

Gantner.webportal

System description

October 2019

Gantner.webportal presented by

Version 3



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FOR

PV Magazine Webcast

Monitoring and visualization of measurement data

„Gantner-webportal“ is a vendor-independent realtime analysis platform for the acquisition, storage, visualization and analysis of measurement data as well as for the monitoring of your PV portfolio. It provides investors with solid and reliable information (financial KPIs, performance analysis) and enables them to estimate the performance of their PV portfolio and plan preventative maintenance strategies.

Gantner provides the AG with the Gantner monitoring platform "Gantner-webportal" via Internet hosting "SaaS". This includes free updates to new program versions as well as service patches and new program features throughout the usage period. The "Gantner web portal" enables the customer to independently monitor and manage his PV systems.

All systems are preconfigured, but individually adaptable and expandable.

Gantner is not responsible for the system monitoring.

The setup of the portal and the systems will be charged according to time and effort.



Research, development and support

„**Made in Germany**“ – We plan and sell not only in Germany, but our entire product development cycle, from research through development to support, is implemented exclusively in Germany by highly qualified specialists.

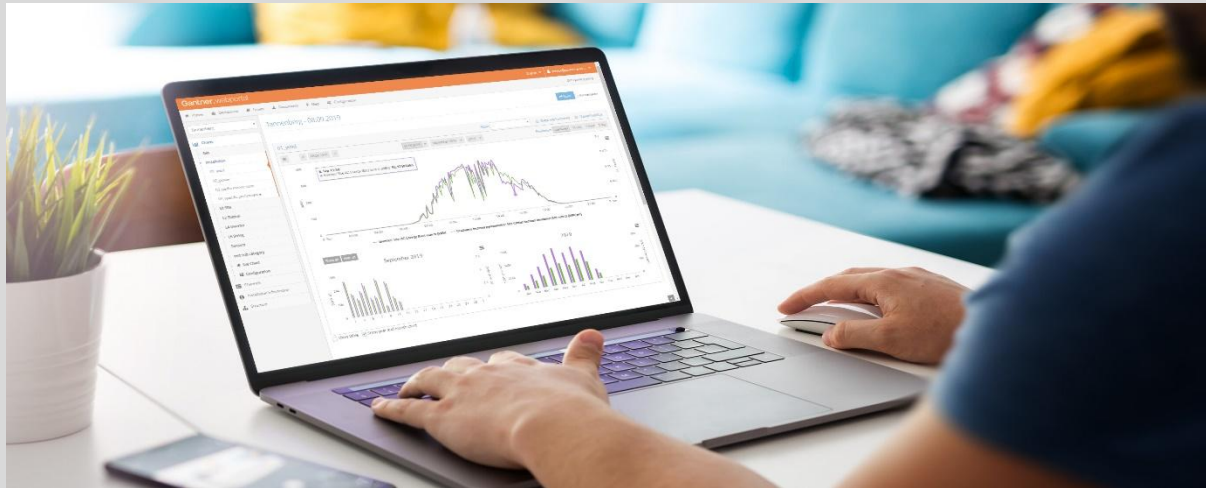
In this way we achieve an undisputed product and service quality from which our customers benefit in the long term.

Information and request for quotation

If you need more information, or would like to make a non-binding offer directly, please contact us directly via

Email: webportal@gantner-environment.com

phone: +49 37754-3351-29



- **Visualization**
- **Analysis**
- **Alarm Management (Channel- and components based)**
- **Digital image of the plant from the string to the entry point**
- **O&M Overview and administration system**
- Portfolio and asset overview including traffic light status system and Key Performance Indicator "KPIs", Asset Dashboard
- Forecast of energy production (optional)
- Mobile devices supported, W3C standard HTML5, no additional plug-ins needed
- Measured value resolution up/down to 1min
- Supports network operator reductions
- Online access and control (Gantner.RAS integration) on Gantner Q.reader systems with refresh rate of up to 1 Hz
- Gantner.RAS API for bidirectional asset access
- Data import Compatibility with data loggers from different manufacturers and other sources
- Compatible with IEC N 61724-1 (2)
- Language: English, German, Russian, Chinese
- User administration including access, release rights management
- Teamwork functionality

Visualization

- Visualization of the data in daily, monthly and annual overview and individual periods
- Charts: bar graph, line graph, combi graph, scatter plot
- Parameter / time, parameter / parameter
- Tables
- Heatmaps
- Live Charts
- Geo Structure (Option)
- Display of the plant location including intuitive traffic light system in a Google Maps map
- **MPM (Mechanistic Power Model)**

Analysis

- Analysis Functions with target / actual comparison based on local meteorostation and sensor data and optional satellite data
- Performance Ratio "PR" Comparison on all structural levels: system, station, inverter, AC-DC combiner, string
- Definable filters (eg: from irradiation 50W / m² and temperature above 20 ° C)
- Automatic plausibility check of raw values (definable range limits)
- Automatic component comparisons
- System (sites) comparison
- Availability calculation (option)
- Excel / CSV - data export (resolution: up to raw data) as download

Alarm Management (Channel- and components based)

- Alarm configuration based intuitive traffic light system
- Alarm messages with ticket system
- Extensive configurable alerting system
- Target / actual deviation
- Min/Max
- PR
- variance
- Consideration of all variables, time ranges, sun position and solar irradiation angle AOI

Digital image of the plant from the string to the entry point

- PV site structure
- installed nominal power at each point of installation
- Normalized values

O&M Overview and administration system

- Issue-Tracking-System
- On-call calendar and holiday calendar
- Plant-specific document management (data sheets, operating instructions, single line diagrams)
- Status Tickets
- Inventory - History Management
- Automatic report creation (PDF, Excel)

Sites Overview (Landing Page)

Traffic Lights System and Key Performance Indicator „KPIs“

Traffic Lights

Logger-Status

Info Alarms

Key Performance Indicator

Yield Today/Yesterday

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Home Issues Documents Map Configuration



