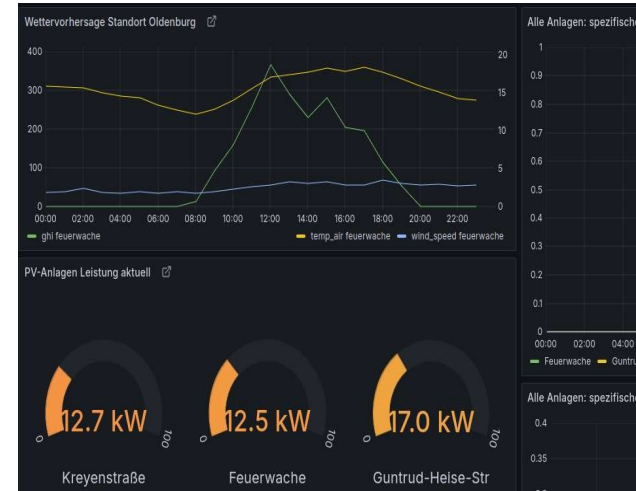


Open source PV Datalogging



Who is talking to you?



- 36 years
- Studied PPRE in 2012 – 2014
- Worked at Enercon as wind measurement engineer 6 years
- Working at Energy Meteorology team at DLR Oldenburg
- Since 10 years volunteering at the Olegeno
- Since 5 years in the board of directors

Presentation of Olegeno

olegeno
oldenburger
energie
genossenschaft eG



Foto: Olegeno

Quartiersgarage Selbstbau

Video

Facts



543

Mitglieder



5373

Anteile



36+20

**Darlehens-
geber:innen**



736



5 PV

Aufbau Ladeinfrastruktur

 **15**

**Öffentliche
Ladesäulen**

 **7**

Standorte

 **5**

**Carsharing-
stationen**

Oldenburger Energie-Genossenschaft eG



Foto: Olegeno



Olegeno PV plants

- Solarbrüter 2005: 1.1
- Feuerwache 2019: 40
- Kreyenstraße 2020: 46.7
- Monopoly 2022: 0.2
- Guntrud-H.-Str 2024 49
- Quartiersgarage 2024? 175
- Total: 312 kWp
- + many balcony pv modules



Olegeno PV plants



Solarbrüter



Feuerwache



Kreyenstraße



Monopoly



Guntrud-Heise-Str.



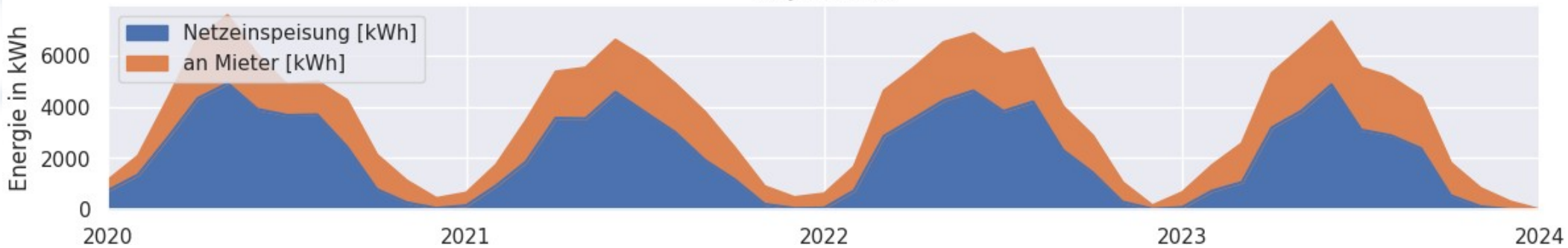
Quartiersgarage

Is everything working fine?

