

Small steps in the right direction

Towards systematic **traction** energy management
and 50001 implementation

UIC Webinar, june 2026

Gregor Hribar, Eastvision

About Eastvision

We have been operating in this field for 20 years and offer consulting services for

- measuring traction energy consumption according to TSIs and EN norms;
- implementation of systems for monitoring traction consumption and evaluating energy efficiency;
- ISO 50001 implementation in railways.

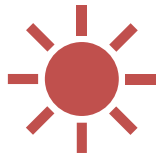
Proud members of UIC and Cenelec working groups.

Let's talk about **traction** energy use

- Difficult
 - moving targets
 - more complex than buildings
 - more parameters (e.g. traffic control) beyond your control
 - many stakeholders
- Valuable
 - 20% or more of operating costs of RUs



Sad facts about EnMS



This isn't a
weekend
project



There are not
many low-
hanging fruits



It will take
some time
for the
project to
gain
recognition



It requires
constant
attention

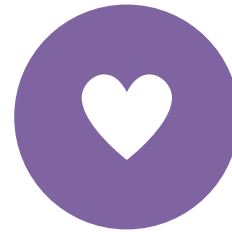
Fun facts about EnMS



There's
always a
business case



It requires a
lot of
collaboration
with
colleagues



It can be
inspiring and
fulfilling



You're doing
something
good for the
world

Different goals – why doing it

Greenwashing

Green
marketing

Customer
requirements

Compliance
with
regulations

Understanding
consumption
and costs

Manage costs
(prices)

Reduce
consumption
& emissions

ISO 50001 (reminder)

EnMS based on
Plan Do Check Act

Focus on energy
performance

Requires data and
continuous
improvement (and
much more)

ISO 50001 key stages

1. **Management commitment**
2. **Energy team**
3. Energy data and understanding
4. Energy performance indicators (EnPIs)
5. Objectives and action plans
6. Integration into operations
7. Monitoring and continuous improvement
8. Employee awareness and engagement



ISO 50005 approach

Build towards
ISO 50001
compliance

Complex
system =>
systematic
approach

Phased, but
flexible

Let's focus on
what brings
value first

INTERNATIONAL
STANDARD

**ISO
50005**

First edition
2021-09

**Energy management systems —
Guidelines for a phased
implementation**

*Systèmes de management de l'énergie — Lignes directrices pour une
mise en œuvre par étapes*

ISO 50001 vs. ISO 50005

ISO 50001	ISO 50005
Requirements standard	Guidance standard
“What you must do”	“How to get there”
Full system required	Step-by-step approach
Certification possible	No certification

Levels towards Energy Mng

Level 1: Enabling (Awareness)

Only basic understanding of energy use
Energy bills available
No structured processes
"We know energy is important."

Level 2: Enhancing (Structured)

Energy policy introduced
Energy team defined
Initial analysis of energy consumption
"We started managing energy."

Level 3: Emerging EnMS (Systematic)

Regular monitoring of energy performance
KPIs (EnPIs) defined
Targets and action plans in place
"Energy management is working."

Level 4 – ISO 50001 ready

Full energy management system in place
Management review, monitoring, and control
"We are ready for ISO 50001."