Data privacy policy

Last update: 12:31 Time (current) - Thursday, Sep 26, 2019, 01:31 PM



Installation		Issues	Inverter	Combiner Box	String	Weather	Nominal Power (DC)	Values	PR	Power	Irradiance	Energy generation Today Yesterday
Site state	Logger state	Overdue Open	Fail Sum	Fail Sum	Fail Sum	Temperature Wind	[kWp]	Date Time	[%]	[kW]	[kW/m²]	[kWh]
 Annaberg		1 10	0 6	0 35	0 398	☀️ 11.4 °C 🌀 6.2 m/s	4'999	26.09.19 12:15	<div><div>86,37</div></div>	1'422,00	0,33	4'847,99 12'767,36
 Schwarzenberg		0 0	0 12	0 64	0 862	☀️ 11.1 °C 🌀 8.7 m/s	9'975	26.09.19 13:25	<div><div>90,99</div></div>	1'972,20	0,21	8'100,08 10'321,67
 Seiffen		0 0	156 156	0 26	0 781	☀️ 14.9 °C 🌀 4.6 m/s	4'548	26.09.19 12:15	<div><div>104,04</div></div>	766,54	0,17	6'513,66 6'157,65

-  = No alarm triggered
-  = Warnings available
-  = Failures exists
-  = Import delayed
-  = No current data available

Logger status

-  = Logger online
-  = Logger offline

Installation status

-  = Not running
-  = Notes

Release notes

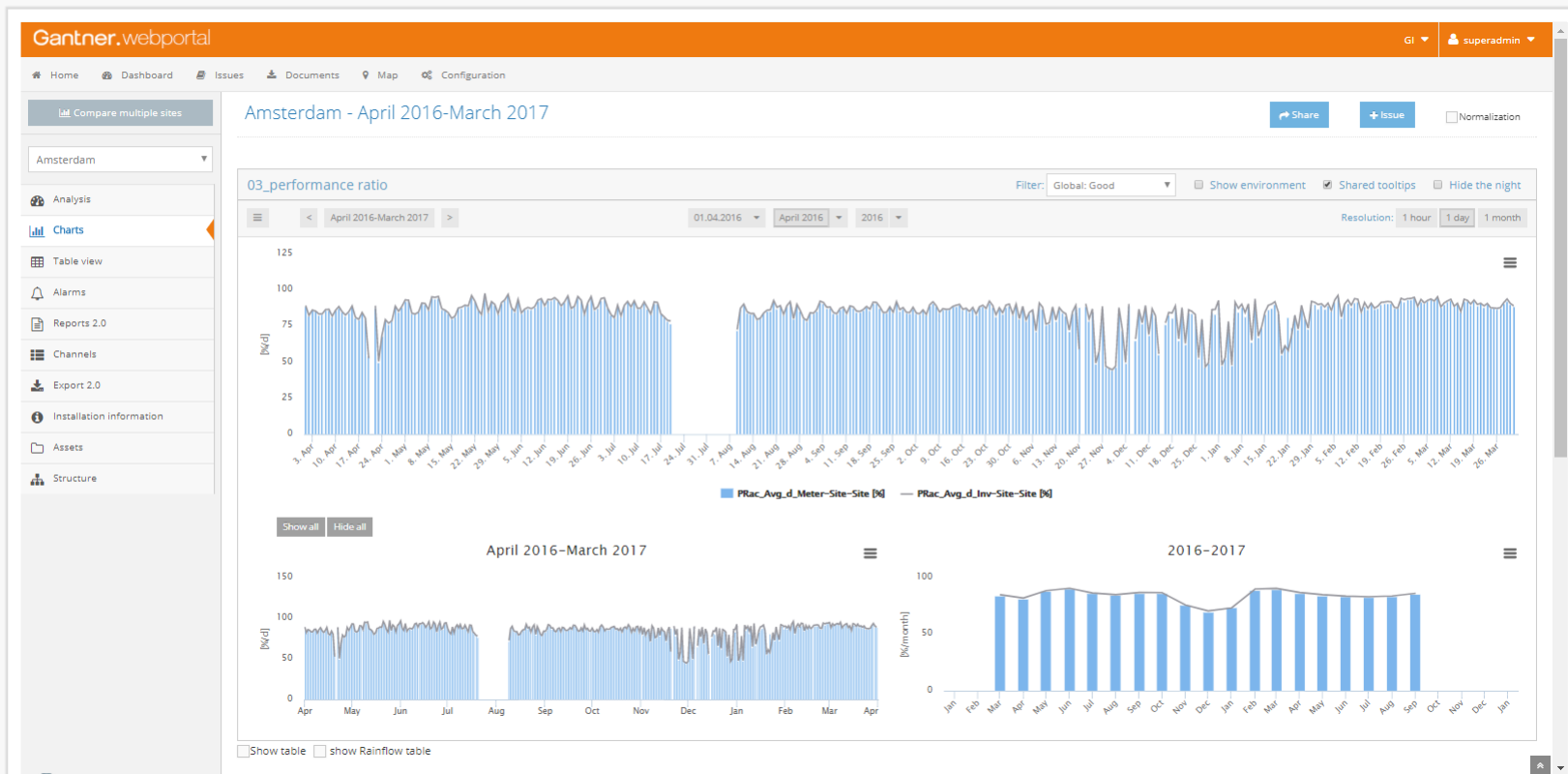
V3.1.1: Structure based alert configurations, support Gi/Tmod as x-axis for charts, GDPR links, new wildcard chart, unit convention and unit layer, dynamic filter limits, Russian language support.