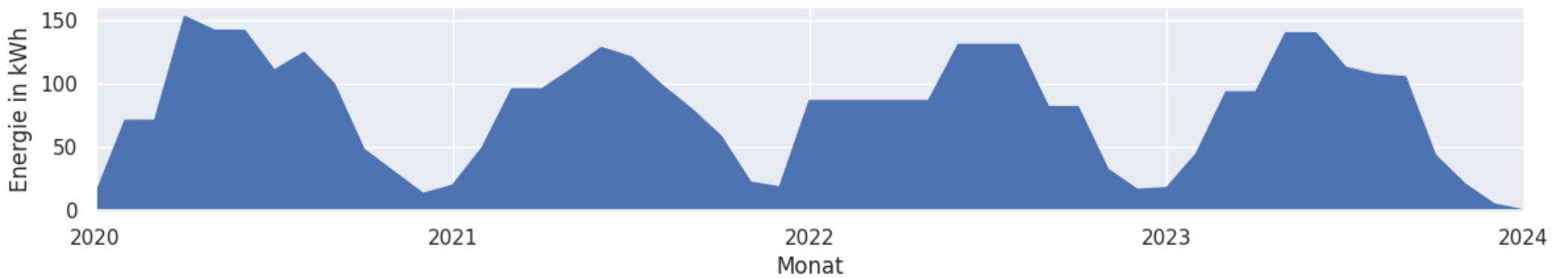
Feuerwache



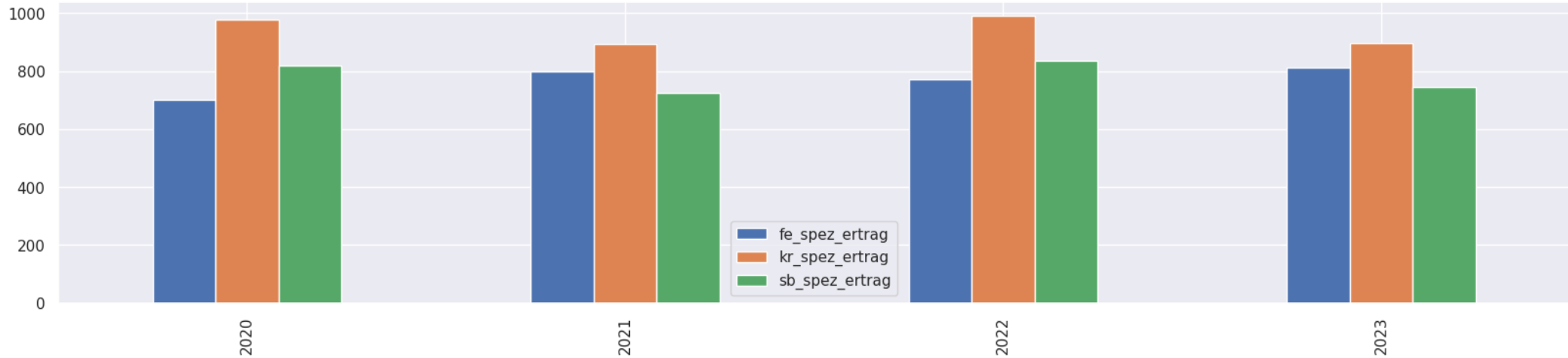
Kreyenstraße



Solarbrüter



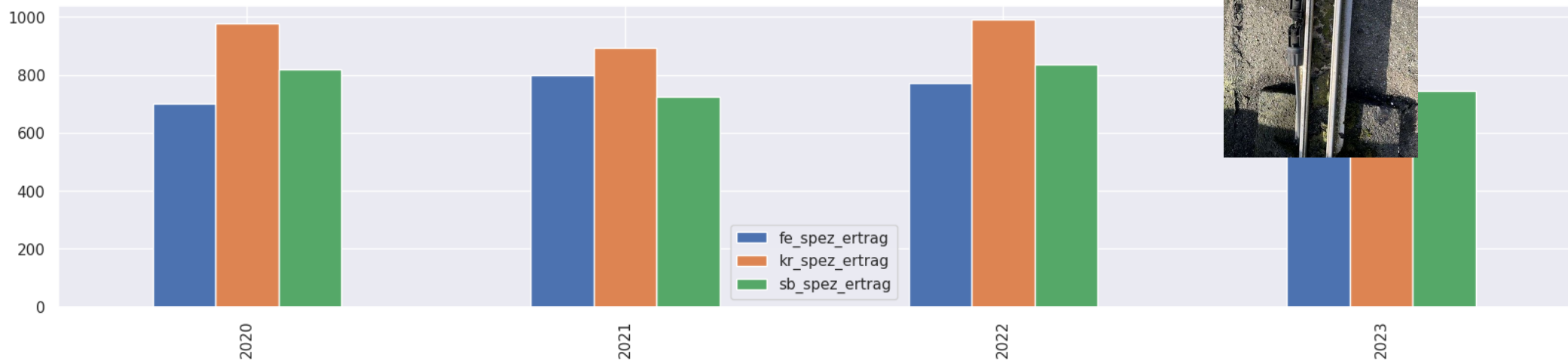
Checking for errors: monthly specific yield



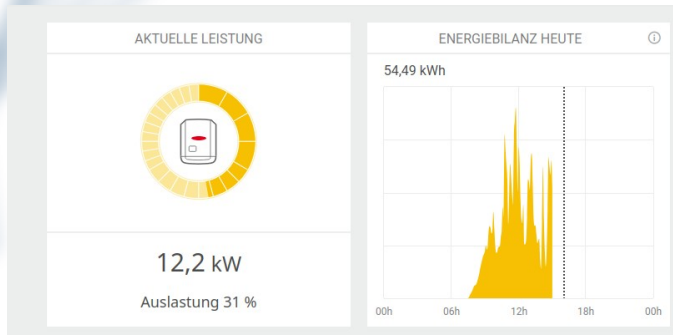
Fehleranalyse PV-Anlagen



egeno
oldenburger
energie
genossenschaft eG



Problem: Lots of different monitoring solutions



