ENIT Systems

Succesful market entry

Foundation	2014; Sales since June 2016 (> 200 industrial plants)
Team	18 FTE
Technology	Fraunhofer Spin-off; multiple award-winning innovation
Invest	€ 2.5 million equity investment + € 2.9 million funding
Structure	Founders (61%), 5 other shareholders (39%)

Origin

→ 10 years of leading pioneering work

Edge computing for industrial energy management

Average €1 million energy costs, but no transparency

Real-time transparency, concrete measures to save energy cost of 5-20%

Customer base

Big

Small and Medium

Customer base

Metal

NEUMAN ALUMINIUM, Hutzel, SHW Automotive, KAUFMANN MICROMECHANIK, SFB, EUROVIA, PREFA, HODAPP, ABB, STRIEBEL & JOHN, SCHONDELMAIER PRESSWERK, Josef HAFNER Stanz- und Umformtechnik, LESSMANN THE GERMAN BRUSH COMPANY, bott SMART HYDRAULICS, CVS ENGINEERING, heinz krumme Zerspanungstechnik, blank, FHB, MANKENBERG Industriearmaturen Industrial Valves, RHODIUS Safety and Environmental Solutions, Hugo Schmitz Kaltwalzwerk · Härterei, EBERLE RIEDEN STANZ-/BIEGETECHNIK, KNEBEL Metalltechnik, thyssenkrupp

Food

GANTER, STOLLE, PONNATH DIE MEISTERMETZGER, Wolf, Schwarzwaldmilch, Salzer, Taifun, Willms Qualität und Frische aus Tradition, STÖHR, DURST MALZ, Backhaus häussler, Färber, Schmid's, LIBRECO

Plastic

truplast, plastik pack, ExtE, ARTEMIS Kautschuk und Kunststoff, GLOBUS, KUNSTSTOFFWERK LAHR member of BERNAUER GROUP, schäfer vollendet., LION PAC fresh thinking!, PREMIER TECH AQUA, Nemera, epurex films A Bayer MaterialScience Company, stäger Verpackungen

Mech. Eng.

JUNKER partner for precision, BASS TECHNIK FÜR GEWINDE, SFS intec, MACGREGOR, Sauerburger, REGO-FIX, HSM, POWERTRAIN TECHNOLOGY GROUP, auma Solutions for a world in motion, VIESSMANN, müga, SCHMALZ, WEBER-HYDRAULIK, ROTEX a member of DAIKIN group, ADELMANN EDELSTAHLTECHNIK, CSM Bakery Solutions

Electronics

faber, RITZ Instrument Transformers, Baumer, hager, hugo müller, ingun, punker, ifm electronic, KENDRION WE MAGNETISE THE WORLD

Others

glaströsch, AICHINGER, Dölling hareico, CASIMIR KAST VERPACKEN + PRÄSENTIEREN, covestro, Diedrichs Heidersfeld, GLACONCHEMIE, CATOLET, Sortimo, etol, Jacob Formschaumtechnik GmbH, DISCH, RONDA, Joos HARTHEIM, KIESWERK SALEM, Scheufelen, segezha PACKAGING, MEDICLIN, reAICL Specialty Fertilizers, SHW Automotive, FASSMER, zimmer International Logistics GmbH, zalando, LIGNO TREND Für eine nachhaltige Holz-Baukultur, ARNOLD MAGNETIC TECHNOLOGIES, dold, APK ALUMINIUM UND KUNSTSTOFFE AG, Eibach FEDERN, CONCRETE RUDOLPH, FLENSBURGER SHIPBUILDERS SINCE 1872, HERMANN PETER BAUSTOFFWERKE RHEINAU, CAGOGAS Flüssiggas, Mr. Wash, ALESA ...us de Schwiiz, HIPP medical AG

Customer distribution

Simplification of real time energy management

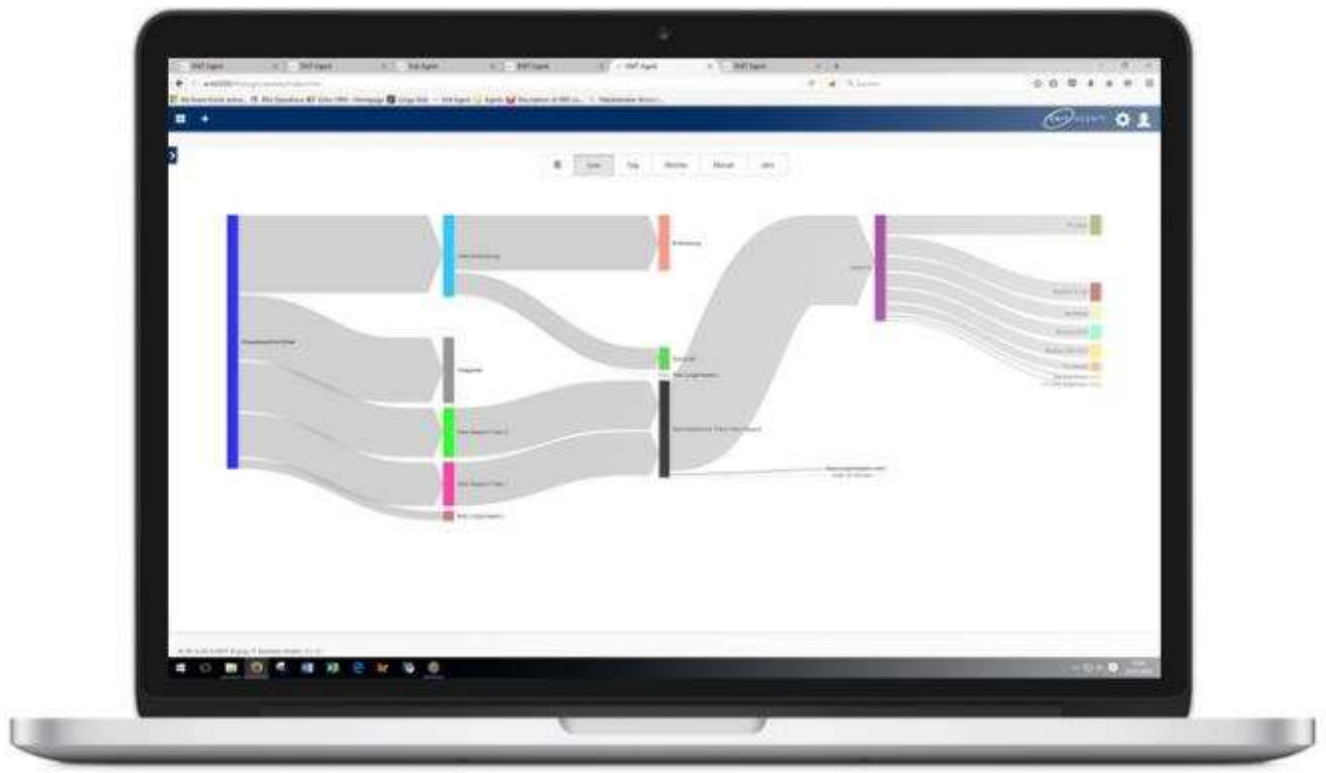
ENIT SYSTEMS
Energie einfach managen.

Offering

Hardware

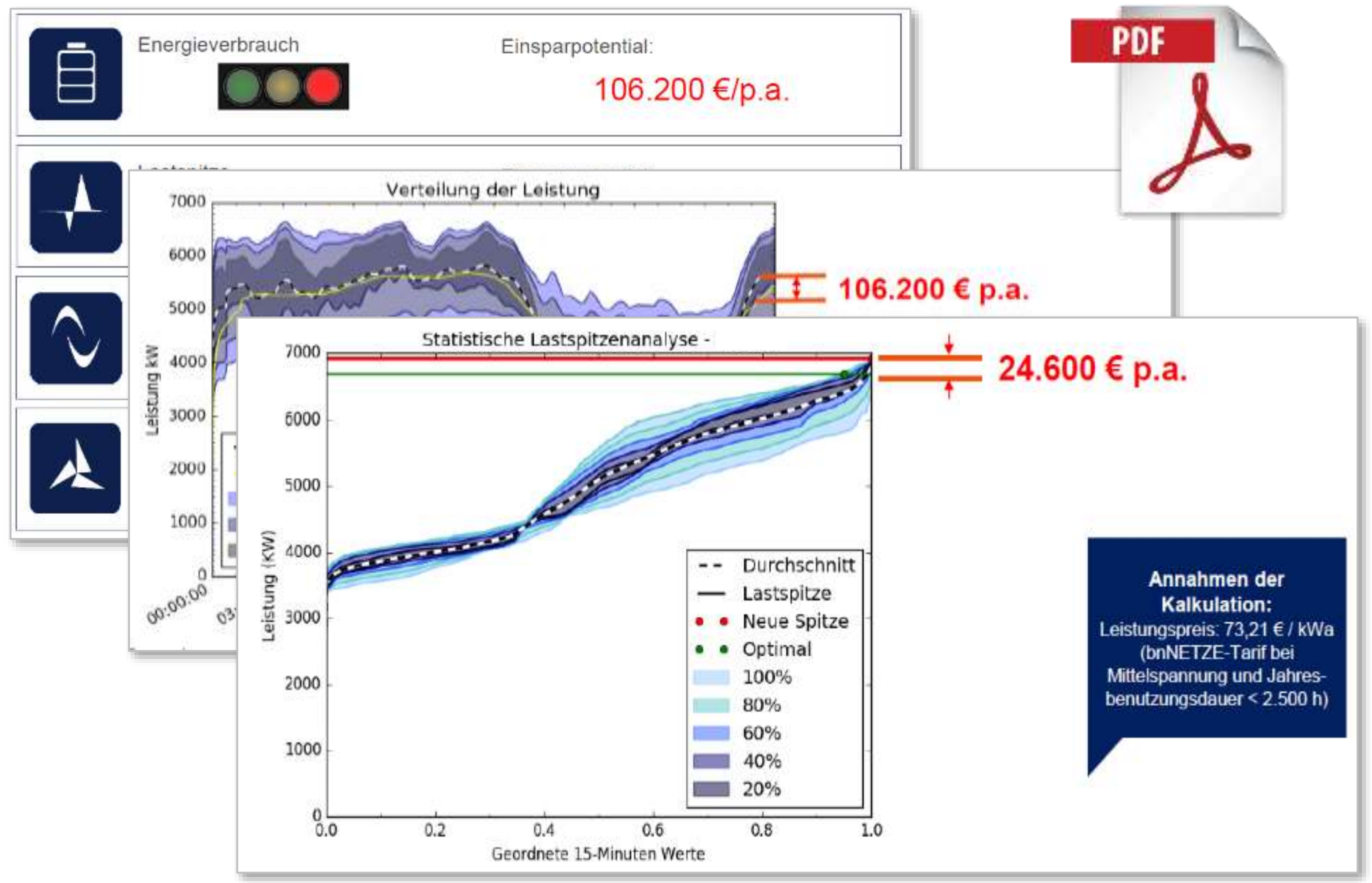
+

Software



+

Analytics



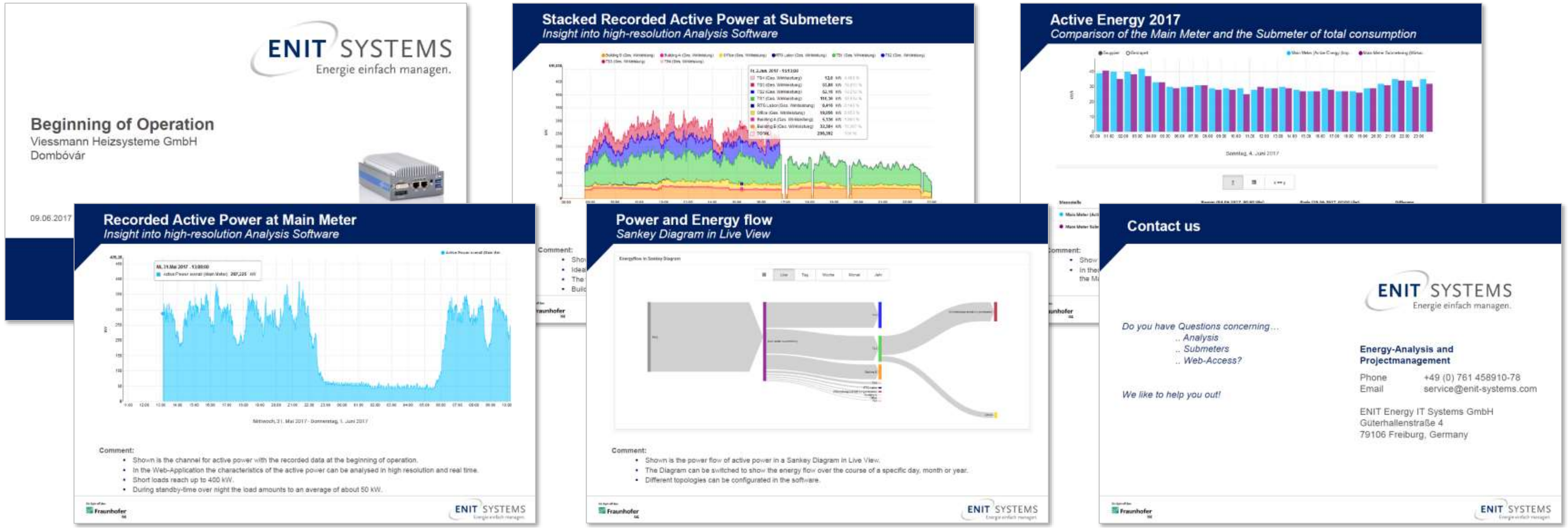
→ seamless = no to-do for customer

< 10 minute for installation

Step 1 of 4

Order → Shipment → Billing meter online → Web-access → First algorithms → Report

First slides:

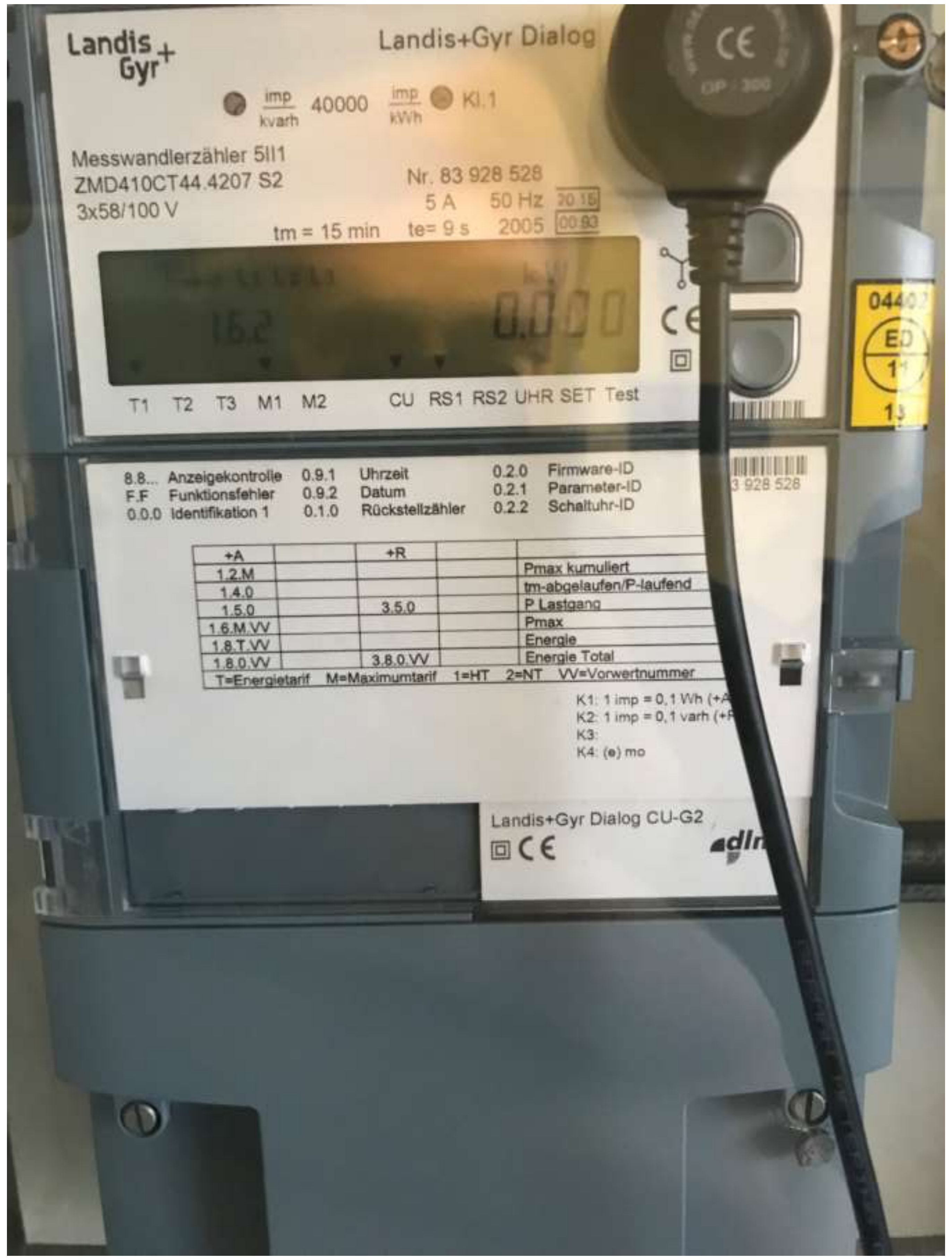


→ billing meter online and first slides

Deep dive: Installation of Agent

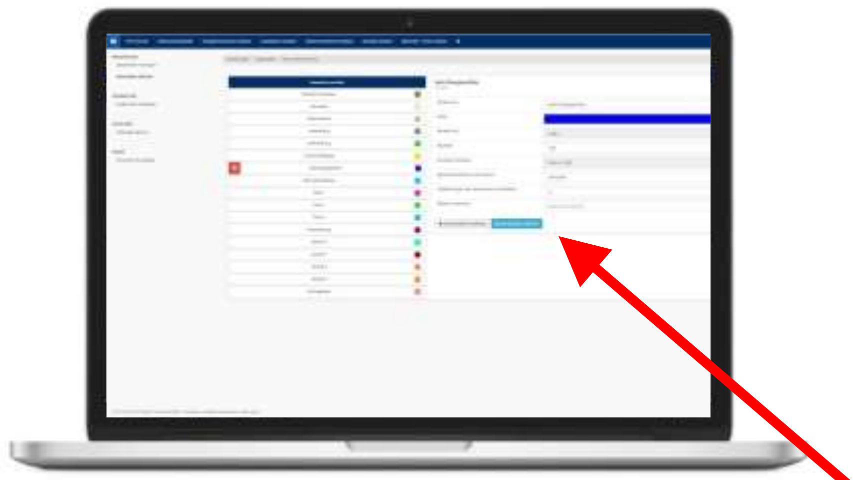
Agent is sent and placed at billing meter

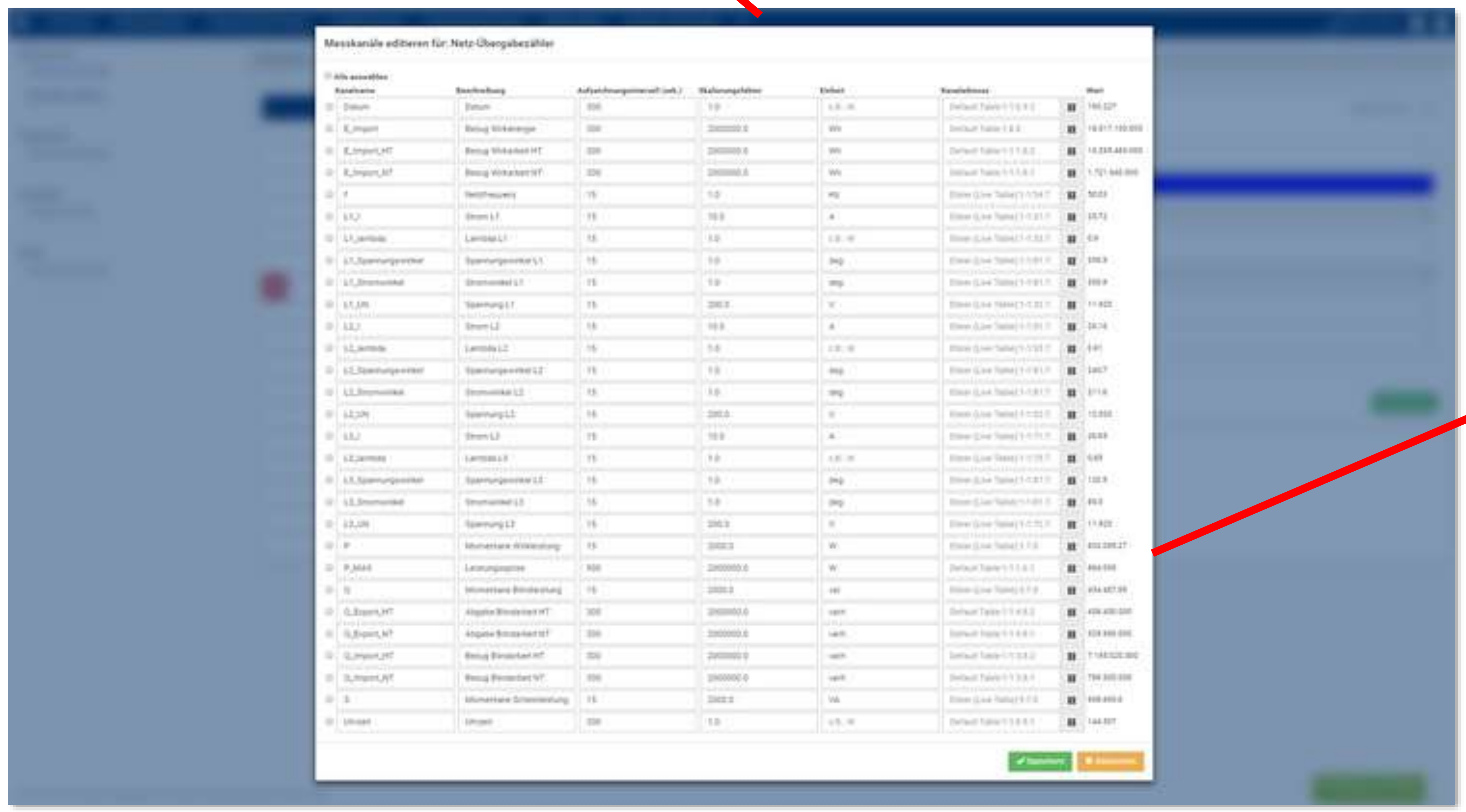
Agent is connected via clip-on



Deep dive: Billing meter data

Example: unique data vector of billing meter





Description	Identifier	Unit	Resolution (s)
Total active energy import	E_Import	Wh	300
Active energy import (HT)	E_Import_HT	Wh	300
Active energy import (NT)	E_Import_NT	Wh	300
Total active energy export	E_Export	Wh	300
Active energy export (HT)	E_Export_HT	Wh	300
Active energy export (NT)	E_Export_NT	Wh	300
Total reactive energy import	Q_Import	varh	300
Reactive energy import (HT)	Q_Import_HT	varh	300
Reactive energy import (NT)	Q_Import_NT	varh	300
Total reactive energy export	Q_Export	varh	300
Reactive energy export (HT)	Q_Export_HT	varh	300
Reactive energy export (NT)	Q_Export_NT	varh	300
Total active power	P	W	15
Total reactive power	Q	var	15
Total apparent power	S	var	15
Active power (Phase 1)	L1_P	W	15
Active power (Phase 2)	L2_P	W	15
Active power (Phase 3)	L3_P	W	15
Current (Phase 1)	L1_I	A	15
Current (Phase 2)	L2_I	A	15
Current (Phase 3)	L3_I	A	15
Voltage (Phase 1)	L1_UN	V	15
Voltage (Phase 2)	L2_UN	V	15
Voltage (Phase 3)	L3_UN	V	15
Lambda (Phase 1)	L1_lambda		15
Lambda (Phase 2)	L2_lambda		15
Lambda (Phase 3)	L3_lambda		15
Peak Load (monthly)	P_Max	W	15
Frequency	f	Hz	15

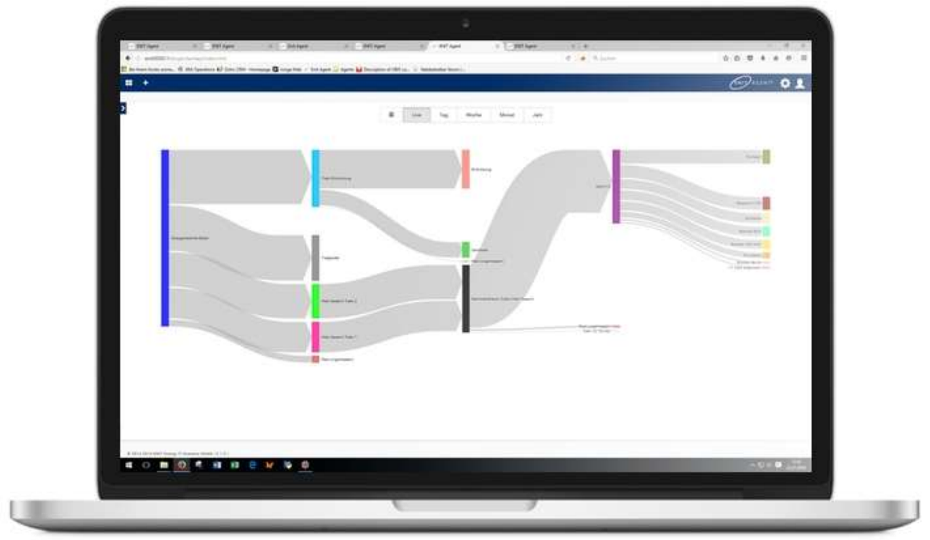
→ edge on data quality crucial for analytics