Recommended system requirements: Latest chrome browser, MAC OS X or WIN 7/10. Intel Core i5, 8GB RAM, separate graphic card with 2GB RAM, resolution 1920 x 1080 px



Visualization

Diagrams, individual time frames, Example: PR, 1d span



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Home
Issues
Documents
Map
Configuration

Annaberg

Analysis

- Compare components (expert level)
 - Compare components (expert level)
 - CB (March Gi500-600)
 - DCCB PR last 7 days
 - Heatmap
 - Inverter nPac
 - String nIdc
- Yearly comparison

Charts
Alarms
Reports 2.0
Channels
Export 2.0
Installation information
Inventory
Structure

Count	Mean	Std. deviation (k=2)	Rel. deviation [%] min/max	OK range (from mean) [%] [abs]	Median
35/35	88,61	1,91252	-6,29 / 6,07	90,0000	88,93

Component	PR DC Average /time Time resolution [%]	PR DC Average /time Time resolution Difference [%]	PR DC Average /time Time resolution Rel. deviation [%]	Range [%]	PR DC Average /time Time resolution Status []
CB-B.1.02	83,043	-5,572	-6,29	<div><div></div></div>	low
CB-C.2.01	85,111	-3,504	-3,95	<div><div></div></div>	ok
CB-A.2.04	86,080	-2,535	-2,86	<div><div></div></div>	ok
CB-A.1.01	86,142	-2,473	-2,79	<div><div></div></div>	ok
CB-A.2.05	86,433	-2,182	-2,46	<div><div></div></div>	ok
CB-C.1.01	86,941	-1,674	-1,89	<div><div></div></div>	ok
CB-C.1.03	87,031	-1,584	-1,79	<div><div></div></div>	ok
CB-A.1.05	87,085	-1,530	-1,73	<div><div></div></div>	ok
CB-B.2.01	87,314	-1,301	-1,47	<div><div></div></div>	ok
CB-C.2.02	87,742	-0,873	-0,98	<div><div></div></div>	ok
CB-A.2.03	88,076	-0,539	-0,61	<div><div></div></div>	ok
CB-C.2.04	88,139	-0,476	-0,54	<div><div></div></div>	ok
CB-C.1.02	88,316	-0,299	-0,34	<div><div></div></div>	ok
CB-B.1.05	88,653	0,038	0,04	<div><div></div></div>	ok
CB-A.1.04	88,661	0,046	0,05	<div><div></div></div>	ok
CB-B.2.06	88,702	0,087	0,10	<div><div></div></div>	ok
CB-B.2.03	88,892	0,277	0,31	<div><div></div></div>	ok
CB-A.1.03	88,926	0,311	0,35	<div><div></div></div>	ok
CB-A.1.02	88,930	0,315	0,36	<div><div></div></div>	ok
CB-A.2.02	88,958	0,343	0,39	<div><div></div></div>	ok
CB-B.2.02	88,966	0,351	0,40	<div><div></div></div>	ok

Settings

View mode
Table view

Type
Combiner box

Parameter name
PR DC Average /time Time resolution

OK range (from mean)
90 [%]