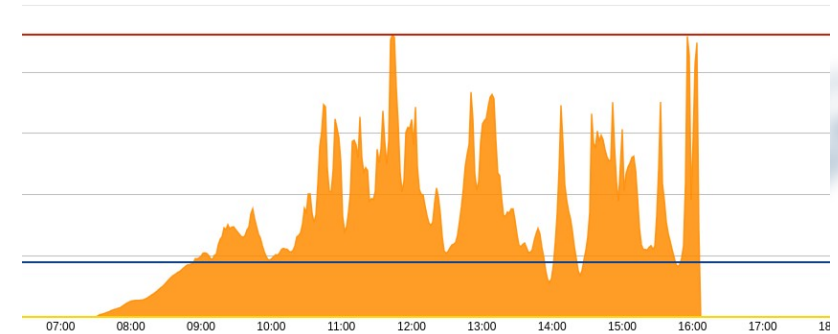
Fronius Solarweb

Aktueller Status

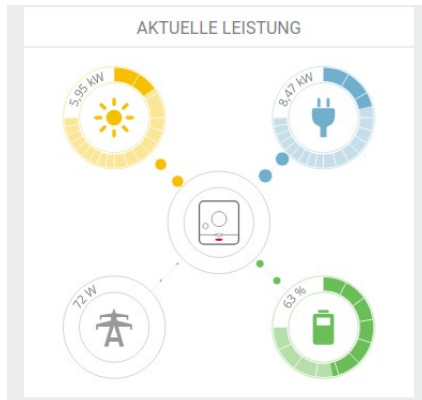


SMA Sunny Portal

SMA EnnexOS Portal



Inexogy Smartmetering Portal



Solarlog WEB Enerest 4

Solution:

- Create your own dashboard.
- Problem:
 - Different softwares and APIs for each inverter
 - You always need direct LAN connection for free access.