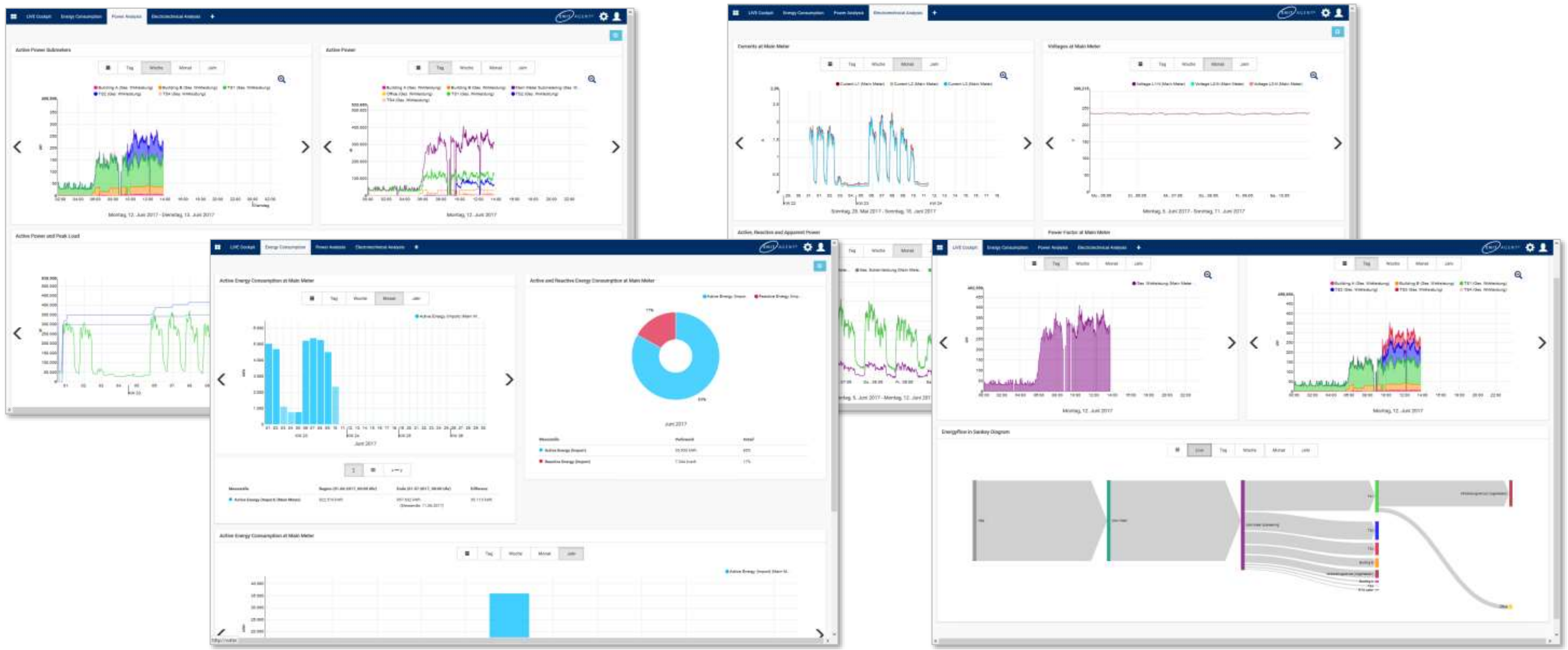
Direct web-access to UI

Step 2 of 4

Order → Shipment → Billing meter online → Web-access → First algorithms → Report

Pre-configured dashboards:





