

# Digitalization in the supply chain

Field reports and status quo

Thomas Zapp  
International Sales Engineer



# About GreenGate AG



Specialising in software for Innovative and Strategic Maintenance Solutions

Based in **Windeck (D)** und **Seengen (CH)**

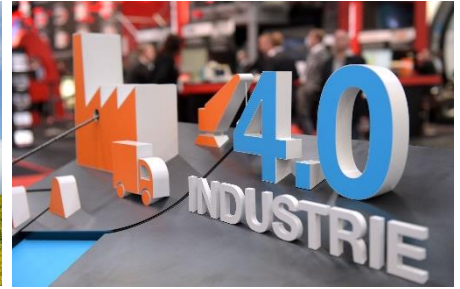
- Founded in 2000 as an Independent Corporation Employer
- In house R&D
- Currently 40 Staff Members, as well as more than 30 additional Specialists in partner companies

## Maintenance Management Software GS-Service

- 1.800 projects, 350 customers, 5.000 licenses
- Projects in 10 countries
- System Languages available in German, English and French
- Content language various more (e.g. Chinese)



# Where management software is being used



# Versatile application solutions

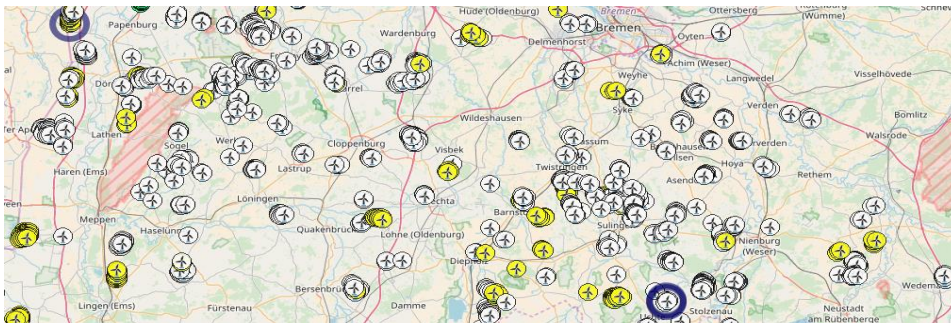


## Inhouse Services



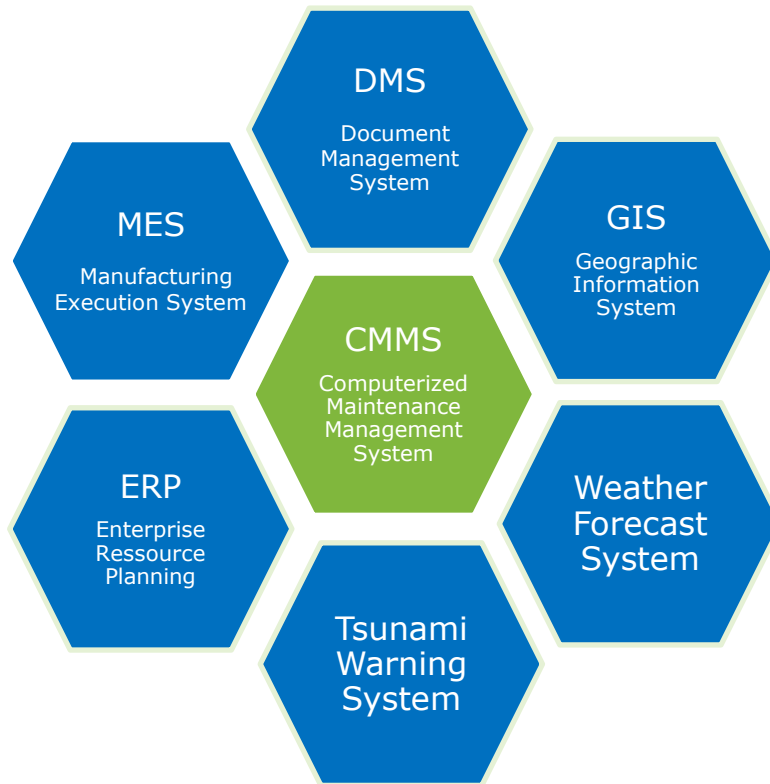
- Asset Classification
- Work schedules
- Availability periods
- Campaign planning

## Field Services



- Regional task planning
- Tour optimization
- Mobile spare parts management

# Typical software landscape



# How to do implement new applications:

1. Object management 
2. Resource planning 
3. Document management 
4. Warehousing 
5. Reporting 
6. Mobile devices 
7. Interfaces 

# 5 steps to develop the digitization strategy

- Record workflows
- Identify problem entities
- Define goals
- Analyze existing data
- Develop, evaluate and constantly improve prototype