Concept

Wireguard VPN

Olegeno Server

Feuerwache

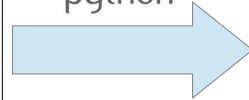
Kreyenstr

Guntrud-H-Str.

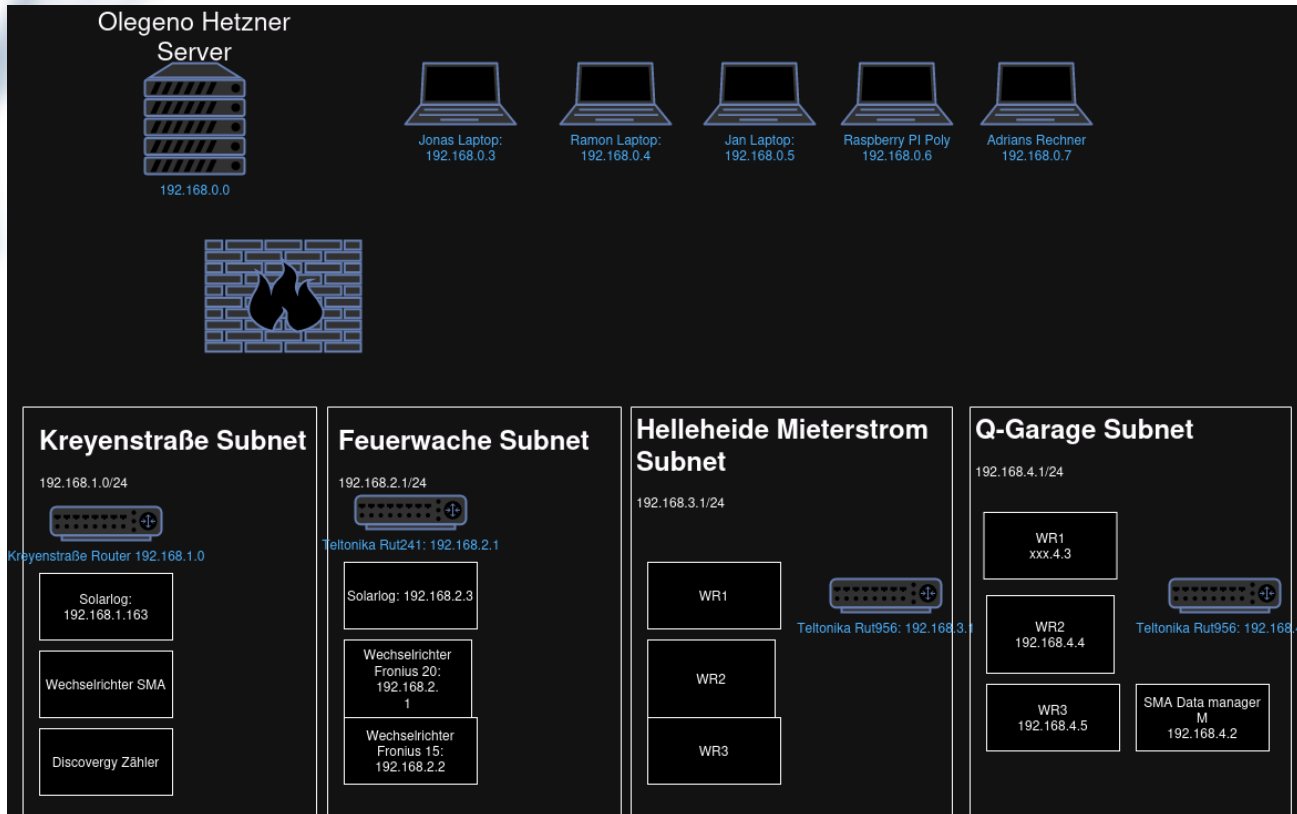
Q-Garage