Filter
Global: Gi > 100 W/m²

Time period
Last seven days

Show OK range (from mean)
All

Limit
Components

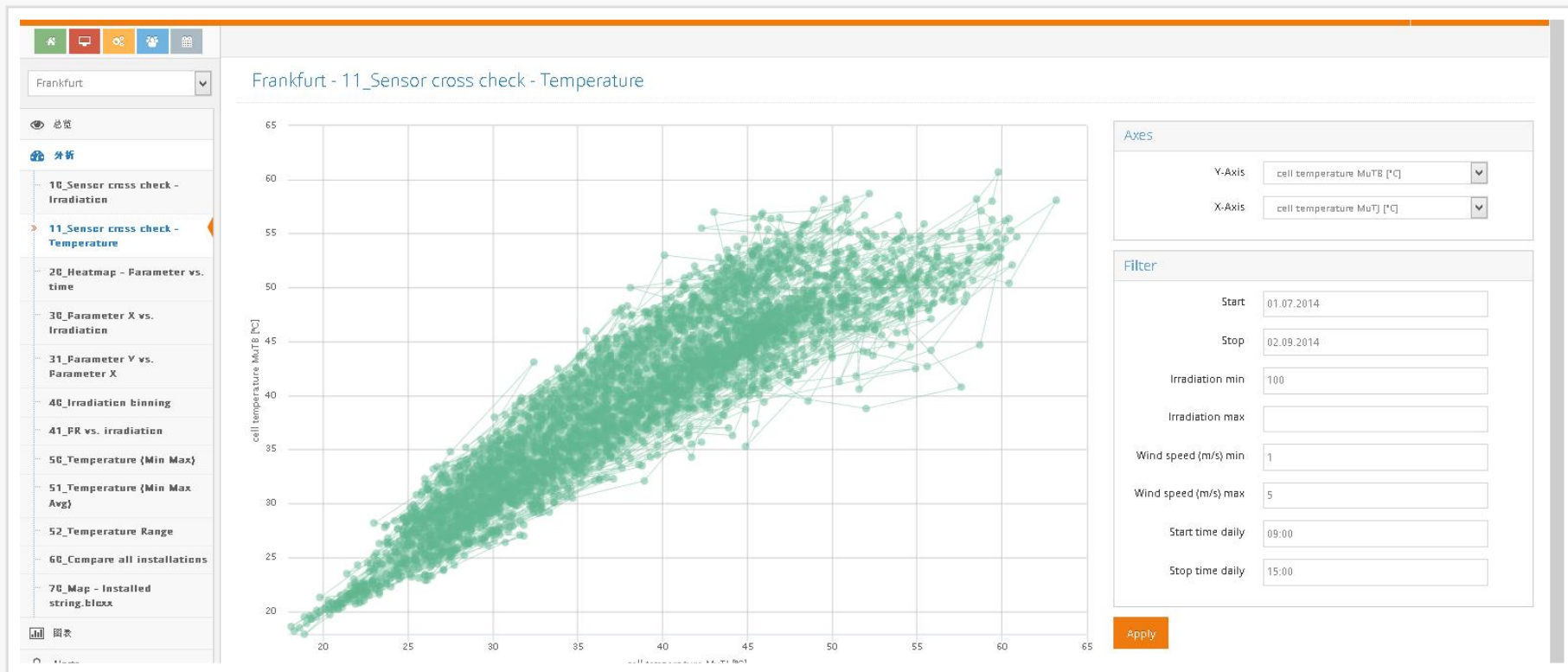
Search

Save as shortcut

De
En [Default]
Ru

Title
DCCB PR last 7 days

Update
Delete



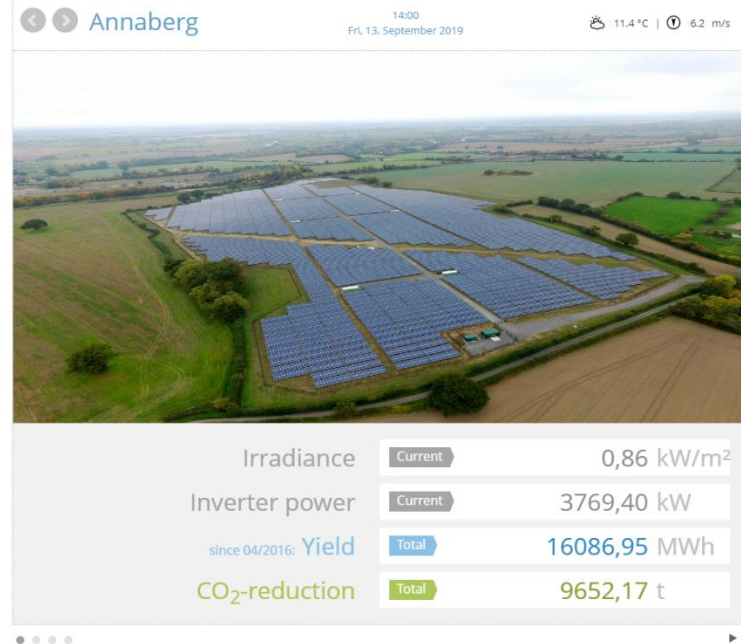
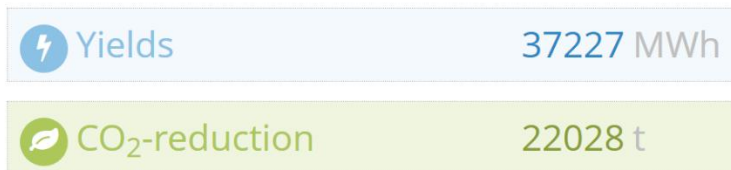
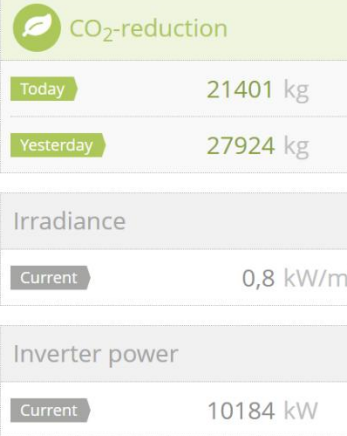
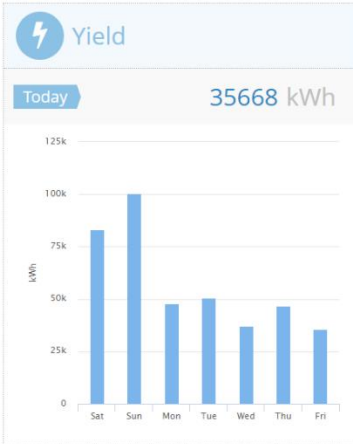
Overview solar farms

4 Solar Farms - 25 MWp

14:01

Fri, 13. September 2019

Gantner
instruments



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Oxford

Overview

Analysis

Charts

Charts v2

Alerts

Reports

Issues

Channels

Export

Availability

Installation Info

Availability

Layout per 12 month, custom start date

Site	Period	H_PER [h]	SYS_AIV [%]	IN count	AMA [h/IN]	SYS_AIV_AMA [%]
Oxford	2013/01-2013/12	2932	98.91	7	10	99.25
Oxford	2014/01-2014/12	2987	99.47	7	10	99.8
Oxford	2015/01-2015/12	1240	98.82	7	10	99.63

