



MARCH 19, 2026

System Efficiency in Data Centers: Why Optimization Without Coherence Structurally Fails

Data centers are becoming more and more efficient per component, but increasingly heavy as a system. This article shows why fragmentation between IT, energy, cooling, and compliance leads to structural inefficiencies — and why system efficiency is an administrative, not a technical, task.

The paradox of technological progress

Data centers are more technologically advanced than ever. Yet rise:

- Absolute energy consumption
- netbelasting
- Complexity

This is not a paradox, but the logical consequence of optimization without coherence. Efficiency is maximized locally, while system losses remain out of the picture.

The data center as a collection of silos

Historically, data centers have been organized around disciplines:

- IT (performance, availability)
- Facility (cooling, energy)
- Compliance (reporting, audits)

Each domain has its own KPIs, tooling and optimizations. What is missing is ownership of the whole.

Why component thinking fails

An efficient server can cause additional cooling loads. An aggressive cooling strategy can undermine IT efficiency. A perfect CSRD report can be disconnected from operational reality.

Without a systems perspective, losses arise that are not addressed anywhere, because they "fall between disciplines".

Efficiency is a system property

Real efficiency does not arise at the component level, but in the interaction between:

- workloadplanning
- Hardware choice
- Refrigeration Design
- Energy distribution

As long as these interactions are not measured, optimization will remain patchy.

From technology to governance

System efficiency is ultimately an administrative question:

- Who is responsible for system behavior?
- Which metrics are leading?
- How are trade-offs made explicit?

Without governance, efficiency remains a technical detail.

The role of standardization

The Save Energy Foundation explicitly focuses on defining system efficiency. Not by comparing tools, but by standardizing measurement methodologies that make system behavior visible.

Integration as a condition for management

Without integration, there is no system insight. **Zirrow** acts as a connecting data layer that:

- IT, energy and cooling
- makes cause-and-effect relationships visible
- enables guidance before reporting

From compliance to design choice

System efficiency requires a fundamental shift: transparency is not a reporting requirement, but a design choice.

The next stage of maturity

The next phase of data center development is not about more technology, but about better coherence. Efficiency is not a feature, but a system feature.