Grafana



1. Step: Olegeno Wireguard VPN

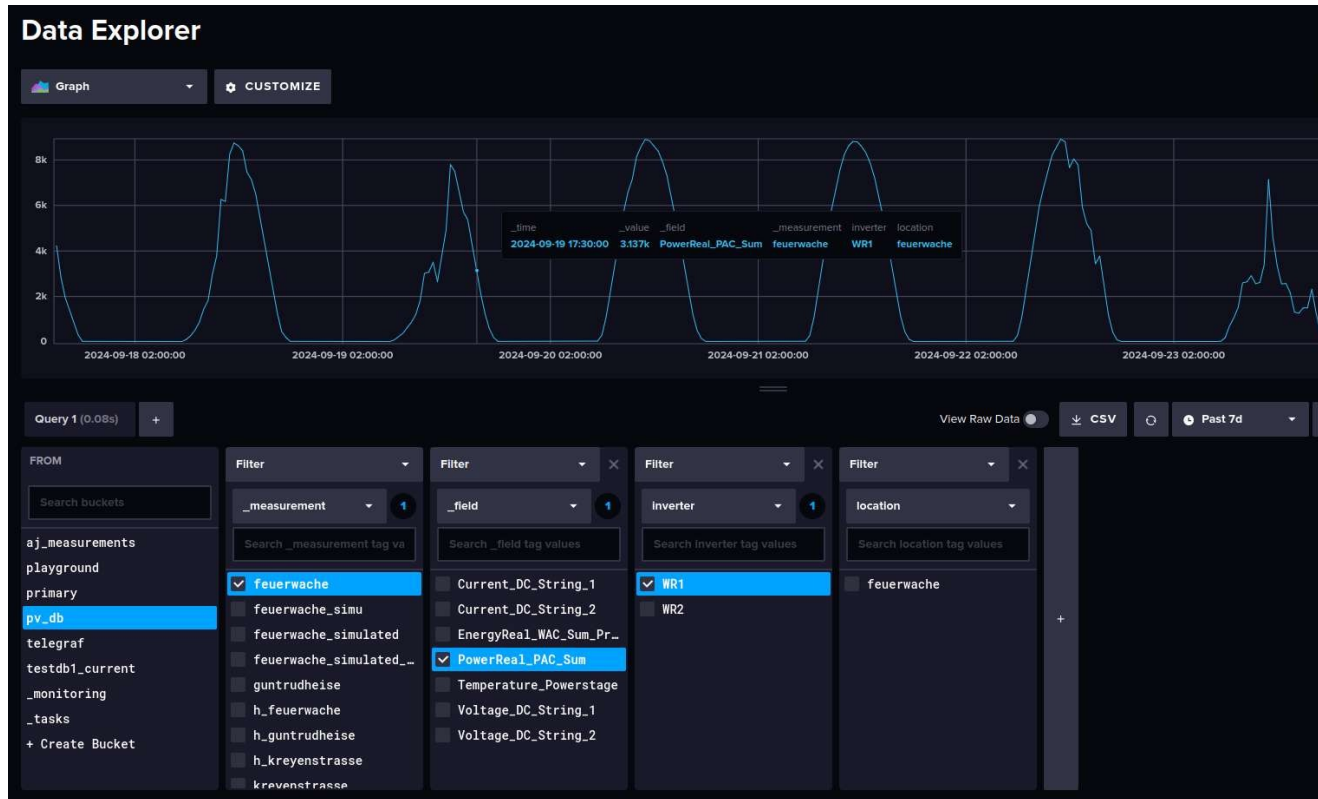


- 4G Router with VPN possibilities (also used for direct access for marketers)