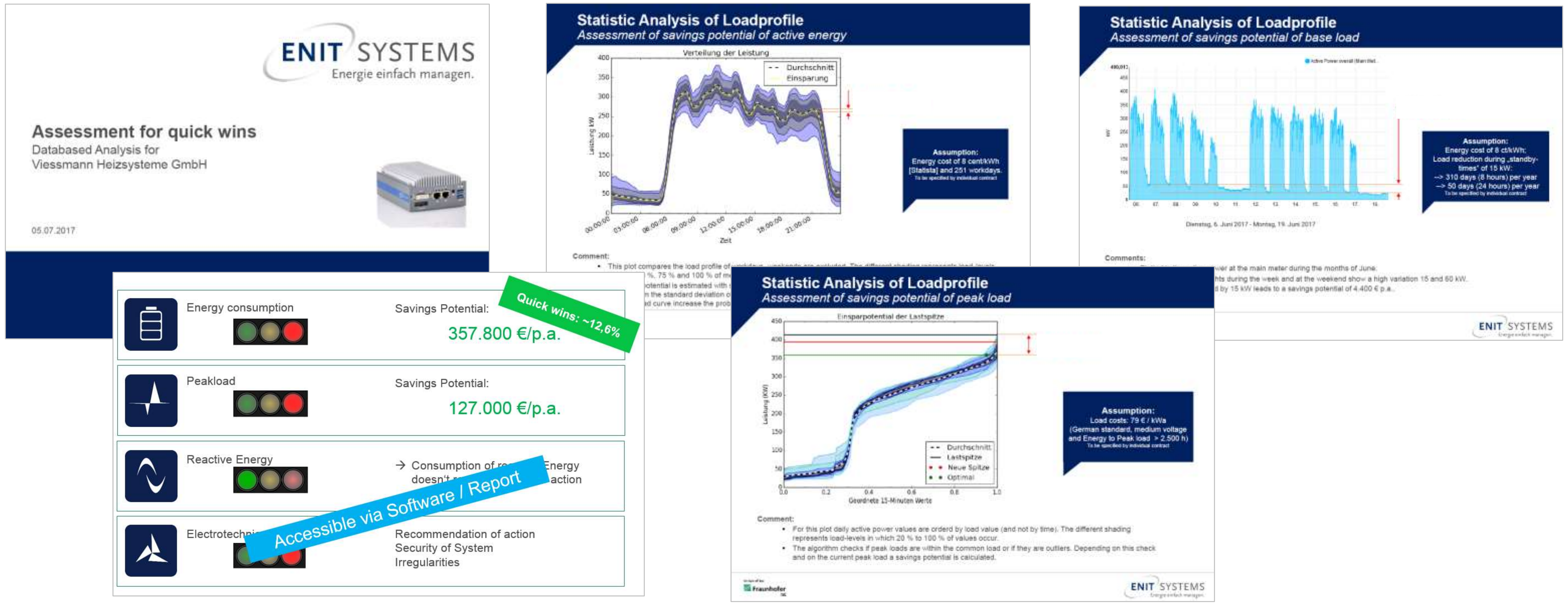
→ pre-configured dashboards

First algorithms on quick wins

Step 3 of 4

Order → Shipment → Billing meter online → Web-access → First algorithms → Report

First algorithms



→ first algorithms applied after 4 full weeks

Submeter integration

Electricity

Heat

Gas/oil

Steam/water

Compressed air

Machine data

Temperature

Sound

…

socomec Innovative Power Solutions

Schneider Electric

SIEMENS

Janitza

Landis+Gyr

ABB

elster Honeywell

EMH

KBR Energy Management

GOSSEN METRAWATT

CAMILLE BAUER

Panasonic

celsa

Itron

kamstrup

FRAKO

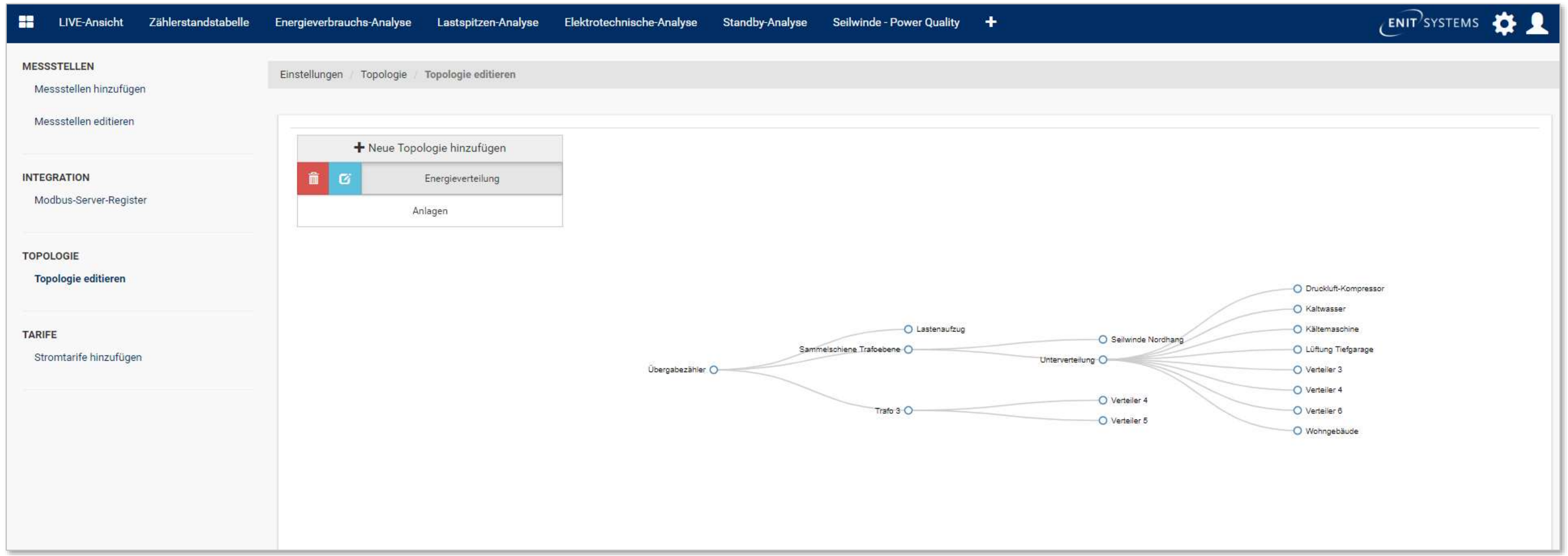
NZR

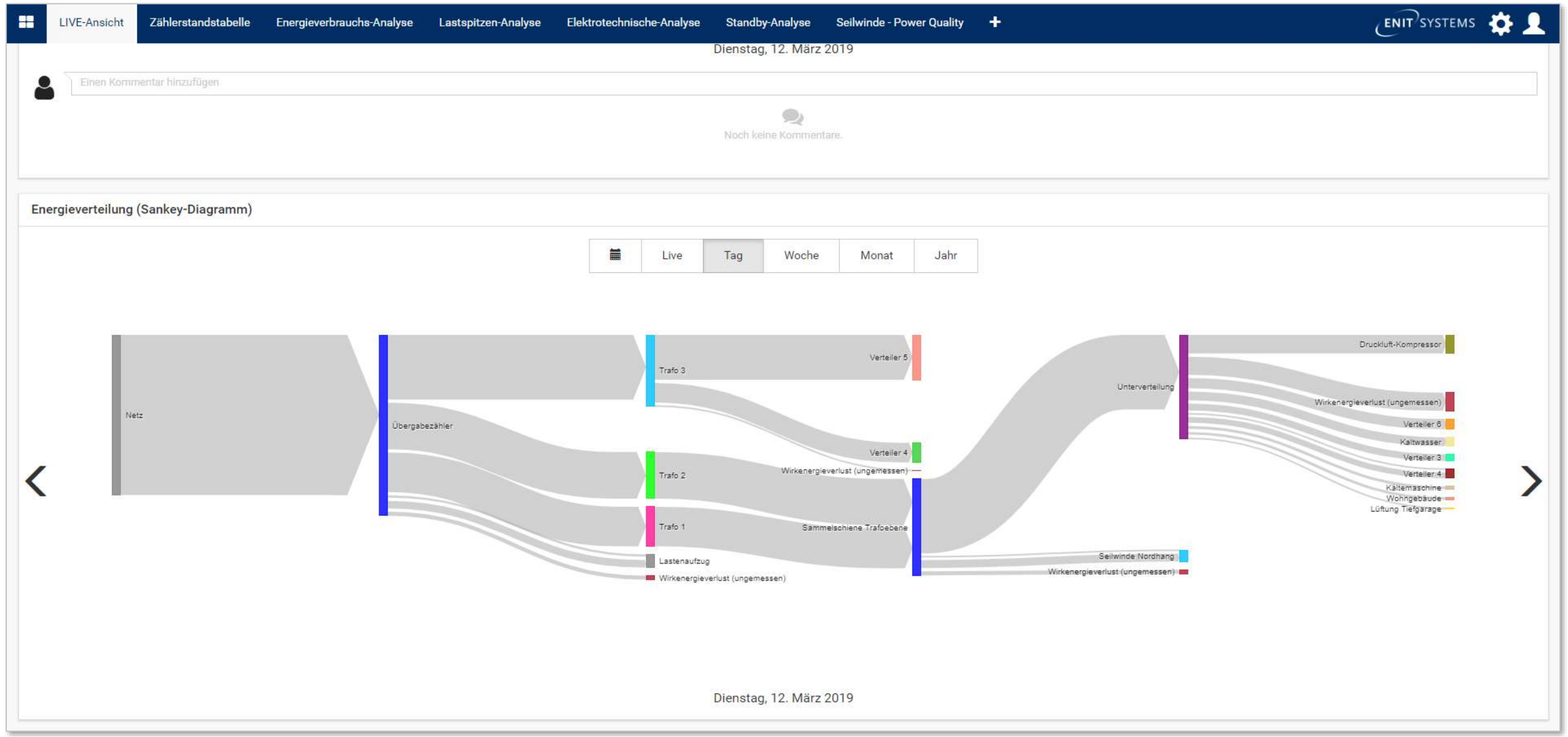
econ SOLUTIONS

…

→ integration of all media and types

Example: Submeter integration



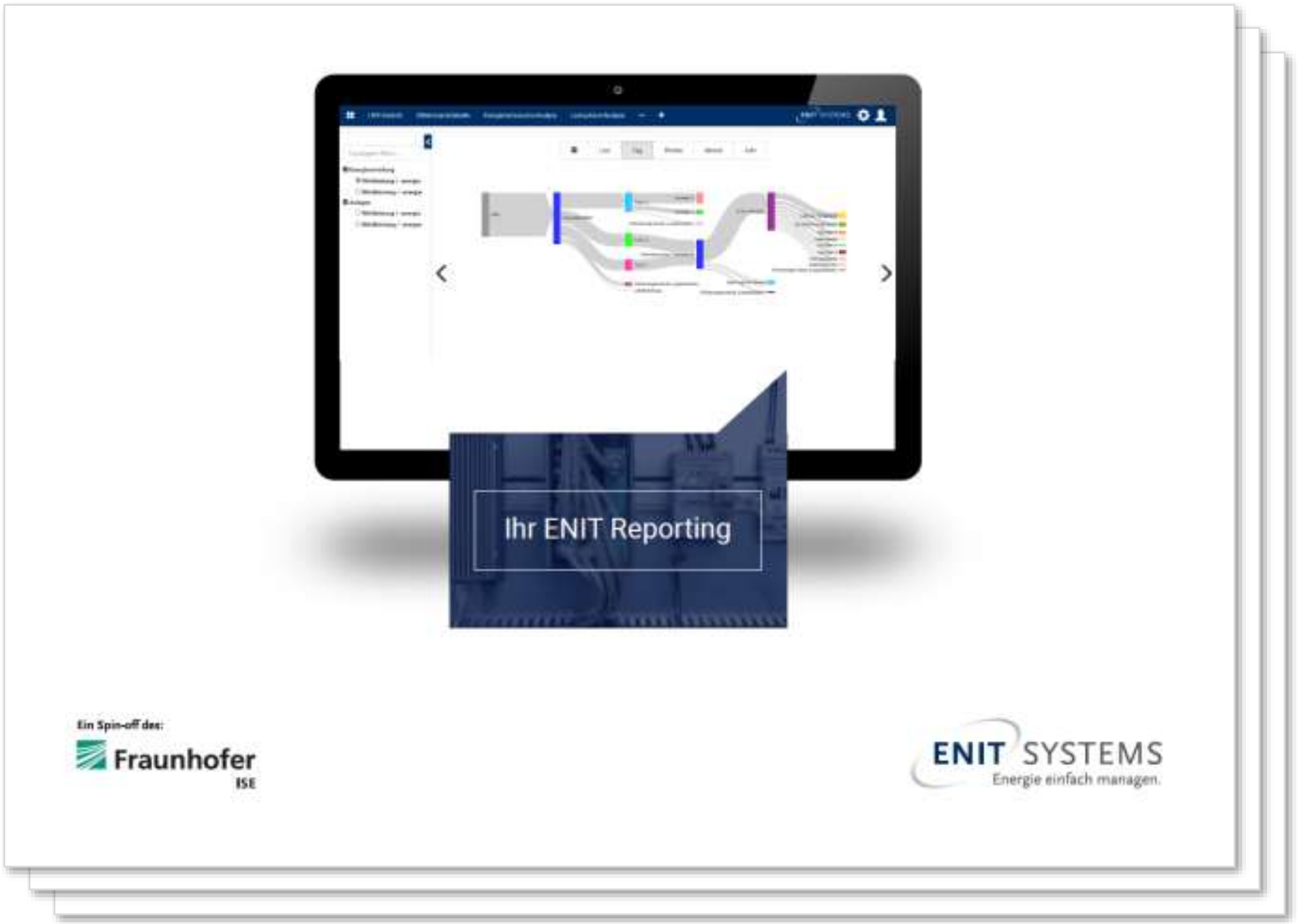


Monthly reports

Step 4 of 4

Order → Shipment → Billing meter online → Web-access → First algorithms → Report

Monthly reports



ENIT as your sparring partner:
→ get advise from experts
→ get consulting on hardware & software
→ get help on individual solutions

→ interaction secures improvements

What do you get?

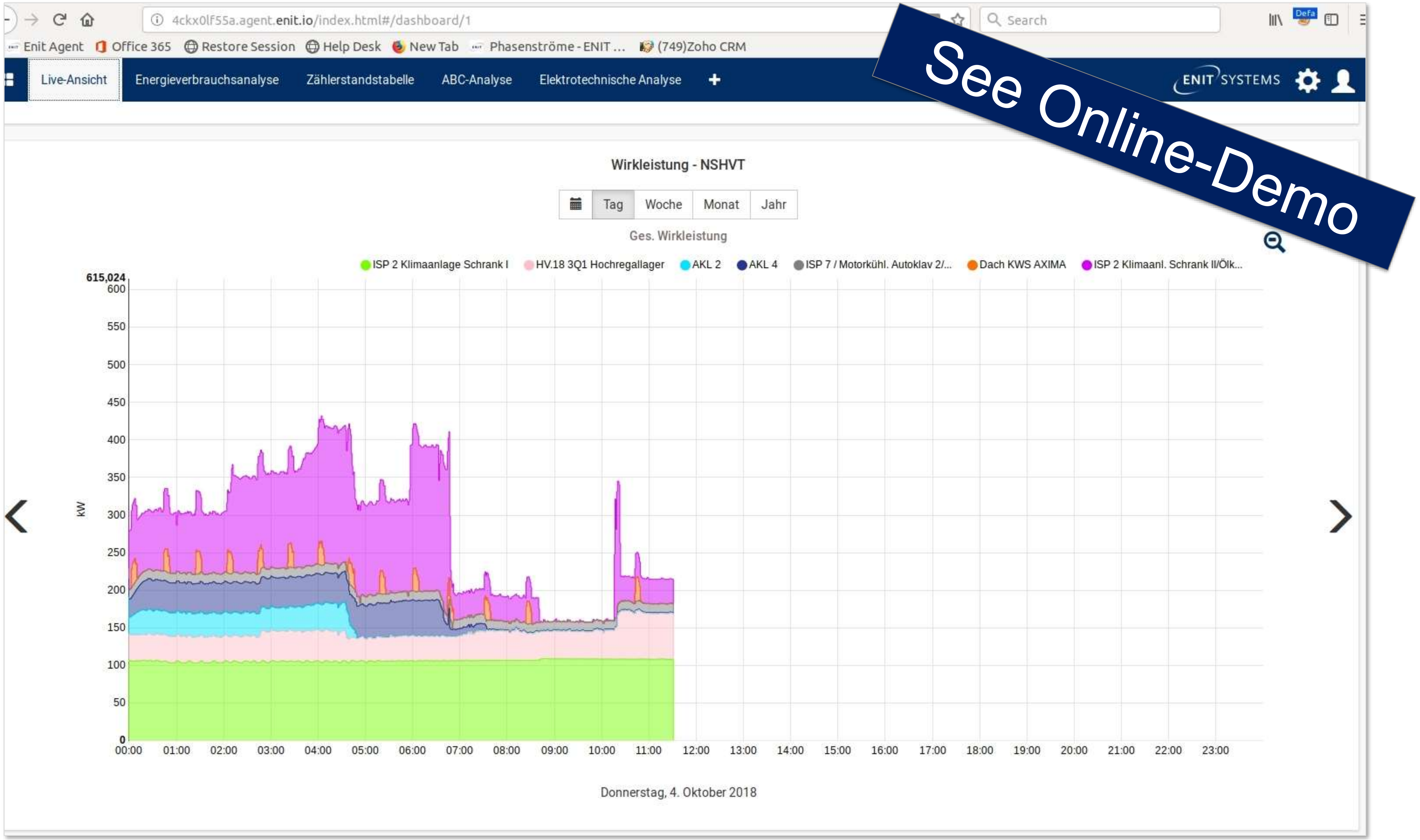
ENIT SYSTEMS
Energie einfach managen.

Web-UI

Real-time

1.

chrome

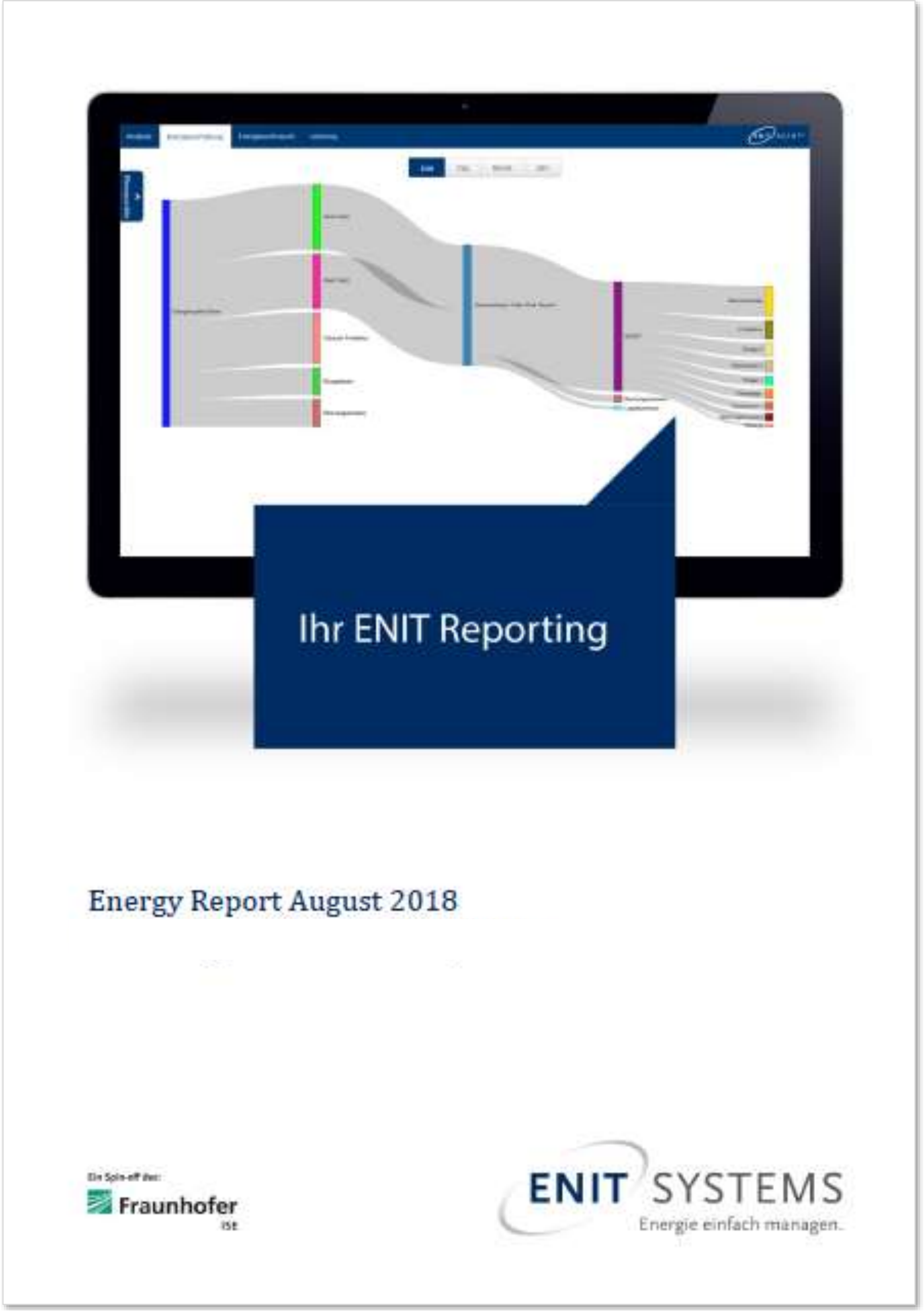


Web-UI: Real-time machine states not only for efficiency analysis

Monthly report

.pdf

2.

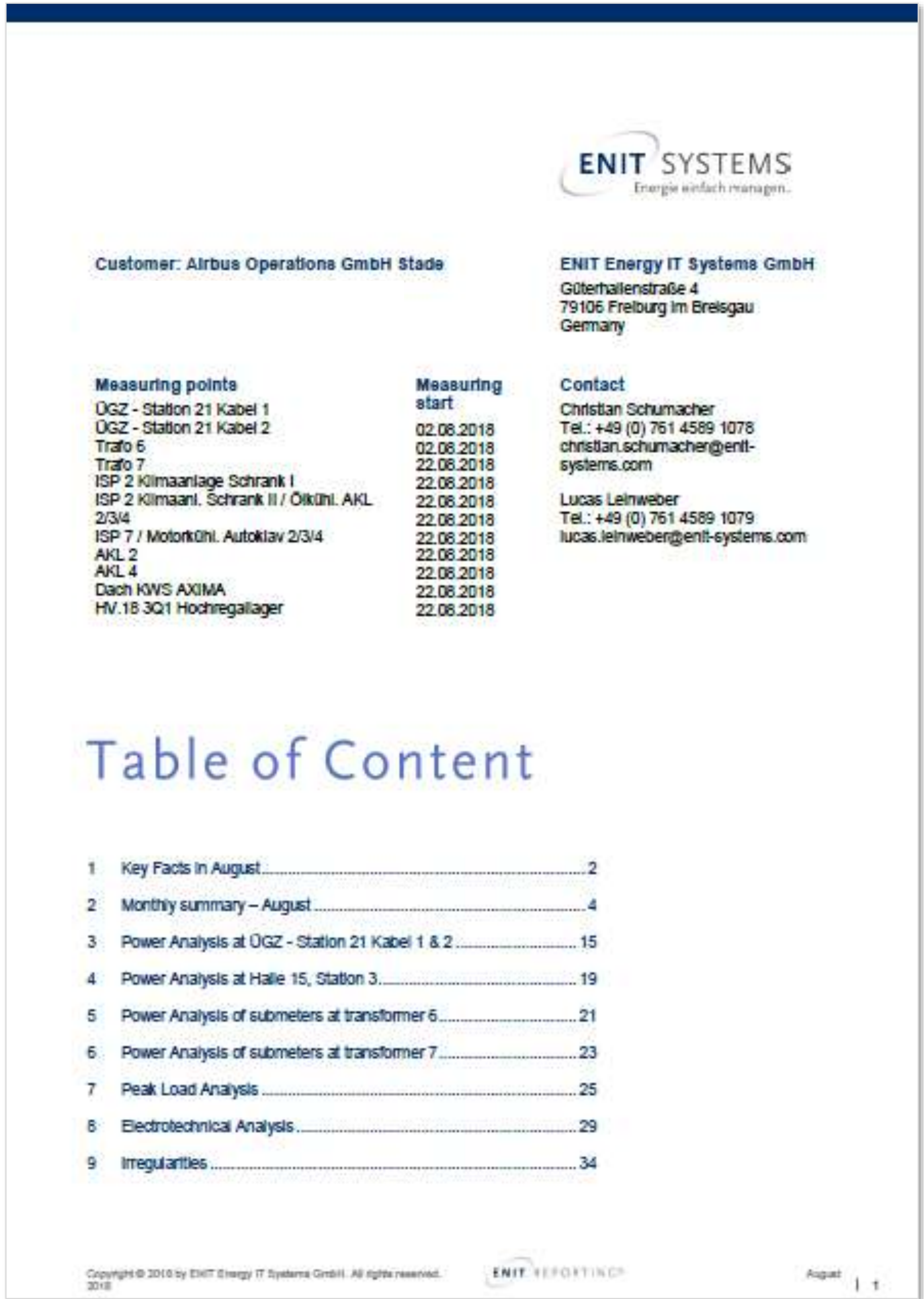


Ihr ENIT Reporting

Energy Report August 2018

Ein Spin-off des:
Fraunhofer ISE

ENIT SYSTEMS
Energie einfach managen.