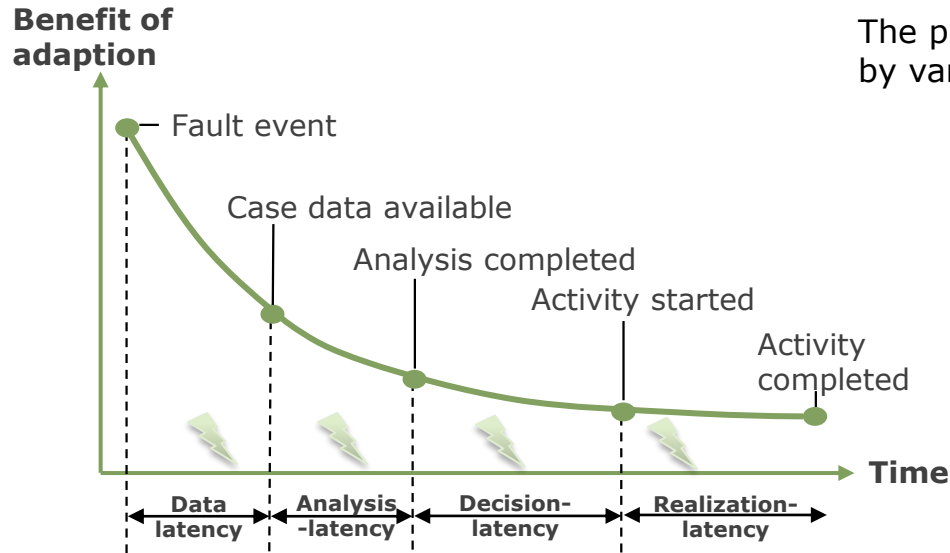
# Topics in which digitization is very helpful

- Urgency of the orders
- Availability of resources
- Qualifications
- Time-bound orders
- Geographical optimization
- Combination of parallel orders
- Release mechanisms
- Customer satisfaction
- Cost efficiency





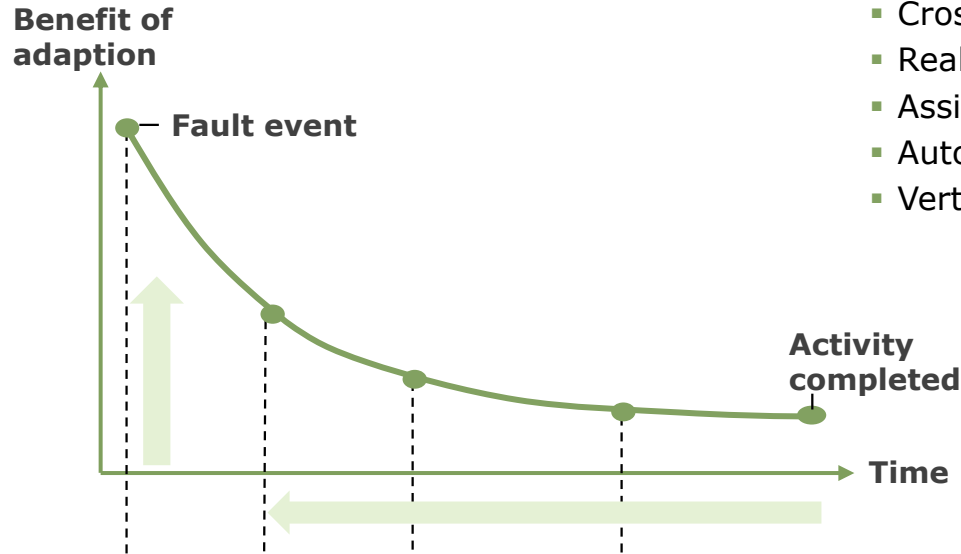
# Reduce latencies



The processes are influenced by various latency times.

Mitgliederversammlung 2016 des FIR e.V., Vortrag Prof. Schuh

# Reduce latencies



## Elements of Digitization

- Cross-linking
- Real time capability
- Assistance systems
- Automation of decisions
- Vertical and horizontal integration