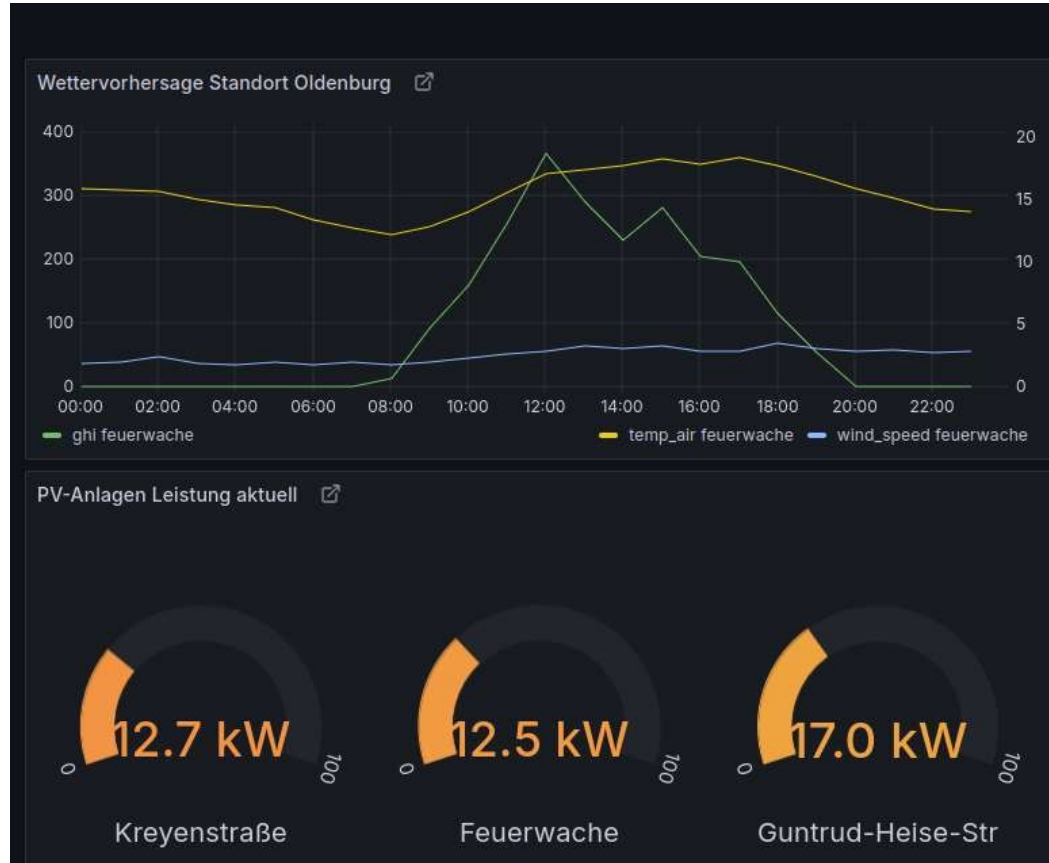
2. Step Python Importers

- Check influxdb for existing data
- Request missing data from inverter
- Send to influxdb
- One importer per plant

3. Step: InfluxDB



4. Step: Visualization in Grafana



Demonstration Grafana

- See specific power of pv plants
- Guntrud-Heise-Straße with Battery
- Weather forecast Feuerwache
- PV Simulation Feuerwache

New Ideas?

- Simulation for all plants with python pvlib
- Queries for automatic business evaluation
- Calculate long-term performance ratios of pv plants

Performance Ratio from pvlib modelling

$$\text{Performance Ratio (PR)} = \frac{Y_f}{Y_r}$$

$$\text{Final Yield (} Y_f \text{)} = \frac{\text{Final Energy Output (kWh)}}{\text{Nominal d. c power (kW)}}$$

$$\text{Reference Yield (} Y_r \text{)} = \frac{\text{Total in-plane irradiance (kWh/m}^2\text{)}}{\text{PV reference irradiance (kW/m}^2\text{)}}$$

Your ideas?

- Send them to stuehrenberg@olegeno.de
- Visit us at <https://olegeno.de>
- Check out the dashboard at:
<https://grafana.olegeno.de/public-dashboards/1c1117a9ab6743f9baec950370031119?orgId=1>
- Become a member or get our electricity!