ENIT SYSTEMS
Energie einfach managen.

Customer: Airbus Operations GmbH Stade

ENIT Energy IT Systems GmbH
Güterhallenstraße 4
79106 Freiburg im Breisgau
Germany

Measuring points	Measuring start
ÜGZ - Station 21 Kabel 1	02.08.2018
ÜGZ - Station 21 Kabel 2	02.08.2018
Trafo 6	22.08.2018
Trafo 7	22.08.2018
ISP 2 Klimaanlage Schrank I	22.08.2018
ISP 2 Klimaanl. Schrank II / Ölkühl. AKL 2/3/4	22.08.2018
ISP 7 / Motorkühl. Autoklav 2/3/4	22.08.2018
AKL 2	22.08.2018
AKL 4	22.08.2018
Dach KWS AXIMA	22.08.2018
HV.18 3Q1 Hochregallager	22.08.2018

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Table of Content

Report is sent as .pdf

Monthly report

.pdf

2.

PDF
Adobe

Energy consumption

Savings Potential:

357.800 €/p.a.

Quick wins: ~12,6%

Peakload

Savings Potential:

127.000 €/p.a.

Reactive Energy

→ Consumption of re Energy
doesn't r action

Accessible via Software / Report

Electrotechni

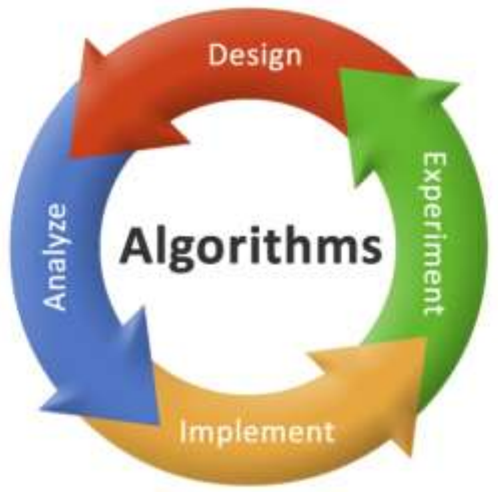
Recommendation of action
Security of System
Irregularities

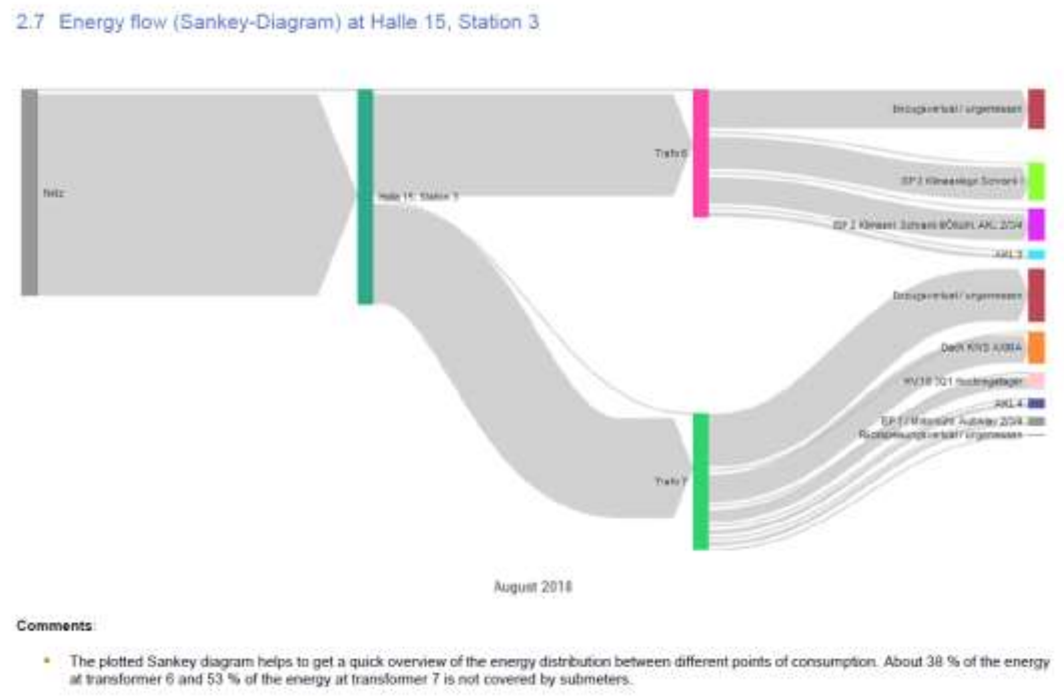
> 12% quick-win potential

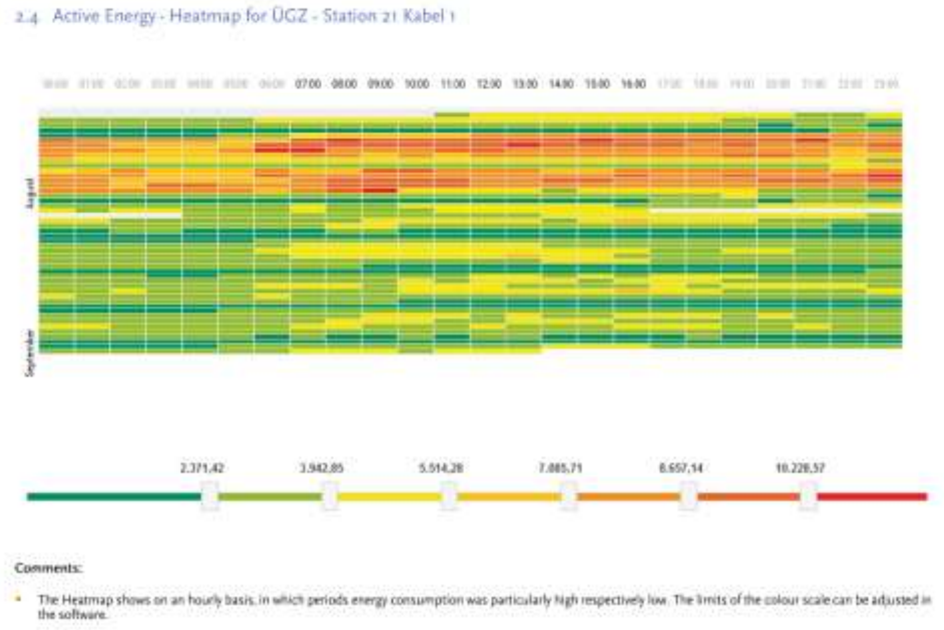
Algorithm results

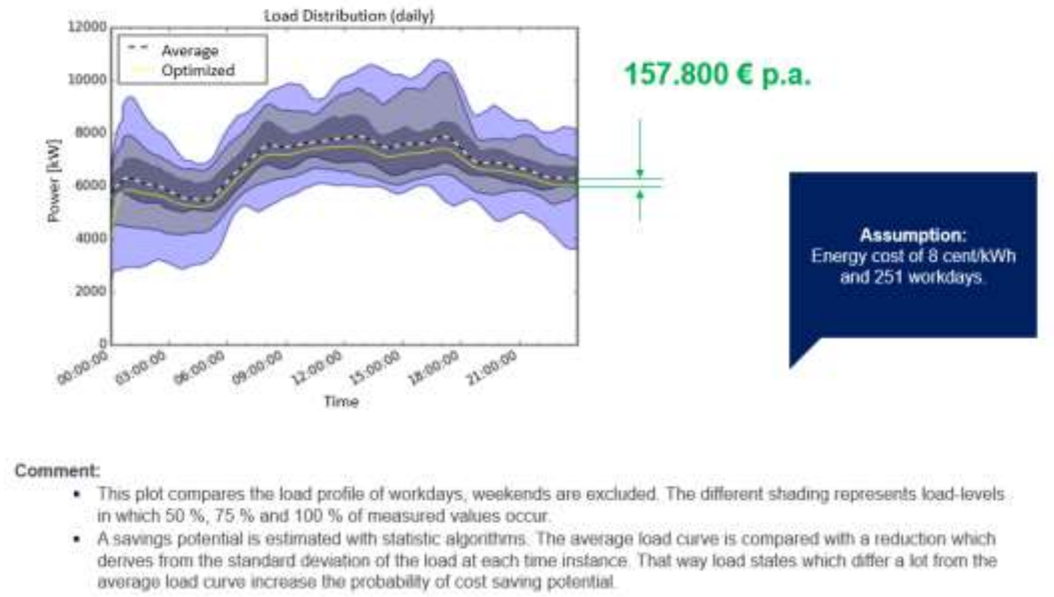
.pdf

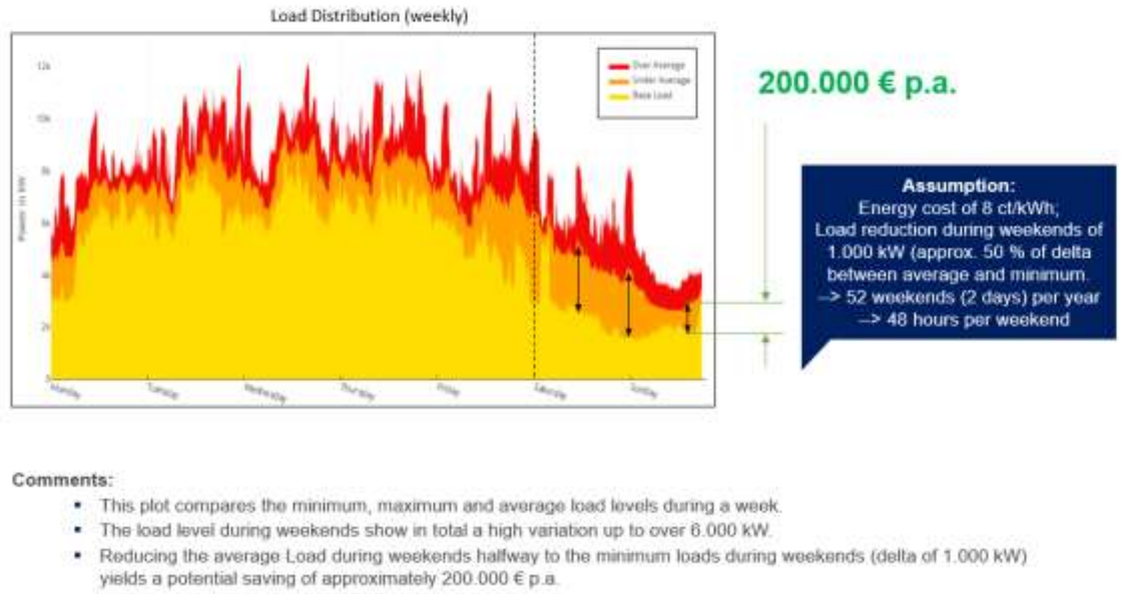
3.