Mitgliederversammlung 2016 des FIR e.V. , Vortrag Prof. Schuh

## RDS-PP Reference Designation System for Power Plants



Aufgabe	Objekt
<input checked="" type="checkbox"/> Safety System Update [=G] Windturbinen/[=G017] Windenergieanlage 17 / Wind turbine 17	[=G017] Windenergieanlage 17 / ...
<input type="checkbox"/> 500 h check bolts (crane) [=G012UMD] Turmkonstruktion / Tower System general/[=G012UMD82] Monopile G	[=G012UMD82] Monopile Gründ...
<input type="checkbox"/> HIAB Crane Retrofit [=G] Windturbinen/[=G002] Windenergieanlage 2 / Wind turbine 2	[=G002] Windenergieanlage 2 / ...
<input type="checkbox"/> Steckdosen besorgen	[=G080] Windenergieanlage 80 / ...
<input type="checkbox"/> Halterung Tetra Repeater	[=G011Y] Kommunikations- und I...
<input checked="" type="checkbox"/> Material bereitstellen	[=G031] Windenergieanlage 31 / ...
<input type="checkbox"/> Blattichtungen Fehlen [=G] Windturbinen/[=G077] Windenergieanlage 77 / Wind turbine 77	[=G077] Windenergieanlage 77 / ...
<input type="checkbox"/> Söll Schiene TP [=G] Windturbinen/[=G039] Windenergieanlage 39 / Wind turbine 39	[=G039] Windenergieanlage 39 / ...
<input type="checkbox"/> Seriennummern der Delta Module aufnehmen	[=G007MSE] Umrichtersystem / ...
<input type="checkbox"/> Seriennummern der Delta Module aufnehmen	[=G017MSE] Umrichtersystem / ...
<input type="checkbox"/> Retrofit Safety Update [=G017MDY] Steuerungssysteme / Control Systems/[=G017MDY10] Anlagensteuerung	[=G017MDY10] Anlagensteuerun...
<input type="checkbox"/> Safety System Update [=G] Windturbinen/[=G012] Windenergieanlage 12 / Wind turbine 12	[=G012] Windenergieanlage 12 / ...
<input type="checkbox"/> Blattdeckeldichtung fehlt am Blatt A [=G] Windturbinen/[=G046] Windenergieanlage 46 / Wind turbine 4	[=G046] Windenergieanlage 46 / ...
<input type="checkbox"/> Wartung Jahre 1 - Ende (mit "h-te" Aufgabe!) [=G] Windturbinen/[=G002] Windenergieanlage 2 / Wind tu	[=G002] Windenergieanlage 2 / ...
<input checked="" type="checkbox"/> Final Walk Down [=G] Windturbinen/[=G067] Windenergieanlage 67 / Wind turbine 67	[=G067] Windenergieanlage 67 / ...
<input checked="" type="checkbox"/> Material bereitstellen	[=G053] Windenergieanlage 53 / ...
<input checked="" type="checkbox"/> Final Walk Down [=G] Windturbinen/[=G045] Windenergieanlage 45 / Wind turbine 45	[=G045] Windenergieanlage 45 / ...
<input checked="" type="checkbox"/> Final Walk Down [=G] Windturbinen/[=G049] Windenergieanlage 49 / Wind turbine 49	[=G049] Windenergieanlage 49 / ...
<input type="checkbox"/> CWC ICCP IBN Protokoll hochladen	[=G080UMD82FR001-FR001] Ak...

# Object Structure and

- [=G001] Windenergieanlage 1 / Wind turbine 1
- [=G002] Windenergieanlage 2 / Wind turbine 2
- [=G003] Windenergieanlage 3 / Wind turbine 3
- [=G004] Windenergieanlage 4 / Wind turbine 4
- [=G004C] Speichern von Energie, Material oder
- [=G004M] Bereitstellung von mechanischer Energie
- [=G004MD] Windturbinensystem / Wind Turbine
- [=G004MDA] Rotorsystem / Rotor System
- [=G004MDK] Antriebsstrang / Drive train
- [=G004MDK10] Rotorwelle / Rotor Shaft
- [=G004MDK10BF001] Zuflussmessung
- [=G004MDK10BG005] Überwachung
- [=G004MDK10BS001] Drehzahlser
- [=G004MDK10BS001-BS001] D
- [=G004MDK10BS001-BS002] D
- [=G004MDK10BS011] Schwingun
- [=G004MDK10FR001] Intervallsch
- [=G004MDK10FR001-FR001] I
- [=G004MDK10FR001-MA001] I
- [=G004MDK10GP001] Pumpe Zer
- [=G004MDK10GP001-GP001] P
- [=G004MDK10UP010] Rotorlager
- [=G004MDK10UP020] Rotorlager
- [=G004MDK10WQ001] Rotor-Hof
- [G004MDK10XP001] Kupplung zw
- [=G004MDK20] Drehzahlwandlung /
- [=G004MDK30] Bremssystem Antrieb
- [=G004MDK40] Momentenübertragu
- [=G004MDK51] Hauptstrom Getriebe
- [=G004MDK54] Rotorarretierung Ant
- [=G004MDK55] Rotordrehvorrichtun
- [=G004MDK56] Kühlsystem Antriebs
- [=G004MDL] Azimutsystem / Yaw System



## Yearly security check Line 1/ST11-AK331 [1ST00

Task description	Yearly security check Line 1/ST11-AK331 [1ST001]		
Task number	W0180450323	Category	Safety
Date due	CW 18/2018	In charge	Marc Menzie
Start date	25.05.2018 08:00	Responsible	Tom Walters [P010]
Frequency	every 52. week on Montag (after execution)		

Name	ST11-AK331		
<b>Staff</b>			
Personalnummer	Staff	Reservations	
Maintenance	P010 Tom Walters	25.05.2018 08:00-25.05.2018 10:30	

**[Stamp] Line 1/ST11-AK331 [1ST001]**

Corrosion

Screw loose

Weathering

abnormal noises

paint damages

Functional check safety door ..... on: 23.05.2018 [info]

OK Yes  / No

Functional check emergency switch ..... on: 23.05.2018 [info]

OK Yes  / No

Optical check of electric connections ..... on: 23.05.2018 [info]

OK Yes  / No

Functional inspection thickness measuring ..... on: 23.05.2018 [info]

Record operating hours Completed: Yes  / No

Current total operating hours 5874 h

Result of the inspection Completed: Yes  / No

Approval passed?