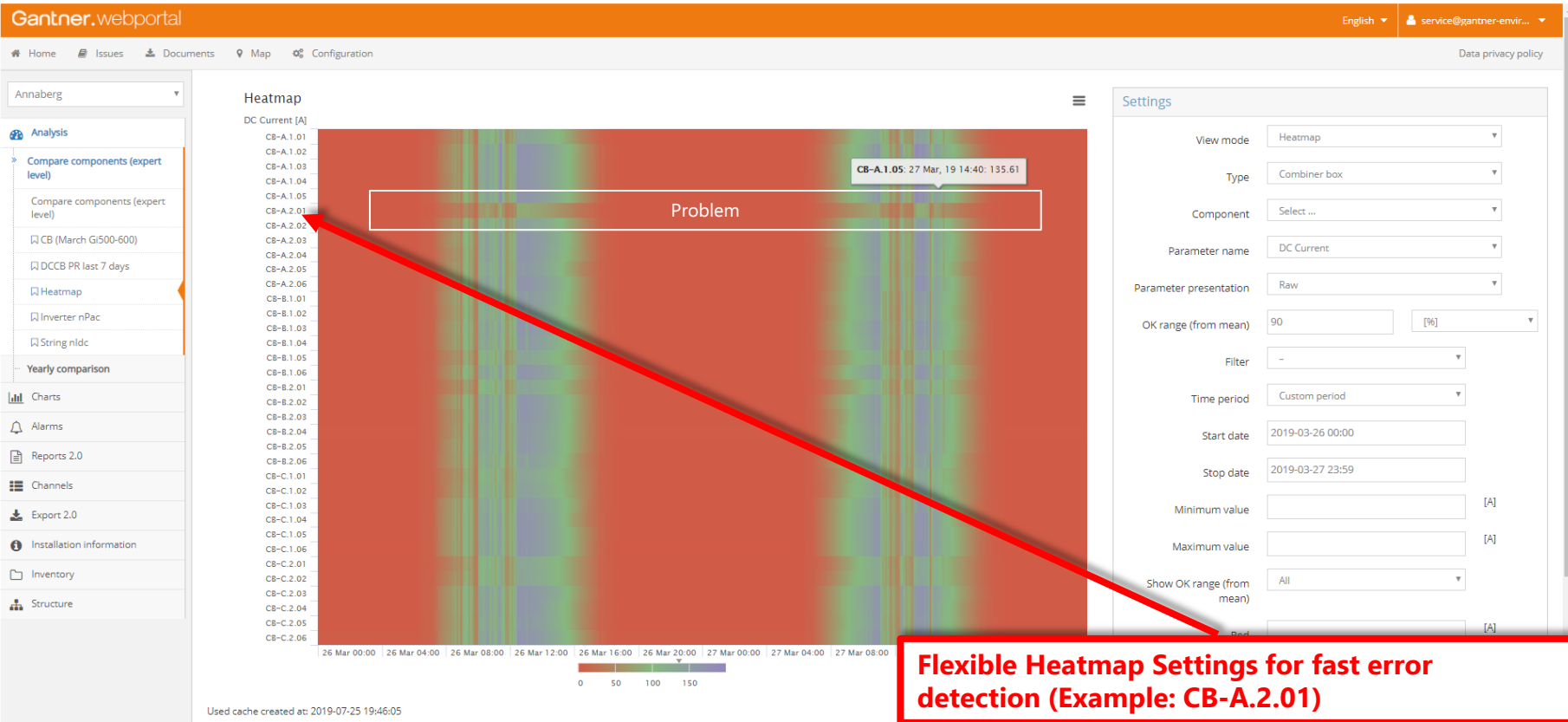
- Resolution: h, day, month, year, 12month floating
- For each component (Inverter, System, Sub-System, Production batch, ..)
- → Supports preventive maintenance strategies

Layout per 12 month, custom start date detailed

Site	Period	H_PER [h]	WR.1_AIV [%]	WR.2_AIV [%]	WR.3_AIV [%]	WR.4_AIV [%]	WR.5_AIV [%]	WR.6_AIV [%]	WR.7_AIV [%]	SYS_AIV [%]	IN count	AMA [h/IN]	SYS_AIV_AMA [%]
Oxford	2013/01-2013/12	2932	99.86	96.73	99.73	96.73	99.86	99.66	99.8	98.91	7	10	99.25
Oxford	2014/01-2014/12	2987	99.13	99.2	99.67	99.1	100	100	99.2	99.47	7	10	99.8
Oxford	2015/01-2015/12	1240	100	100	91.94	100	100	100	100	98.82	7	10	99.63

Analysis

Heatmap component comparison



Map View

Display of the plant locations including intuitive traffic light system in a Google Maps map

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Home Issues Documents Map Configuration