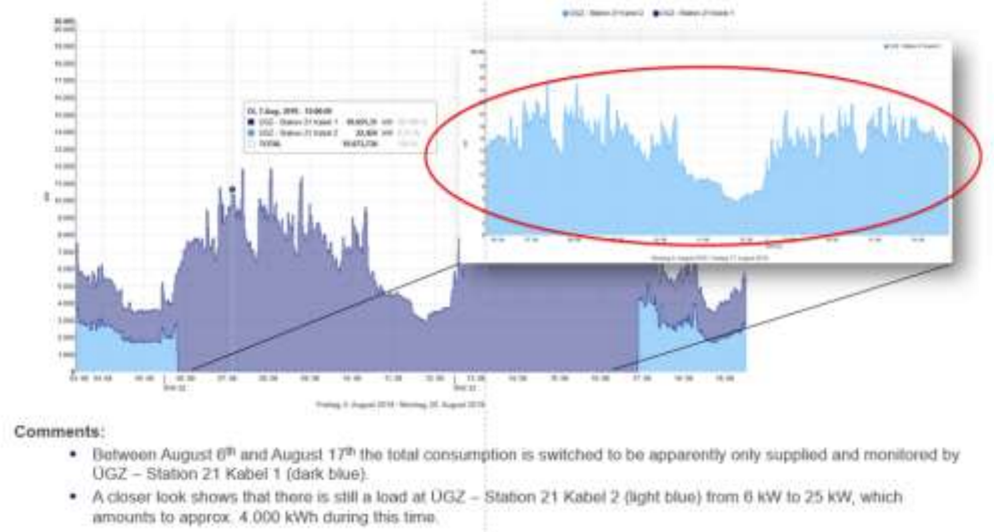








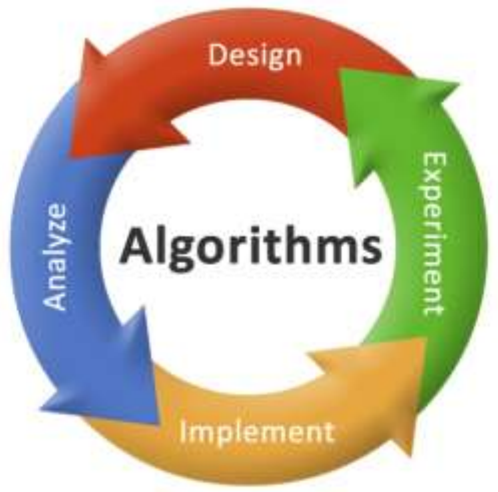


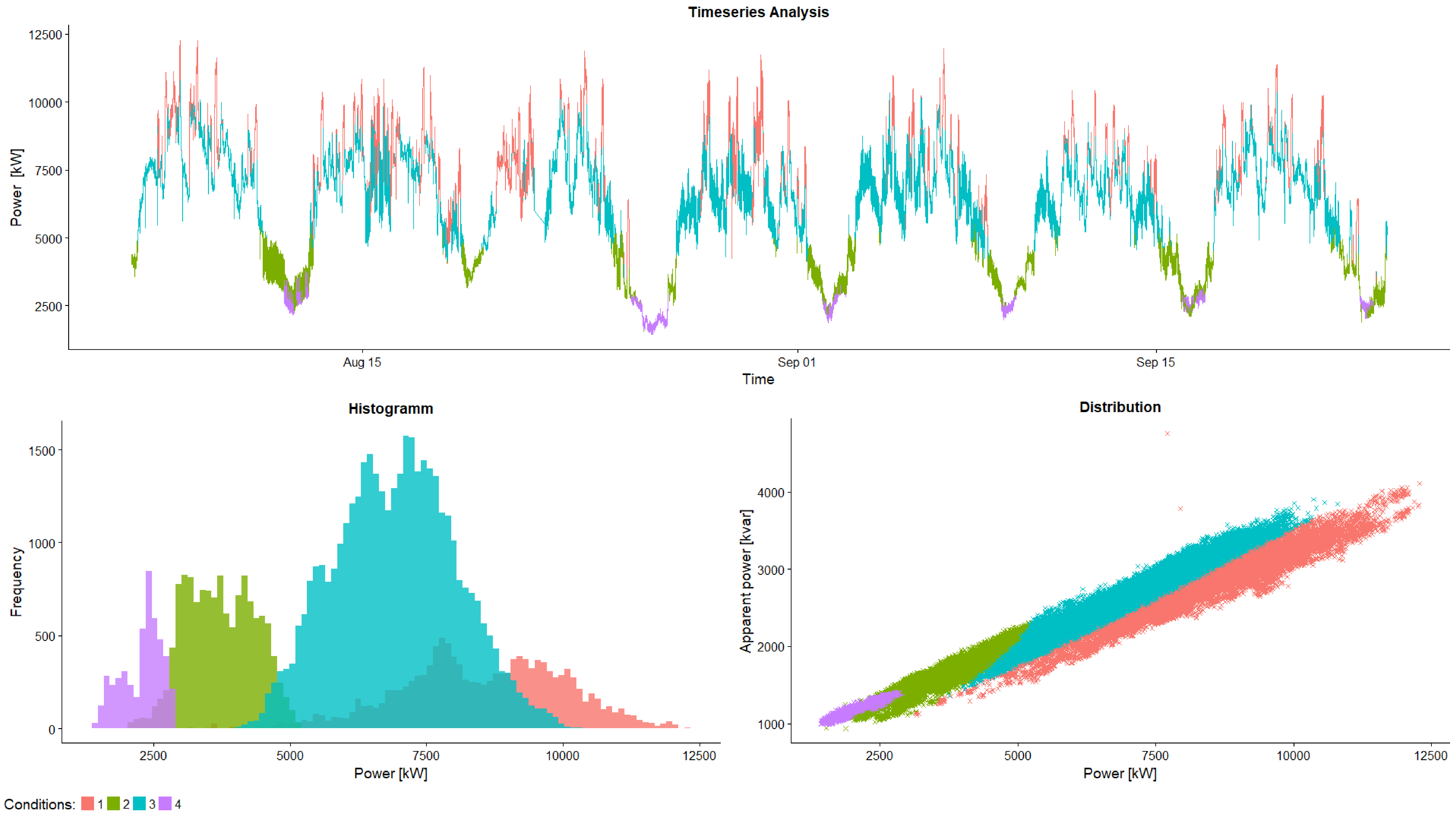


Example:

Multi-dimensional state identfication based on

3.





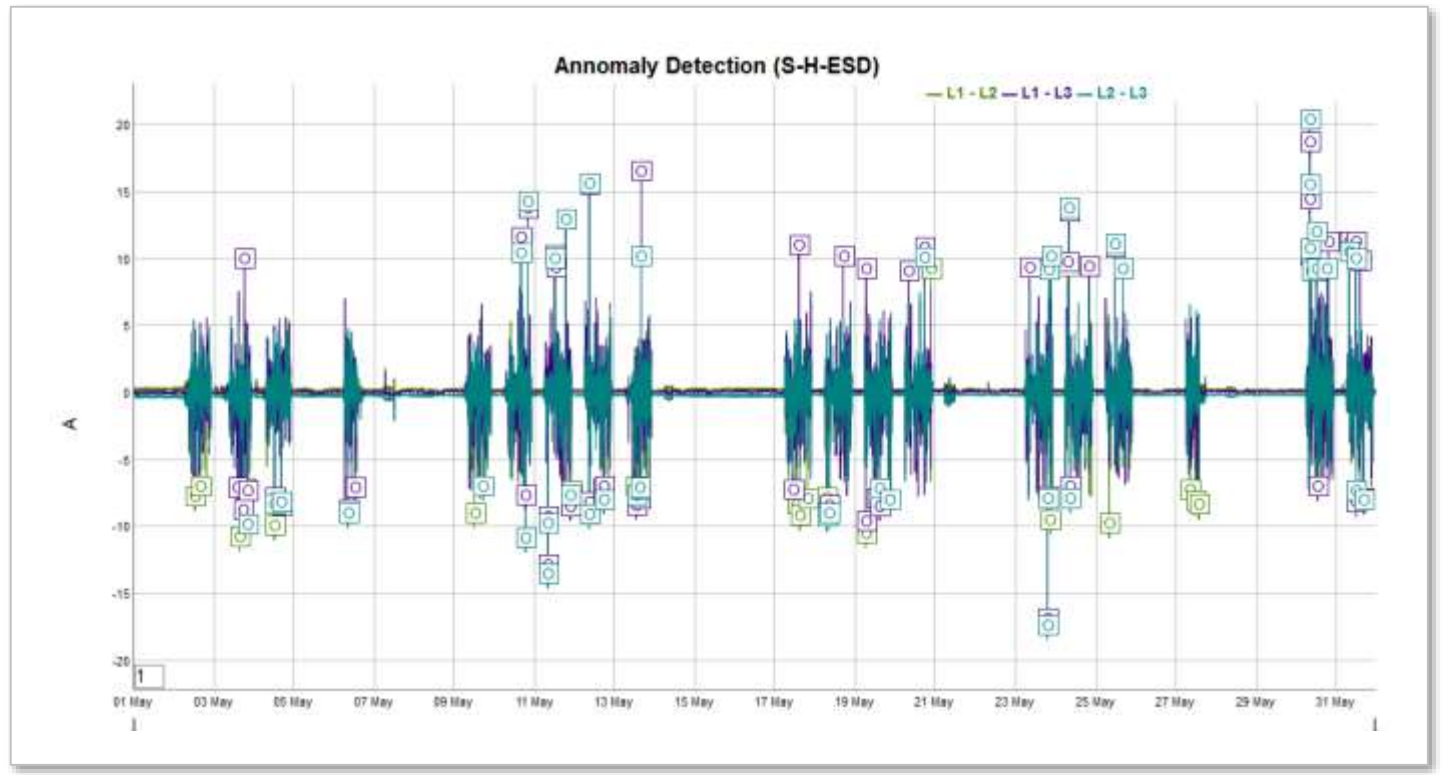
Integration of production data allows KPIs & error detection