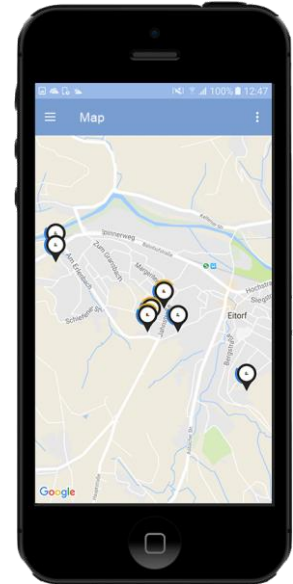
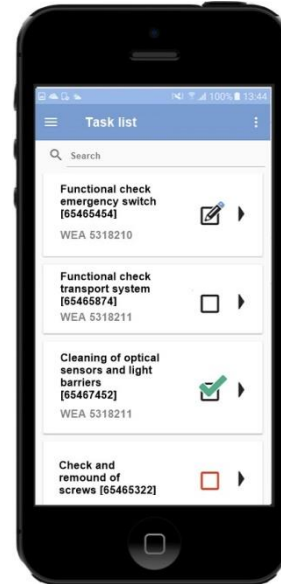
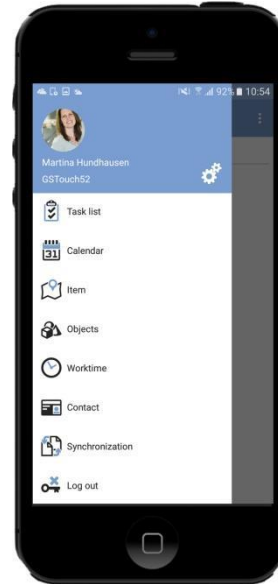
well passed  
scrape passed  
not passed



# System for Power Plants

Objekt	
[=G017] Windenergieanlage 17 / ...	
JMD82) Monopile G	[=G012UMD82) Monopile Gründ...
	[=G002] Windenergieanlage 2 / ...
	[=G080] Windenergieanlage 80 / ...
	[=G011Y) Kommunikations- und I...
	[=G031] Windenergieanlage 31 / ...
7	[=G077] Windenergieanlage 77 / ...
	[=G039] Windenergieanlage 39 / ...
	[=G007MSE) Umrichtersystem / ...
	[=G017MSE) Umrichtersystem / ...
Anlagensteuerung	[=G017MDY10) Anlagensteuerun...
2	[=G012) Windenergieanlage 12 / ...
Wind turbine 4	[=G046] Windenergieanlage 46 / ...
Wind turbine 2 / Wind tu	[=G002] Windenergieanlage 2 / ...
	[=G067] Windenergieanlage 67 / ...
	[=G053] Windenergieanlage 53 / ...
	[=G045] Windenergieanlage 45 / ...
	[=G049] Windenergieanlage 49 / ...
	[=G080UMD82FR001-FR001) Ak...