Data privacy policy

Map of Installations




Back

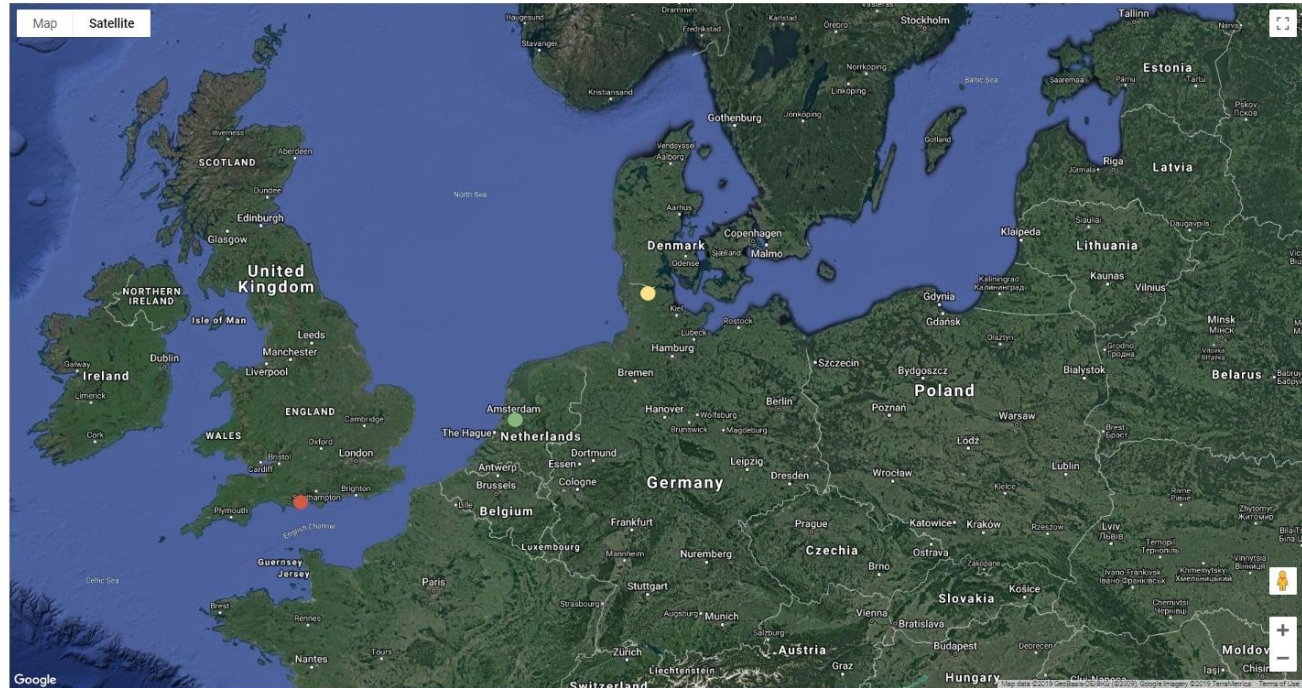
Search

☒ Show all sites
☐ Show only sites within map view

Group sites by: Continent

Europe ☐ Zoom continent

	Annaberg	11.4 °C	6.2 m/s
	Schwarzenberg	11.1 °C	8.7 m/s
	Seiffen	14.9 °C	4.6 m/s



$$P_{\text{norm}} = P_{\text{meas}} / P_{\text{peak}} = G_i * PR_{\text{MPM}}$$

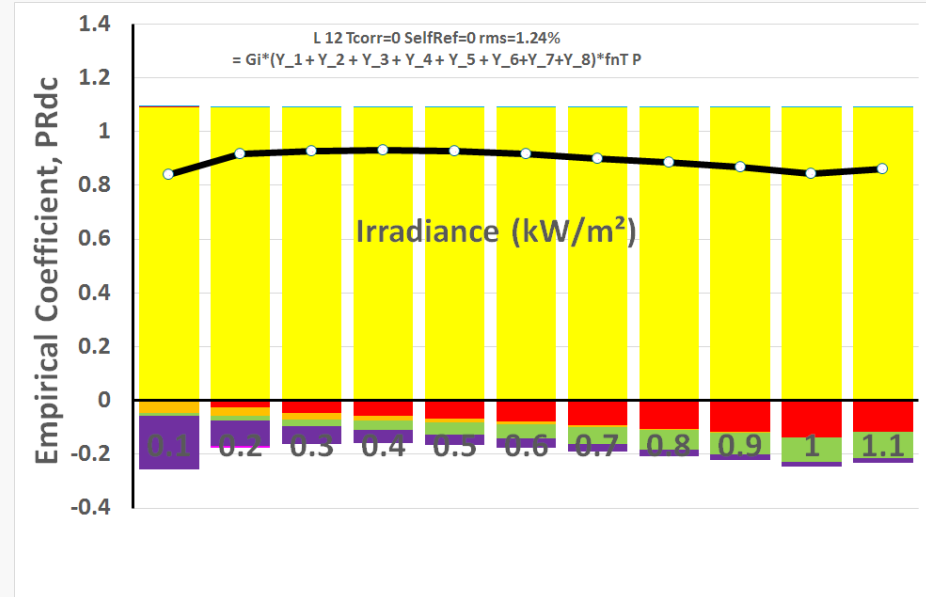
PR_{MPM} equation

$PR_{\text{MPM}} =$

$$\begin{aligned} & C_1 \\ & + C_2 * dT_{\text{mod}} \\ & + C_3 * \log_{10}(G_i) \\ & + C_4 * G_i \\ & + C_5 * WS \end{aligned}$$

- quality (~ 80 to 100%)
- gamma (PV-module)
- low light behavior
- high irradiation
- wind speed

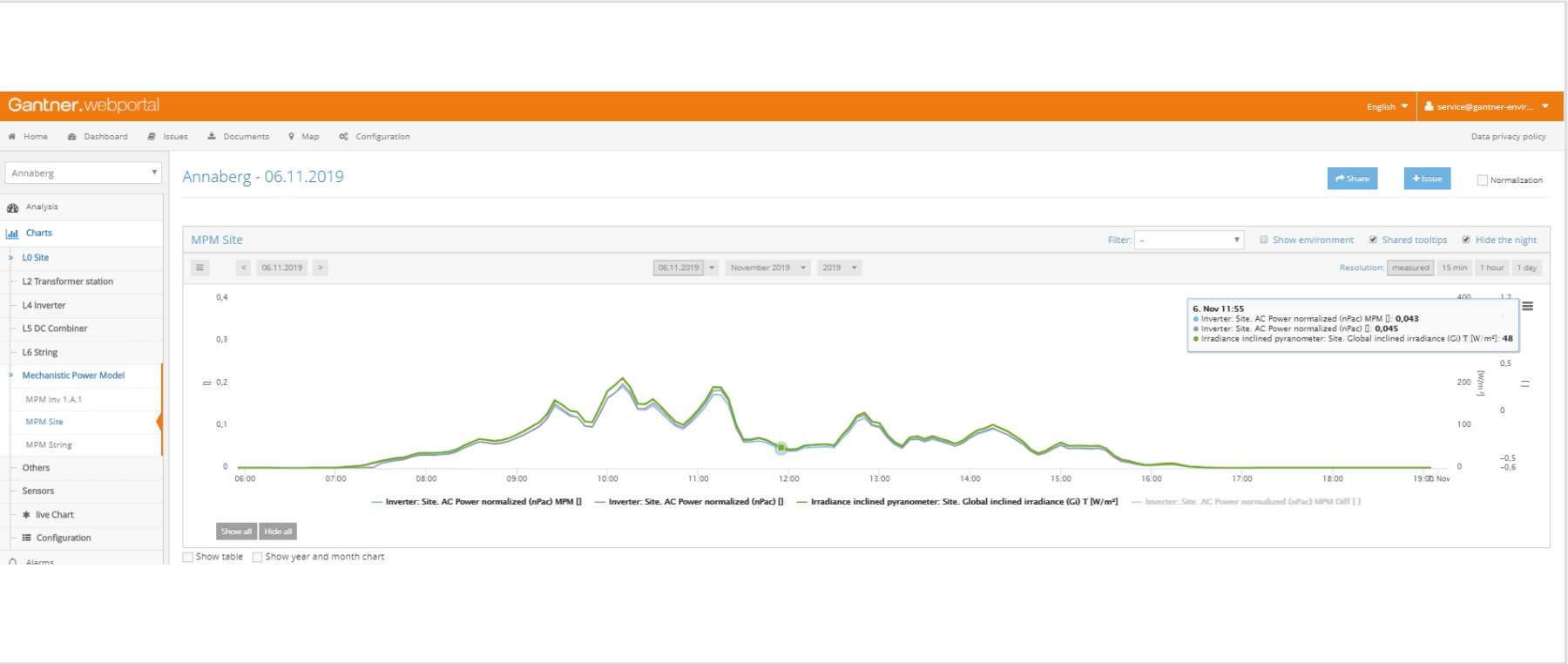
- Normalized coefficients are used to weight the influence of the physical quantities on the Performance Ratio.
- The calculated PR is the sum of all sensor terms.
- The stacked graph shows the impact of the single terms at different light levels.