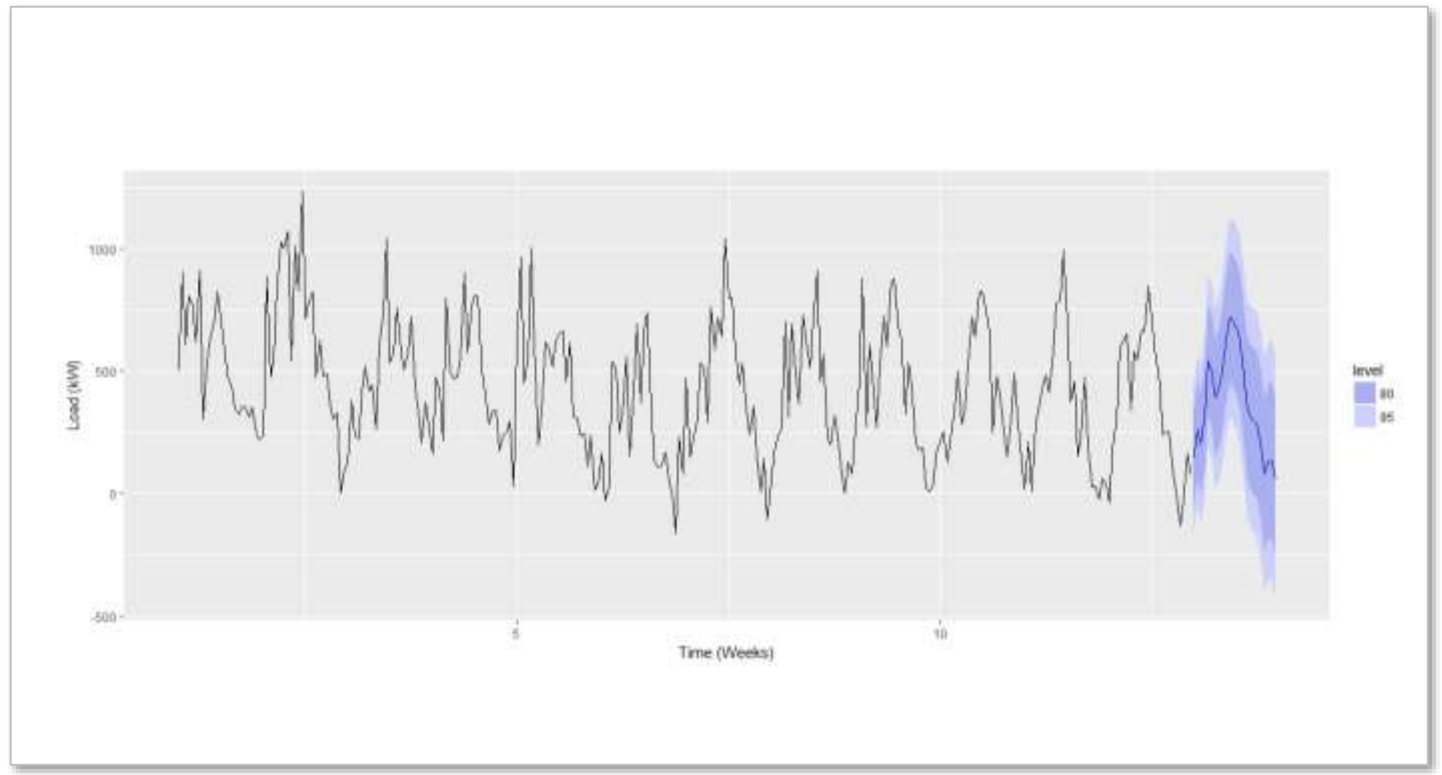
New:
Anomaly-detections and prediction

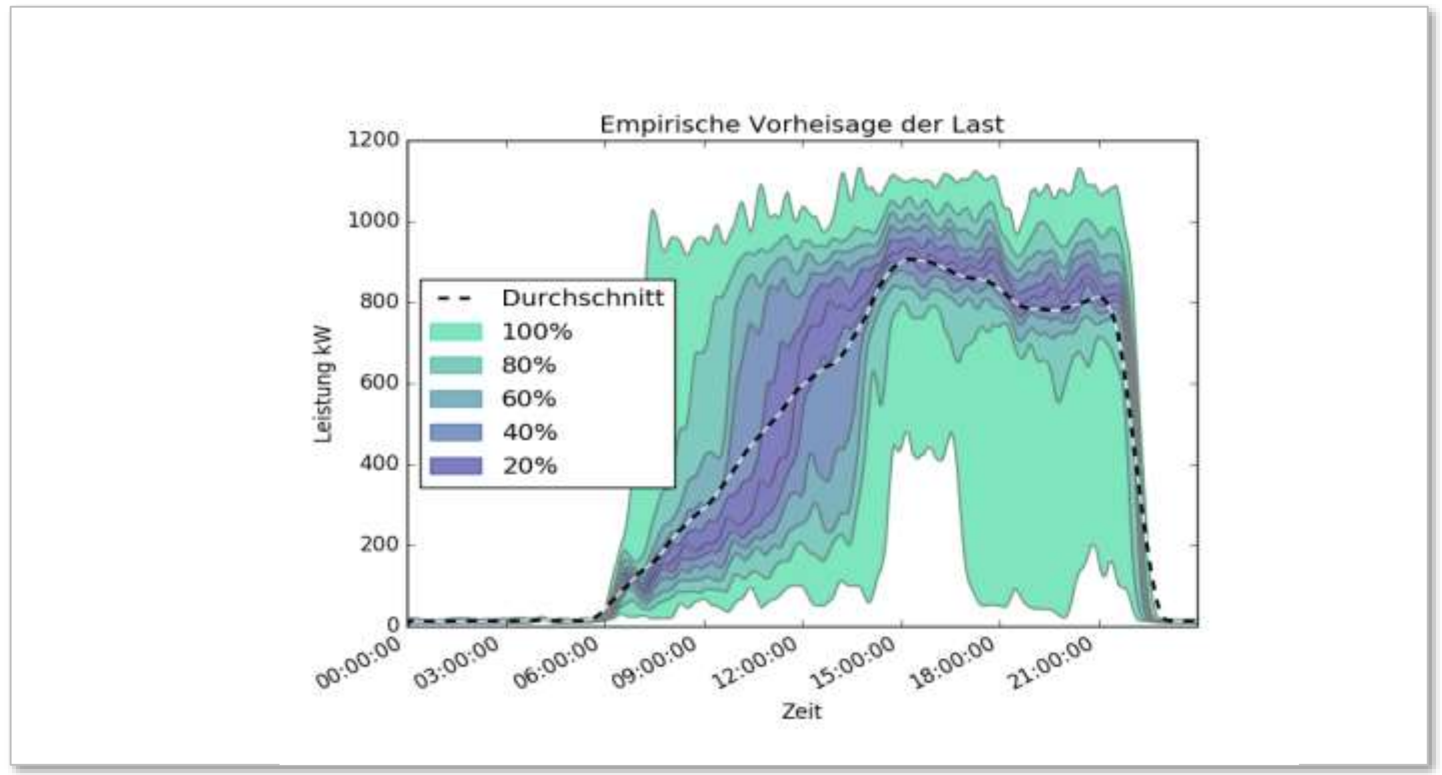
Anomaly detection

Prediction of weekly load profile

Prediction of daily load profile







Assistance in maintenance and basis for flexibility leverage

Customer query

ENERGY COSTS
Localisation and disconnection of unnecessary consumers

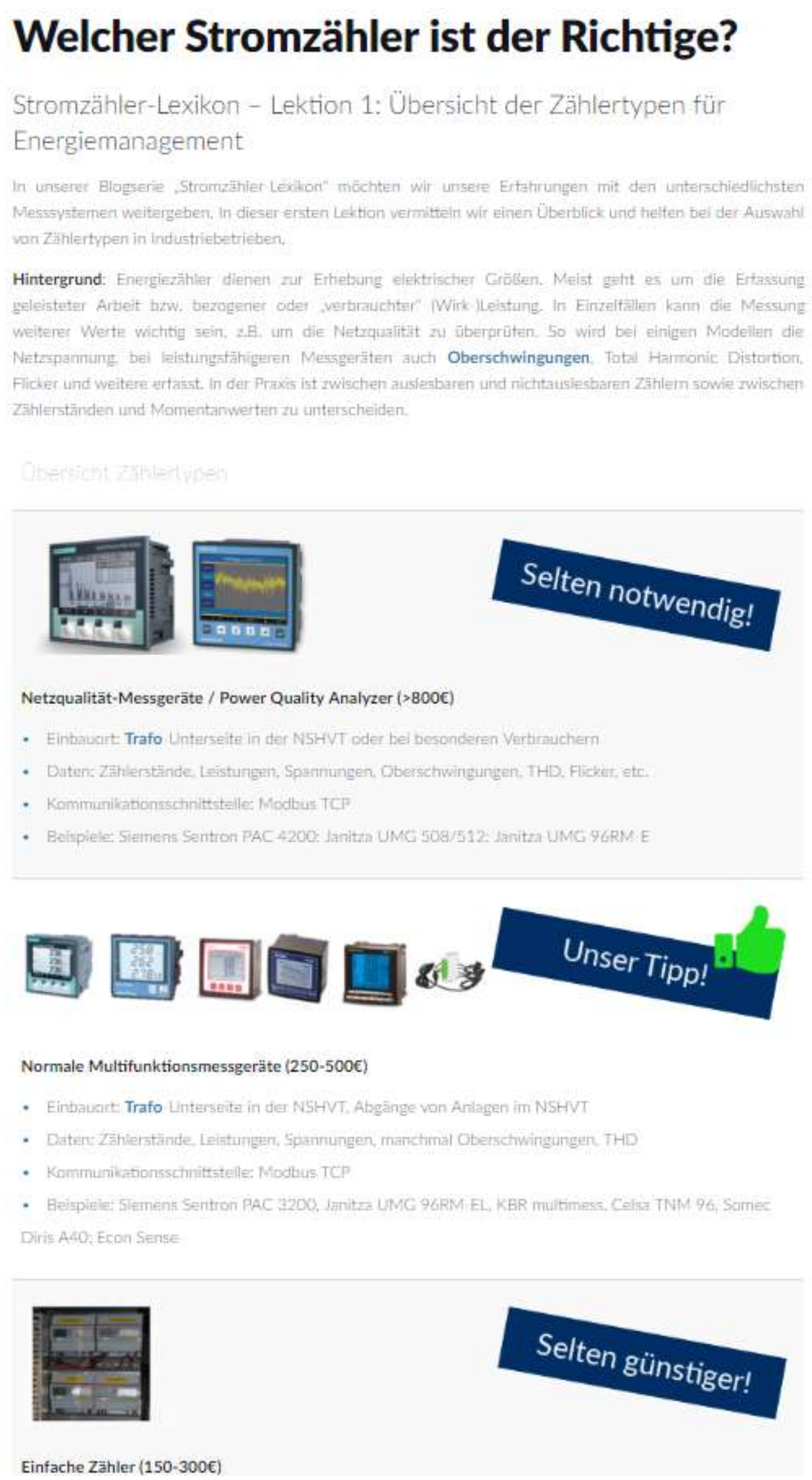
VALUE

ISO 50.001/3
Certification tool

CONTROLLING
Energy costs per cost center

SECURITY
Power quality monitoring

Deep dive: Submeter integration



Welcher Stromzähler ist der Richtige?

Stromzähler-Lexikon – Lektion 1: Übersicht der Zählertypen für Energiemanagement

In unserer Blogserie „Stromzähler Lexikon" möchten wir unsere Erfahrungen mit den unterschiedlichsten Messsystemen weitergeben. In dieser ersten Lektion vermitteln wir einen Überblick und helfen bei der Auswahl von Zählertypen in Industriebetrieben.

Hintergrund: Energiezähler dienen zur Erhebung elektrischer Größen. Meist geht es um die Erfassung geleisteter Arbeit bzw. bezogener oder „verbrauchter" (Wirk-)Leistung. In Einzelfällen kann die Messung weiterer Werte wichtig sein, z.B. um die Netzqualität zu überprüfen. So wird bei einigen Modellen die Netzspannung, bei leistungsfähigeren Messgeräten auch Oberschwingungen, Total Harmonic Distortion, Flicker und weitere erfasst. In der Praxis ist zwischen auslesbaren und nichtauslesbaren Zählern sowie zwischen Zählerständen und Momentanwerten zu unterscheiden.

Übersicht Zählertypen

Selten notwendig!

Netzqualität-Messgeräte / Power Quality Analyzer (>800€)

- Einbauort: Trafo Unterseite in der NSHVT oder bei besonderen Verbrauchern
- Daten: Zählerstände, Leistungen, Spannungen, Oberschwingungen, THD, Flicker, etc.
- Kommunikationsschnittstelle: Modbus TCP
- Beispiele: Siemens Sentron PAC 4200; Janitza UMG 508/512; Janitza UMG 96RM-E

Unser Tipp!

Normale Multifunktionsmessgeräte (250-500€)

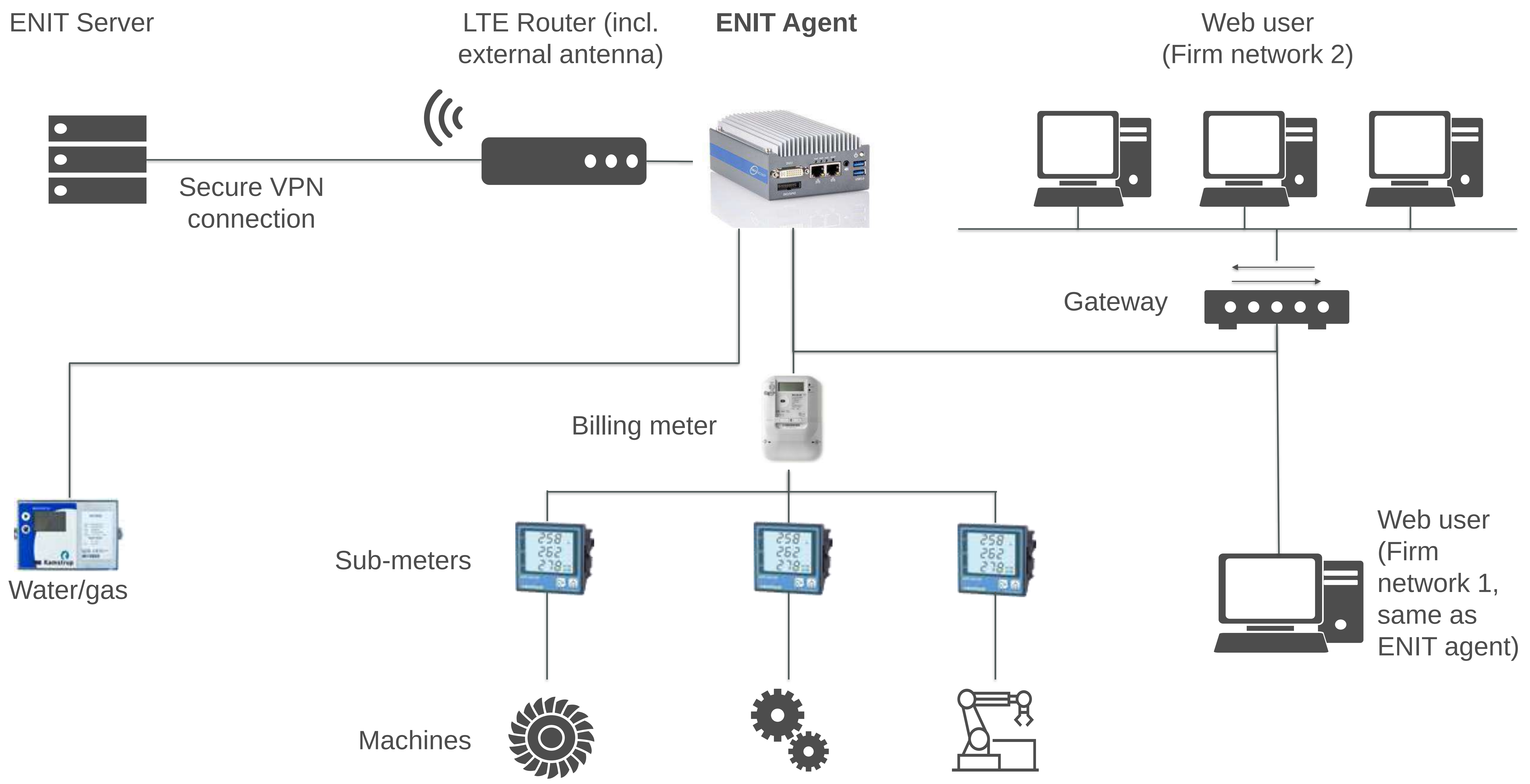
- Einbauort: Trafo Unterseite in der NSHVT, Abgänge von Anlagen im NSHVT
- Daten: Zählerstände, Leistungen, Spannungen, manchmal Oberschwingungen, THD
- Kommunikationsschnittstelle: Modbus TCP
- Beispiele: Siemens Sentron PAC 3200, Janitza UMG 96RM-EL, KBR multimess, Celsa TNM 96, Somec Diris A40; Econ Sense

Selten günstiger!