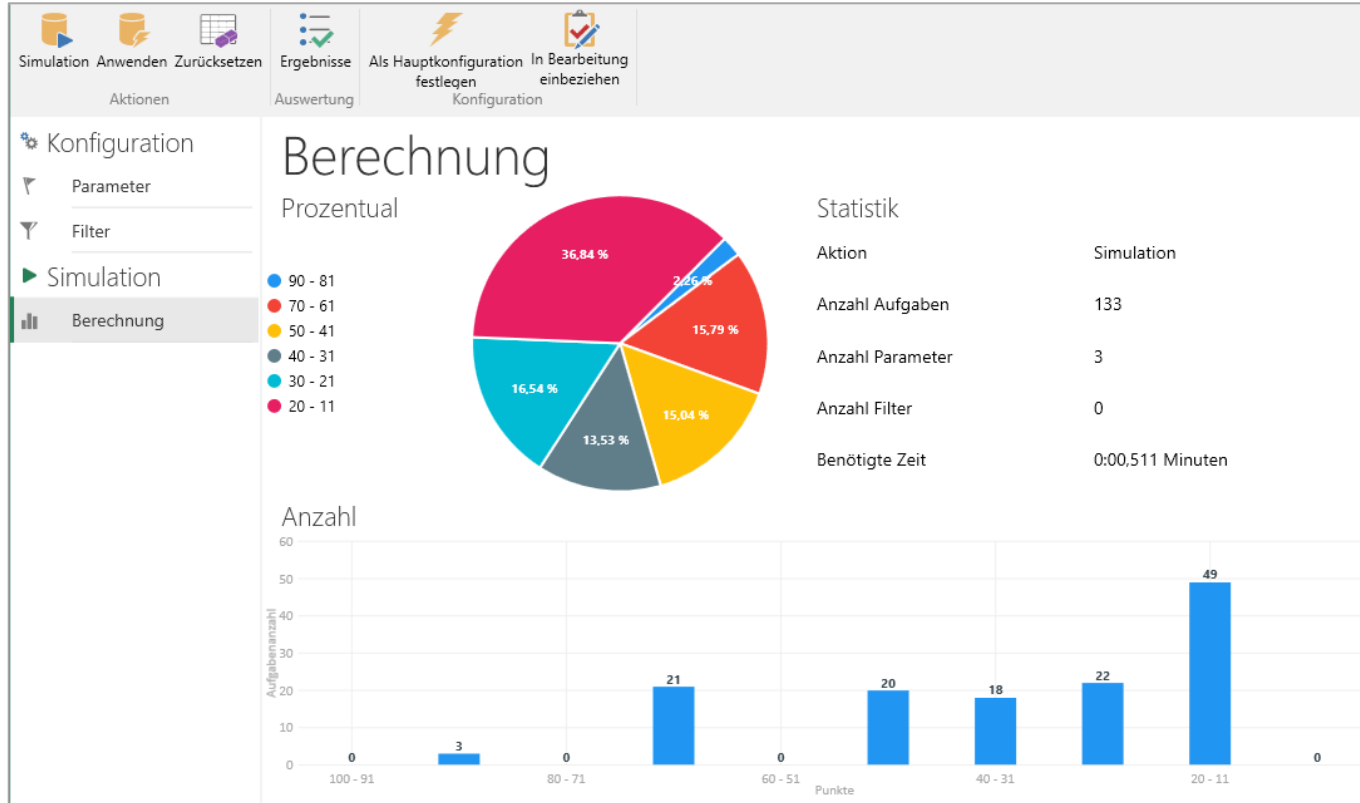
# Mobile devices



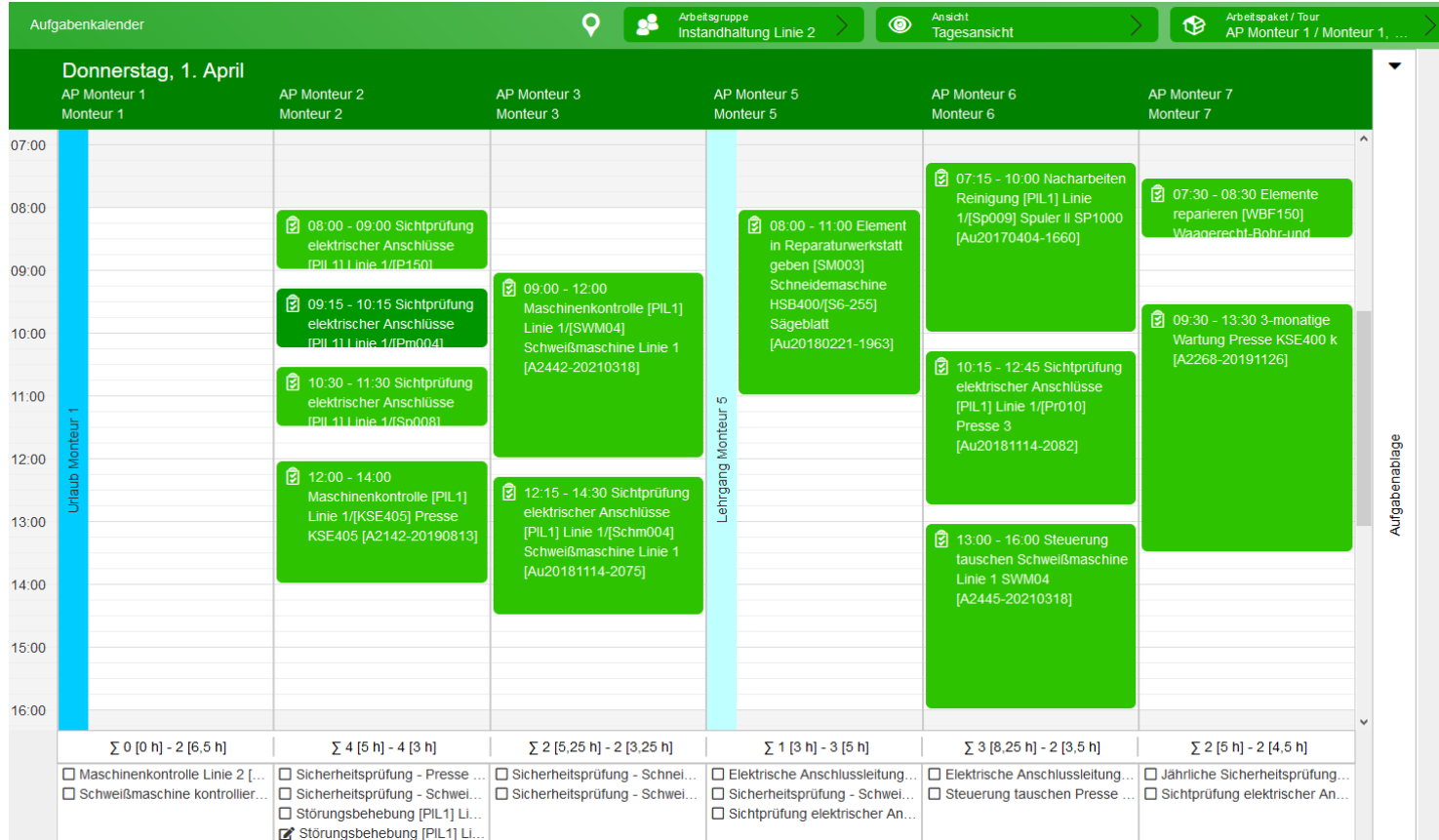
## Parameter

Aktiv	Name	Eigenschaft	Ersatzwert	Standardwert	Rating	Limit
<input checked="" type="checkbox"/>	Parameter1	Kategorie	20	30	1	100
<input checked="" type="checkbox"/>	Parameter2	Überfälligkeit	20	30	1	100
<input checked="" type="checkbox"/>	Parameter3	Aufgabendefinition	20	30	1	100
<input checked="" type="checkbox"/>	Parameter4	Objekteigenschaft	20	30	1	100

Wert	Zugewiesene Punkte	Normierte Punkte
A	100	100
B	75	75
C	50	50
D	25	25
E	10	10



# Digital work planning





# Digital task processing



Maschinenkontrolle [PIL1] Linie 1/[PR11] Presse 4 \*\* [A2464-20210510]

GG [8]

### Tätigkeiten

- Funktionsprüfung Not-Aus-Schalter 1/1
- Funktionsprüfung Sicherheitstürschalter 1/1
- Anlagenzustand bewerten 0/2
- Sichtprüfung elektrischer Anschlüsse 1/1
- Betriebsstunden ablesen 1/1
- Ölkontrolle 0/2
- Geschwindigkeit überprüfen (Schliessen/Pressen/Öffnen) 0/1
- Schriftliche Stellungnahme des Arbeitssicherheitsbeauftragten
- Schutzmaßnahmen Maschinen allgemein überprüfen 0/1

### Objekt

Name\*  
Presse 4

Kurzname  
PR11

Objektklasse  
Presse

Betriebsstunden  
4850

Wert

Personal  
[MA007] Frank K. Schluss

Längengrad

Breitengrad

### Technische Information

Hersteller  
BRUDERER AG Stanzautomaten

Baujahr  
10.2003

Klassifizierung  
A

### Wartung

Datum der letzten Überprüfung  
10.05.2021

Letzter erfasster Anlagenzustand  
In Ordnung

### Lage

# Digital supplier portal



Create PTW

**Drafted**   **Submitted**   **Prechecked**   **Approved**

Wind farm\*  
SeeWind >

Location type\*  
WEC >

Location\*  
W24 >

Task\*  
Suppression of windturbine >

Task category\*  
Troubleshooting >

choose detail information list

Approval level 1  
 Approval level 2  
 Approval level 3  
 Approval level 4

Begin\*  
27.01.2021 00:00

End\*  
27.01.2021 00:00

Duration  
5

Work description\*  
Fault finding and replacement of the defective components, test operation mode, completion of the work and cleaning.