Source: Steve Ransome & Juergen Sutterlueti

Mechanistic Power Model

Chart



O&M overview and administration system

Issue tracking system / system-specific document management

Ticketsystem

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Home Issues Documents Map Configuration

Data privacy policy

Issues

Issues Time tracking Recurring issues Invoice addresses Delivery contacts Customers

Keyword search

Installation Select ...

Status Select ...

Responsible user Gantner Service

Priority Select ...

Filter

ID	Installation	Category	Type	Priority	Deadline	Title	Contact person	Responsible user	Created on	Updated	Status	Actions
19		O&M	Repair	Normal		test	Gantner Service	Gantner Service	2019-09-03	2019-09-03 16:04	Open	
18		O&M	Repair	Normal		check com on site	Gantner Service	Gantner Service	2019-09-03	2019-09-03 15:04	Open	
16	Annaberg	O&M	Repair	Low		Replace inv 1.3	Gantner Service	Gantner Service	2019-05-08	2019-05-08 09:34	Open	
15	Annaberg	Hardware	Repair	Low		Inverter replacement	Gantner Service	Gantner Service	2019-04-18	2019-04-18 15:15	Open	
11	Annaberg	Communication	Repair	Normal	2019-04-01	check com on site		Gantner Service	2019-03-25	2019-03-25 16:28	Open	

Export to Excel Export to CSV

O&M overview and administration system

Plant-specific document management

Plant-specific document management

Home Issues Documents Map Configuration

Document overview

Documents Categories

Upload documents

Site ☐ Not assigned

Category

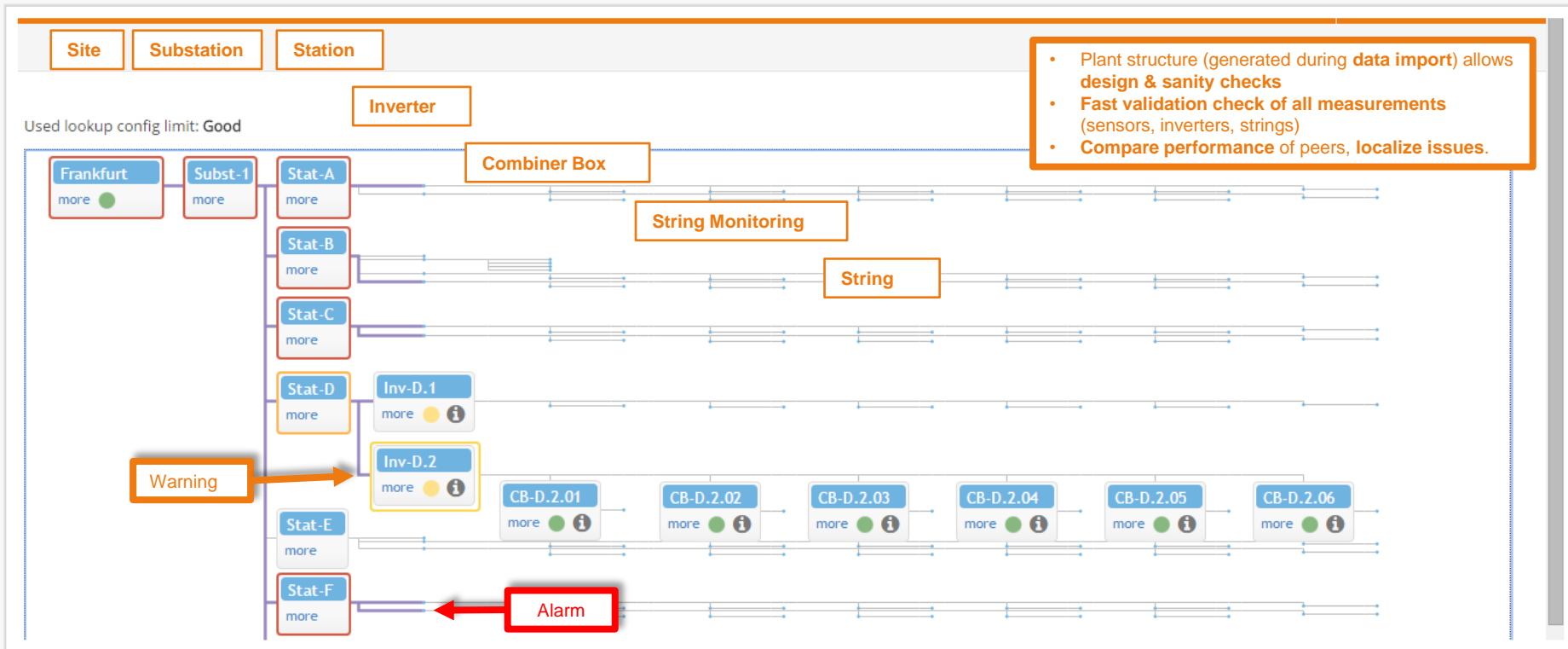
Before you can upload files, please choose an Installation or check "Not assigned".