Be flexible



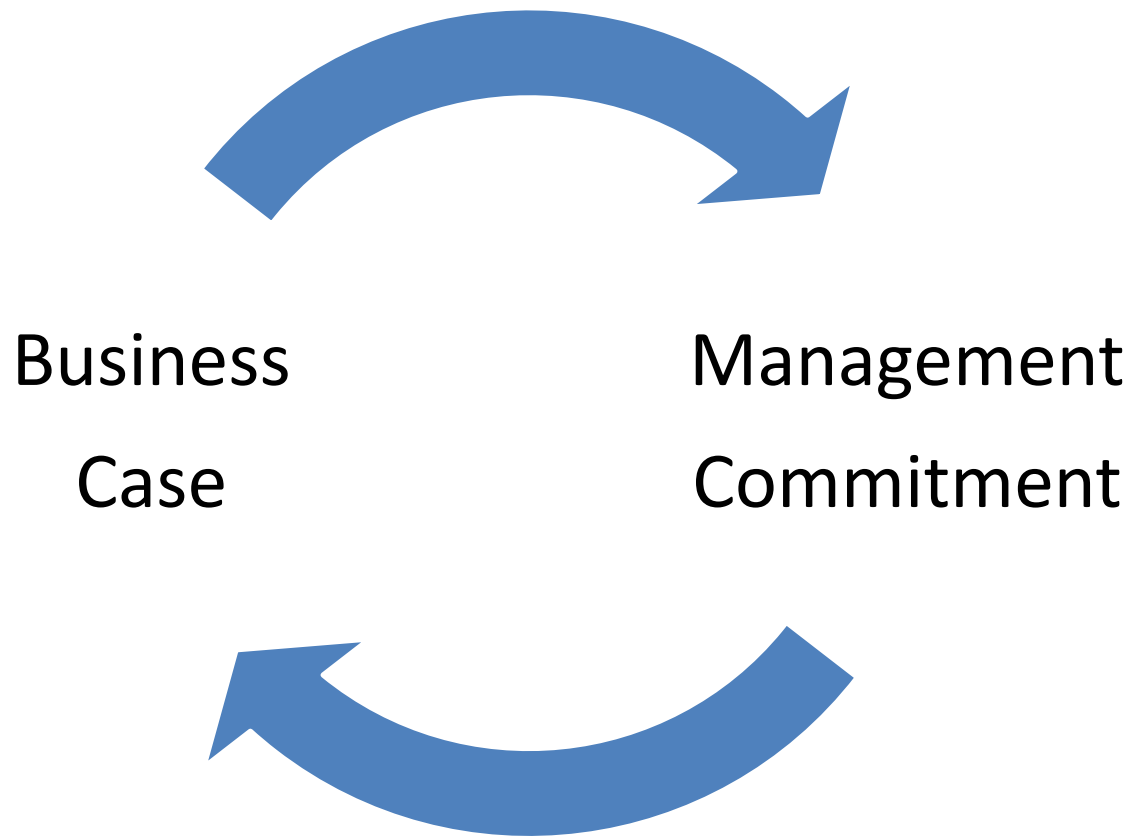
Management commitment

Energy data and understanding

Energy team

**Your agenda:
business case**

One way or another



Start: Energy bills

- Basic understanding of energy use
- Checking energy bills of **metered energy consumption**
- Comparing them to traffic data, weather
- Consumption (MWh) of same / similar trains
- kWh/gtkm // kWh per passenger

Wirklich Ökostrom Klassik.

Verbrauchsermittlung

Kundennr.

München, d

Wirklich Ökostrom Klassik in der Zeit vom 22.02.2024 bis zum 20.02.2025

MaLo-ID [REDACTED] MeLo-ID [REDACTED]
Netzbetreibercode [REDACTED] Messstellenbetreiber [REDACTED]

Zeitraum	Zählernummer	Ableseart ¹⁾	Zählerstand in kWh	Differenz in kWh	Faktor ²⁾ (Wandler)
22.02.2024 bis 31.12.2024	T55707	Schätzung Messstellenbetreiber	alt 27.109 neu 27.735	626	1
01.01.2025 bis 20.02.2025	T55707	Ablesung Messstellenbetreiber	alt 27.735 neu 27.849	114	1

Gesamt

¹⁾ Der Zählerstand kann durch dich selbst oder durch den Netzbetreiber abgelesen oder durch den Netzbetreiber geschätzt werden. Schätzung ist z.B. dann gerechtfertigt, wenn die Daten der Selbstablesung unvollständig sind oder kein Zutritt zur Messeinrichtung.

²⁾ Zähler mit Wandlerfaktor kommen zumeist bei größerer Energieabnahme vor. Bei Haushaltskunden in der Regel 1.

Deviations => Savings Potential

Meter readouts are better

- The more detail, the better (but more work in Excel)
- Usually 5 minutes, sometimes 1 minute
- Traction unit speed profile
- Comparison of identical / similar trains (from A to B)
- Deviations of up to +20% are expected

Deviations => Savings Potential



Potential

Not all deviations are savings potential

- Impact of weather
- Traffic management issues
- Efficiency of locomotive
- Number of passengers, train weight
- Freight train composition (open wagons)

! no deviations \nRightarrow no potential:

Maybe all trains are performing poorly.

Together, all know everything



Think about the team:

- **Informants**
- Implementers
- Influencers
- Promoters

Without them, you can't score a goal (you won't even get the ball).

Go to your people

Go where the energy is used:

- Drivers
- Dispatchers
- Planners
- Cleaners
- Conductors
- Maintenance workers

People, all experts, will reveal more than numbers!



Just do: make small changes

Make tiny projects with metered units



An interested driver
implements eco
driving



An interested cleaner
close the doors
during cleaning

Notice the difference.

Energy consumption. Commitment. Team spirit.

Key Takeaways

Interim goals:

- Commitment of the management
- Energy team with enthusiastic members
- Basic understanding of the consumption
- Feel the savings potential

Choose your own sequence (ISO 50005).

Key Takeaways

Look far into the future, but take small steps

- Start with smaller projects alongside enthusiastic colleague(s)
- Track and report on all results
- Keep the business case in mind (always)

Have a safe trip and good luck!

Gregor Hribar

gregor.hribar@eastvision.nl

M +31649846099

Consulting on traction energy consumption measurement
and energy efficiency monitoring.

eastvision.