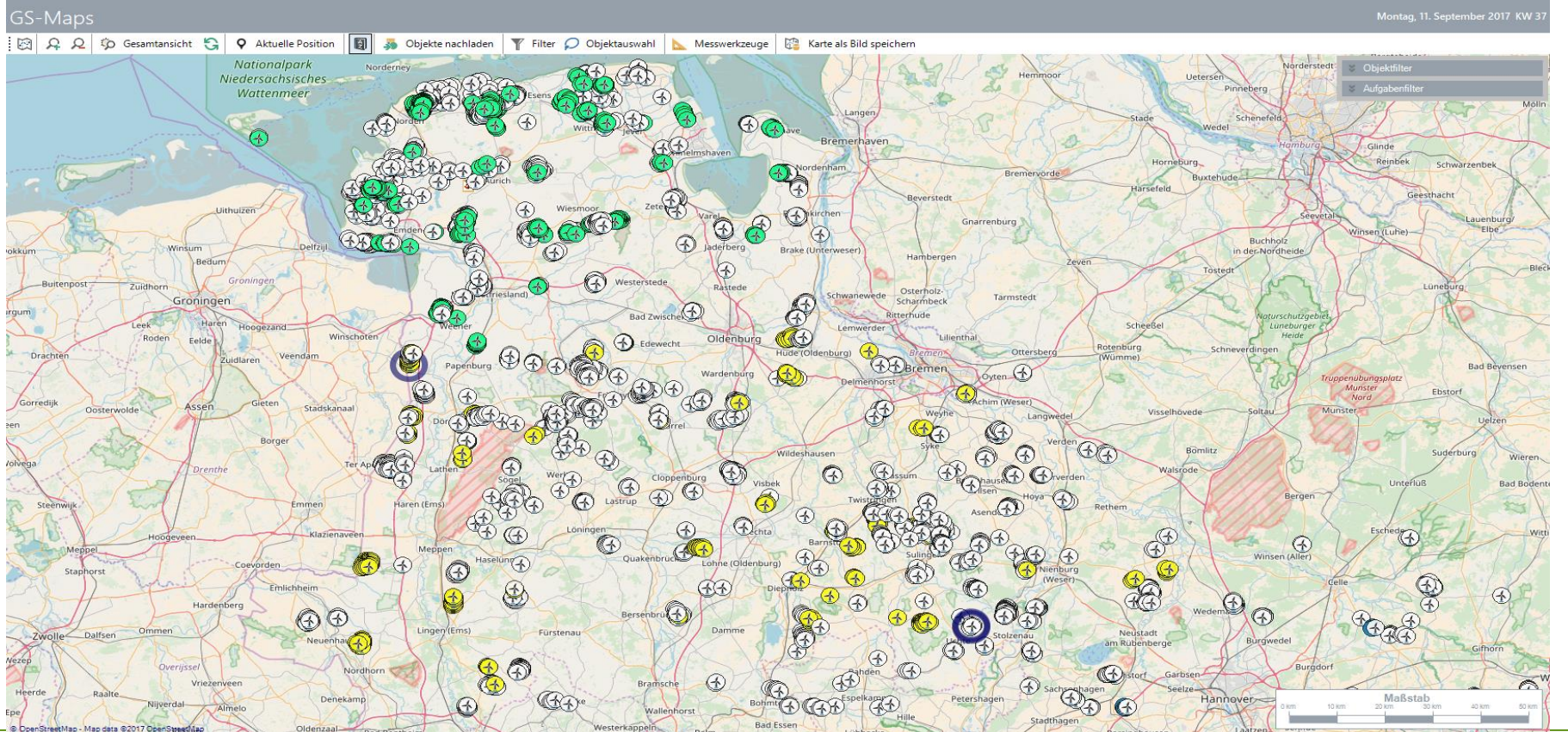
Safety note  
Danger rating 4  
Safety category 2

