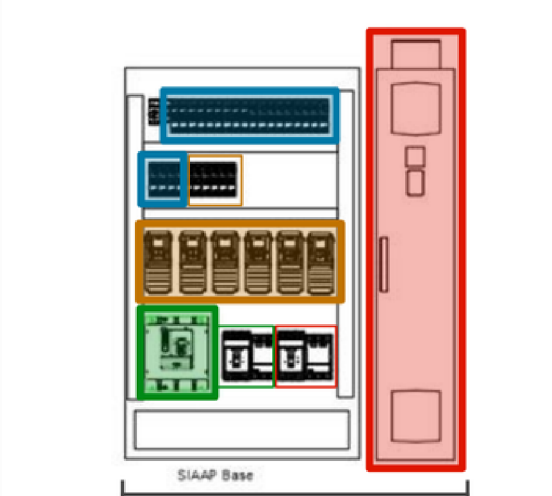
Starters help keep **control panels smaller**. A panel using a mix of starters can be less than half the size of a panel using only VSDs—and often even smaller, since VSD systems usually need extra components like fans and filters.

Reliability and Resilience

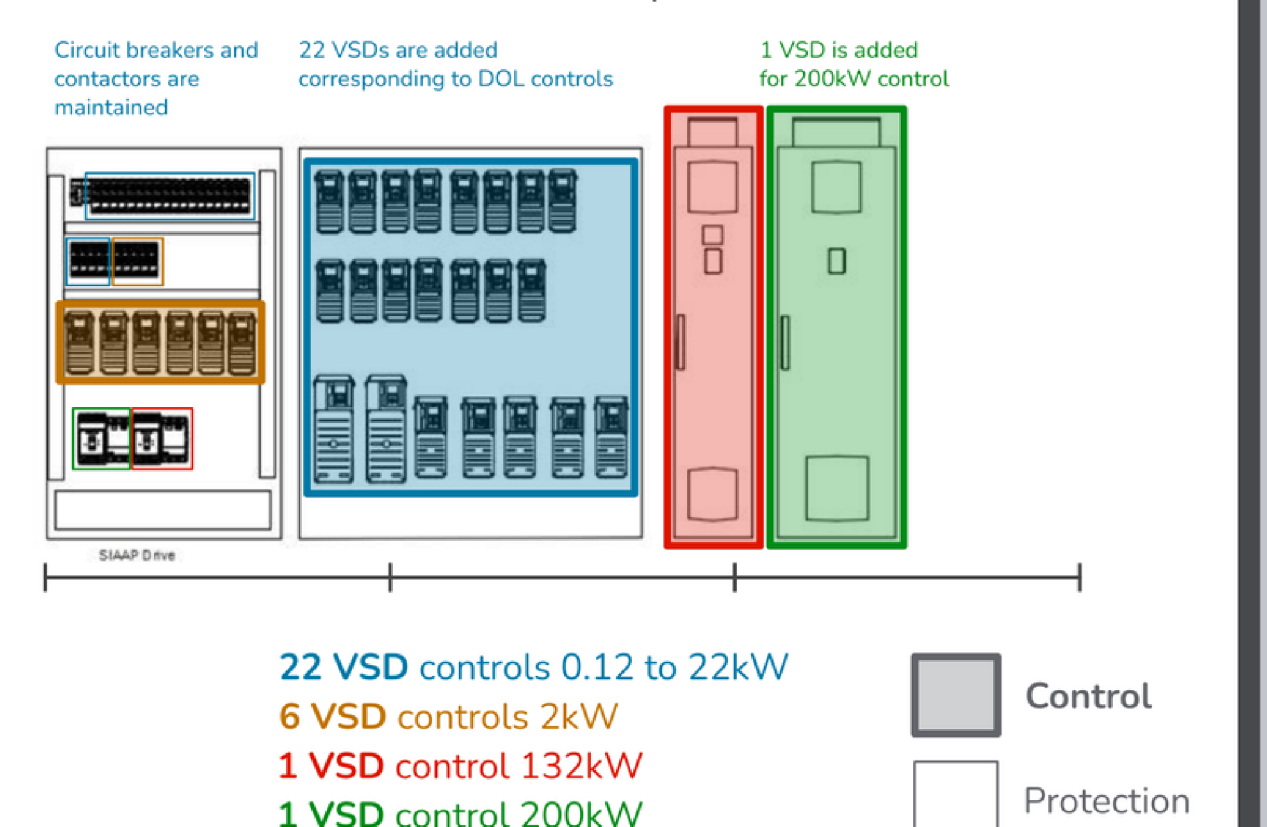
Starters are a robust and dependable solution, engineered to perform consistently across a **wide range of operating conditions**.

- No cooling constraints
- Resistant to dust
- Reliable in extreme conditions
- No EMC interference
- Safe and dependable
- Long operational life (high MTTF)

Mixed control panel



Full VSD control panel



Motor starters are still the best solution for the majority of fixed-speed motor-driven installations