Keyword search Installation ☐ Include expired

Installation	Title	Author	Created	Valid until	Updated	Actions
	Documentation					
	As-built					
	Commissioning					
	Pictures					
Annaberg	Amsterdam.jpg	Superadmin	2017-03-28	2017-03-28		
Seiffen	Seiffen.jpg	Superadmin	2018-03-13	2018-03-13		
Schwarzenberg	schwarzenberg.jpg	Superadmin	2018-02-28	2018-02-28		
	Issues					
	#2 test					
Annaberg	DSC_0072.JPG	Superadmin	2017-03-31	2017-03-31		
	Manuals / data sheets					
	AC combiner					
	DC combiner					
	Inverter					
Annaberg	QM201311Conext Core XC-NA Operating Manual(990-5145_Rev).pdf	Superadmin	2017-03-28	2017-03-28		
Annaberg	conext-core-xc-datashet-20141002_eng.pdf	Superadmin	2017-03-28	2017-03-28		
	Monitoring / Power Plant Controller					
	PV-modules					
	Sensors					
	Reports					
	Availability					
	Monthly reports					
	Yearly reports					

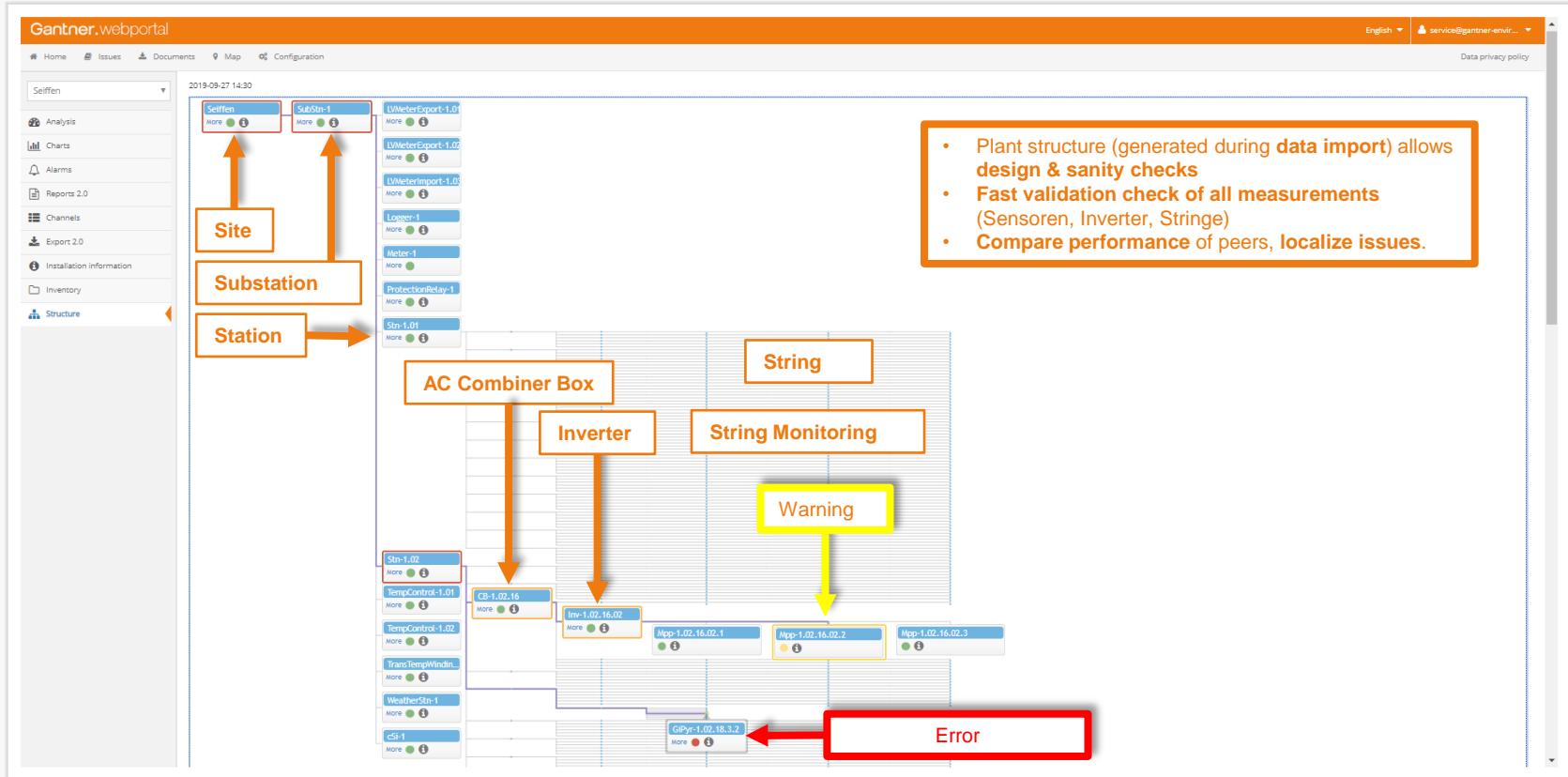
Digital image of the plant from the string to the entry point

(central) PV systems structure



Digital image of the plant from the string to the entry point

(decentral) PV Anlagen Struktur



Digital image of the plant from the string to the entry point

Normalised Values

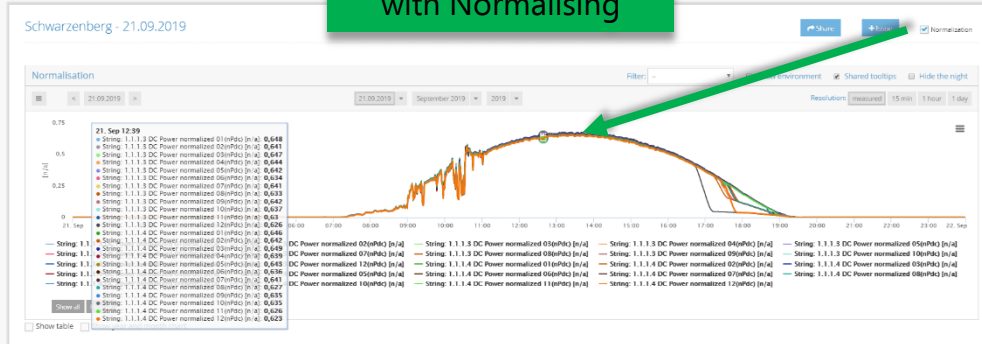
without Normalising



Absolute values:

I_{measured} is different for larger and smaller areas

with Normalising



Normalized values:

$I_{\text{MEASURED}} / P_{\text{NOMINAL}}$ shows nearly the same values

Michael St. Neitzel

Head of Global Cloud Services