Einfache Zähler (150-300€)

→ advice on field level is part of service

Deep dive: Architecture and security



Enablement of industry 4.0 applications

Deep-Dive: Three core functionalities in one

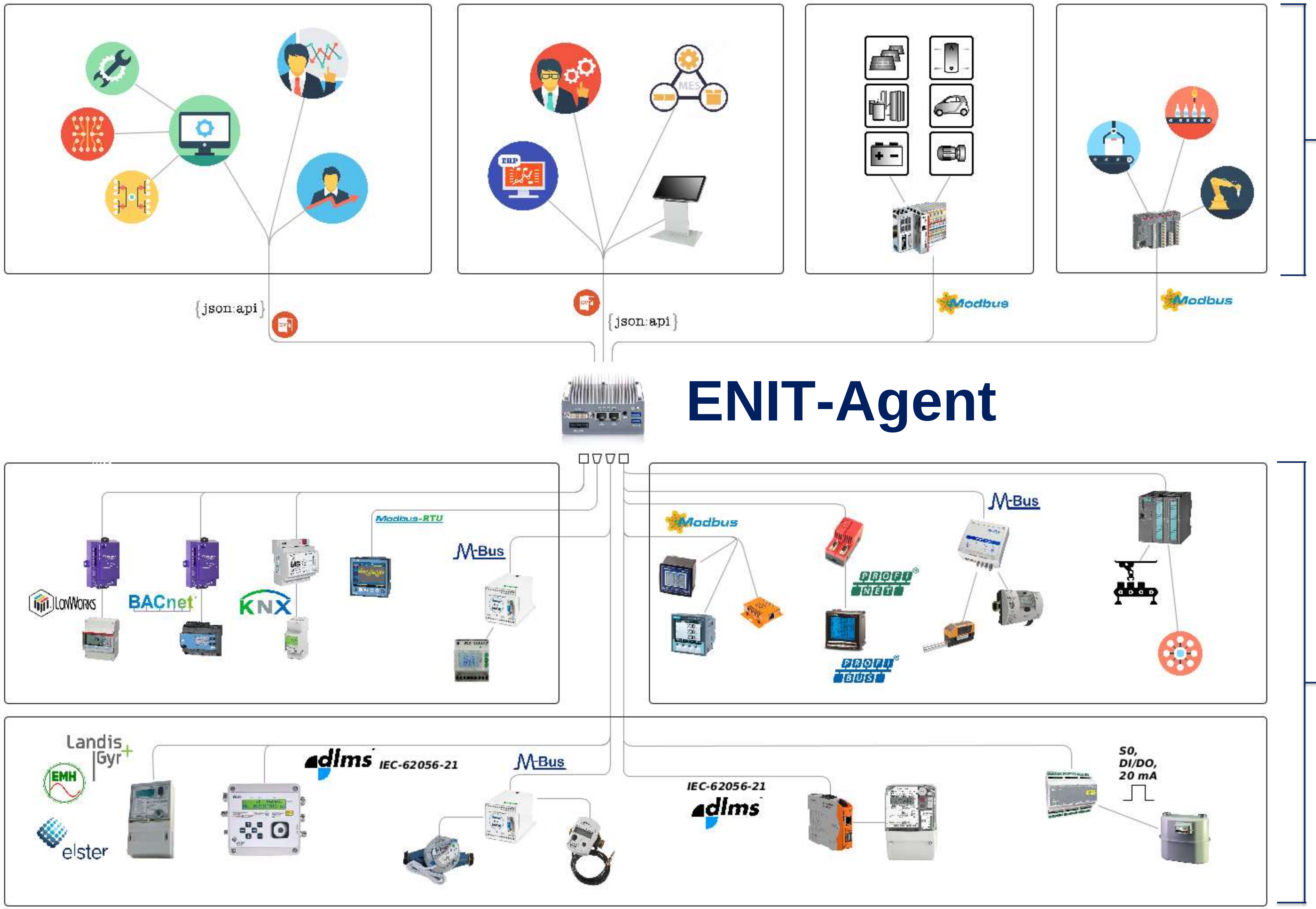
1 **Analytics-Software**
Individual dashboards

2 **Energydata-Gateway**
ERP, SPS, BMS, MES, etc.

3 **Datalogger**
Datalogger and -base for all energy media

ENIT Agent:
All-in-one

Open edge platform



Data processing and interpretation

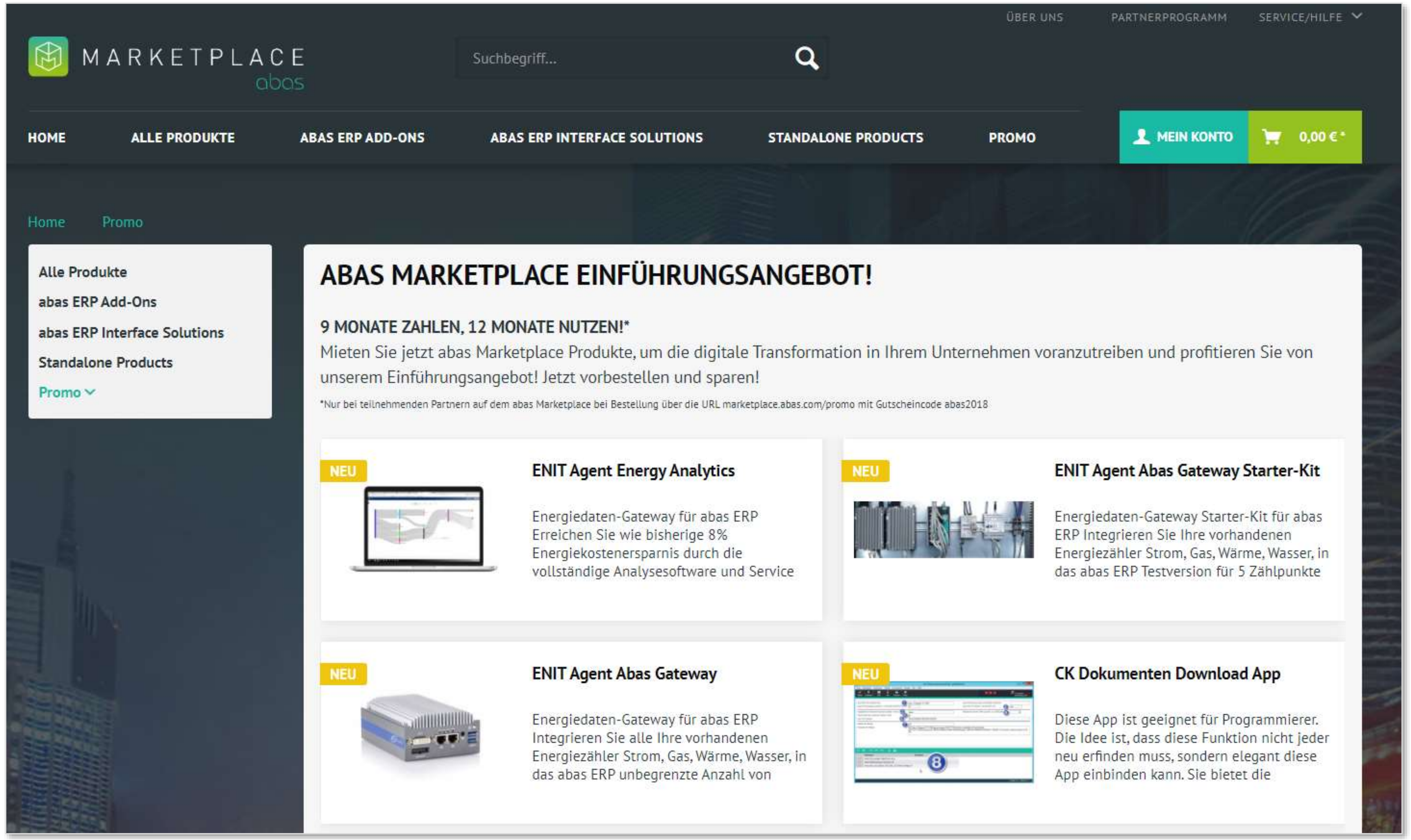
Data acquisition

Deep dive: Open platform

3

Example:

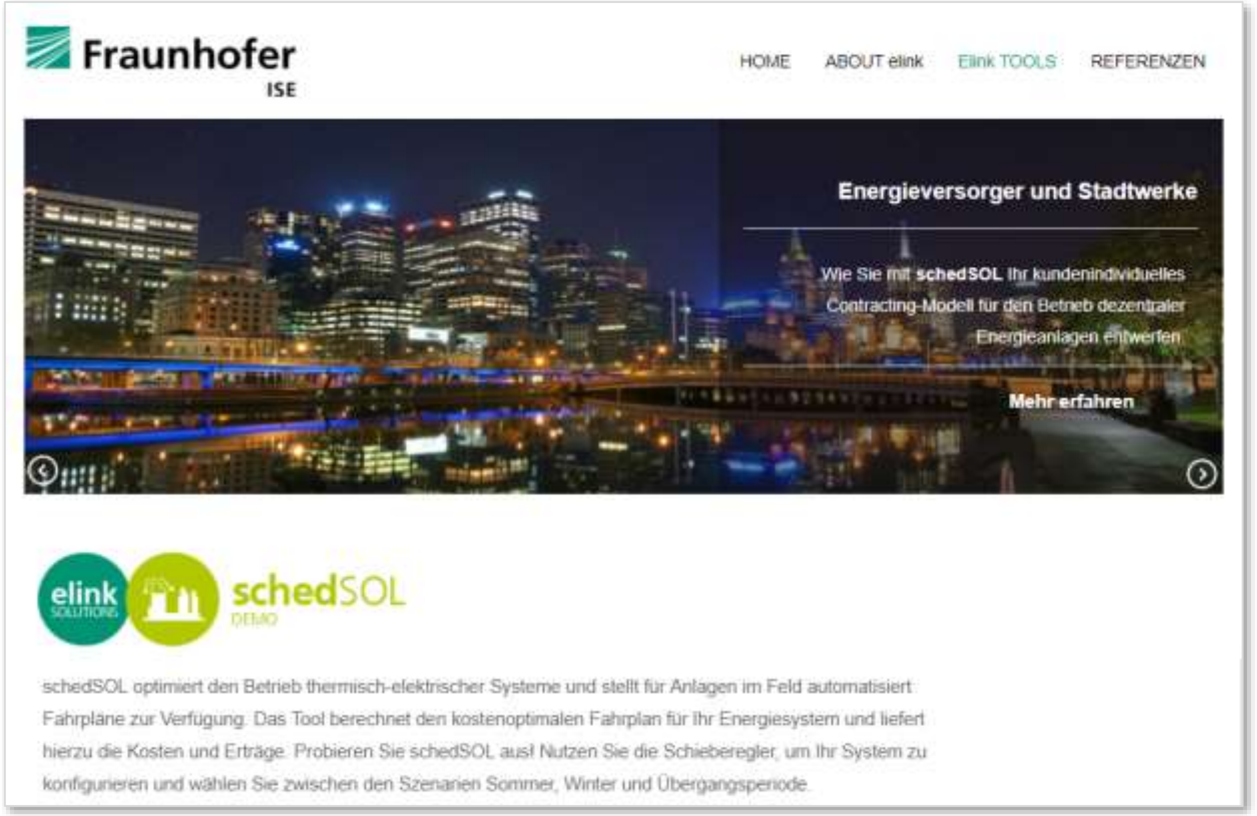
abas ERP

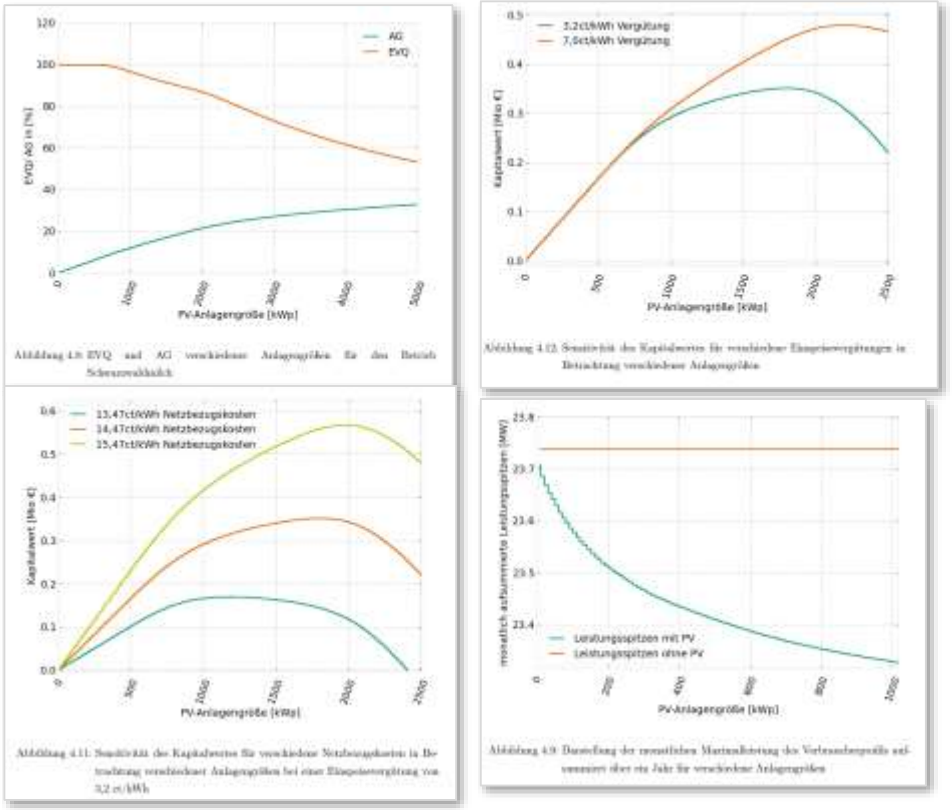


ERP-integration, incl. production planning

Deep dive: Open platform

4





High-resolution simulation for PV & battery systems


ENIT Kundentag
EINLADUNG
10.10.19
ENIT SYSTEMS
Energie einfach managen.

Location, Infos und Impressionen

Location ENIT-Kundentag

KREATIVPARK
LOKHALLE FREIBURG

Kreativpark Lokhalle
Paul-Ehrlich-Straße 7
79106 Freiburg
http://enit.systems/lokhalle

Kontaktdaten für Rückfragen

E-Mail: kundentag@enit-systems.com
Telefon: 0761 45 89 10 0
Ansichtskarte: http://enit.systems/karte

Empfohlene Unterkünfte

Der Veranstaltungsort ist von den empfohlenen Unterkünften bequem zu Fuß erreichbar.

Hampton by Hilton
Zita-Kaiser-Straße 32
79106 Freiburg
http://enit.systems/hampton

Super 8 Freiburg
Zita-Kaiser-Straße 34
79106 Freiburg
http://enit.systems/super8

Contact

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youtube.com/ENITSystemsIT