Transportation Category >

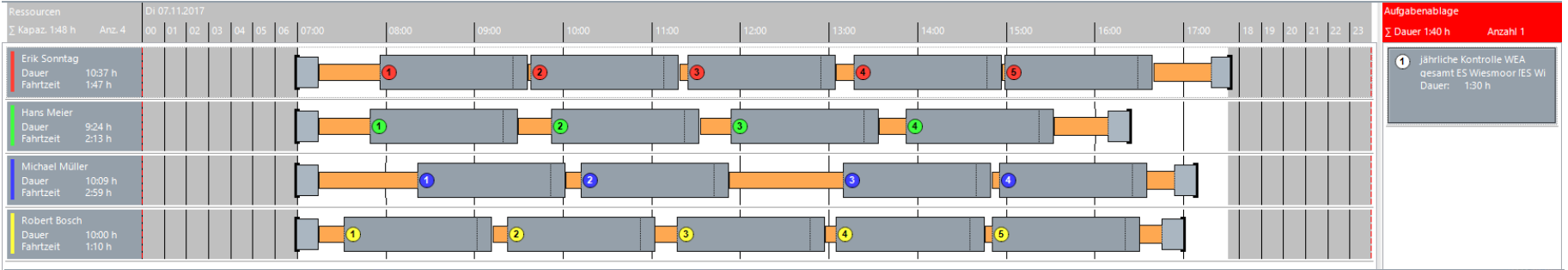
Select all objects

Show park map

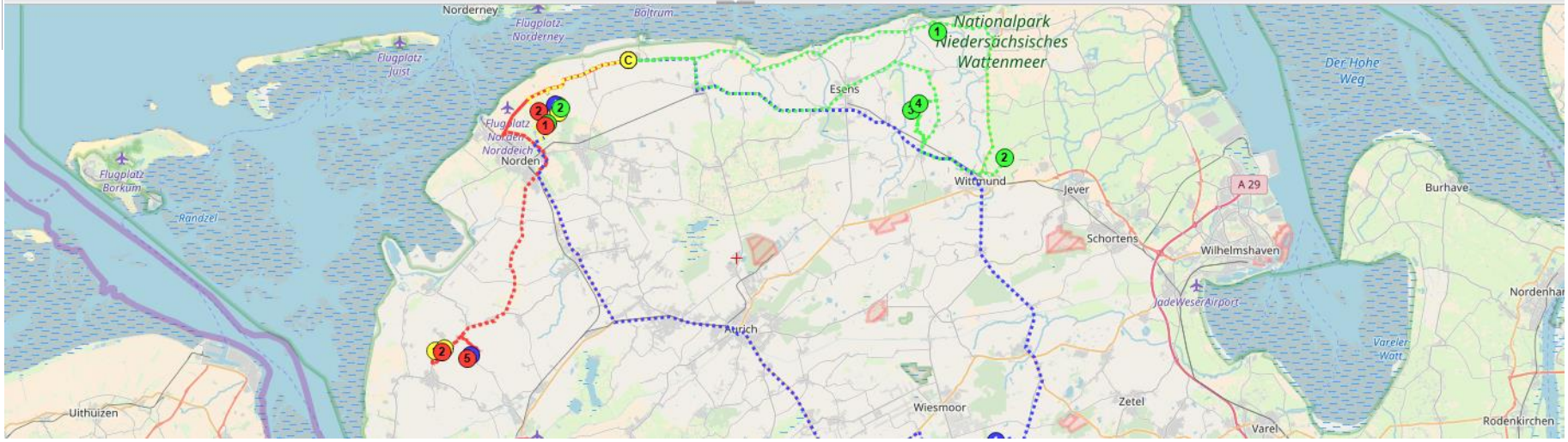
# Geographical overview of assets



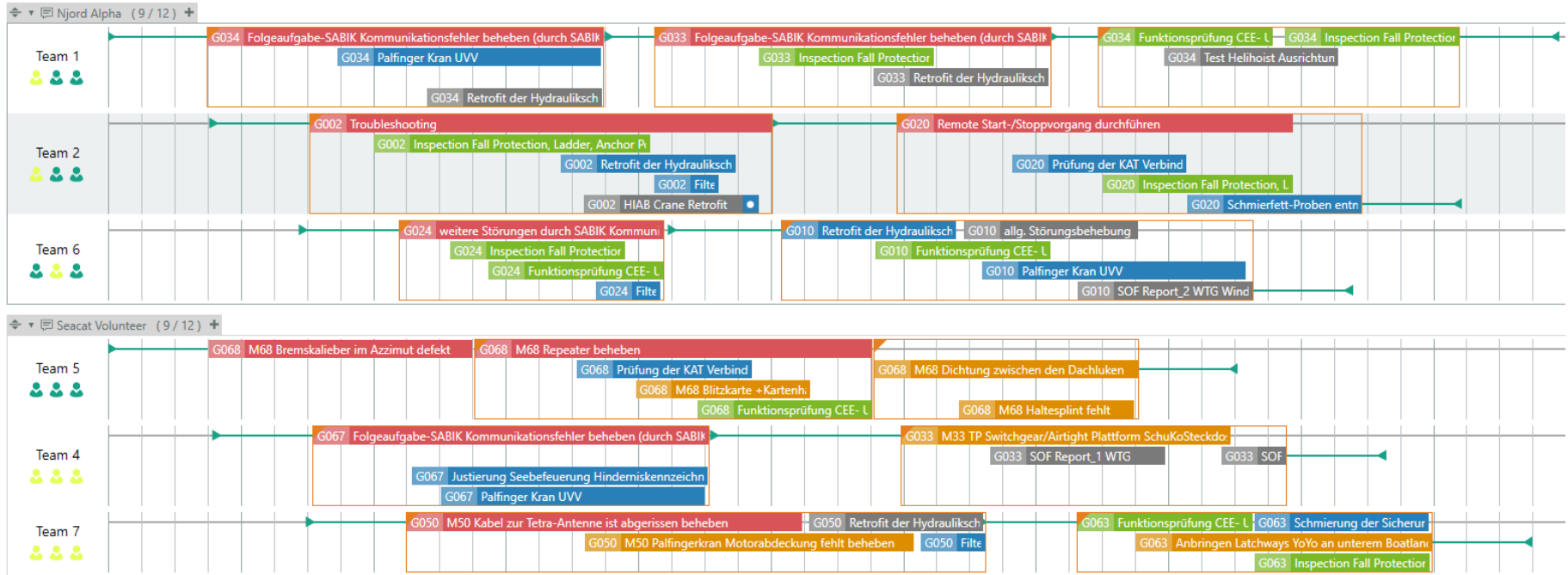
# Scheduler deployment tool



40:12 h (+0:00 h)    Σ Fahrzeit    8:11 h (+0:00 h)    Σ Leerlauf    0:00 h (+0:00 h)    Σ Aufgabendauer    30:00 h    Aufgaben    18    M ...

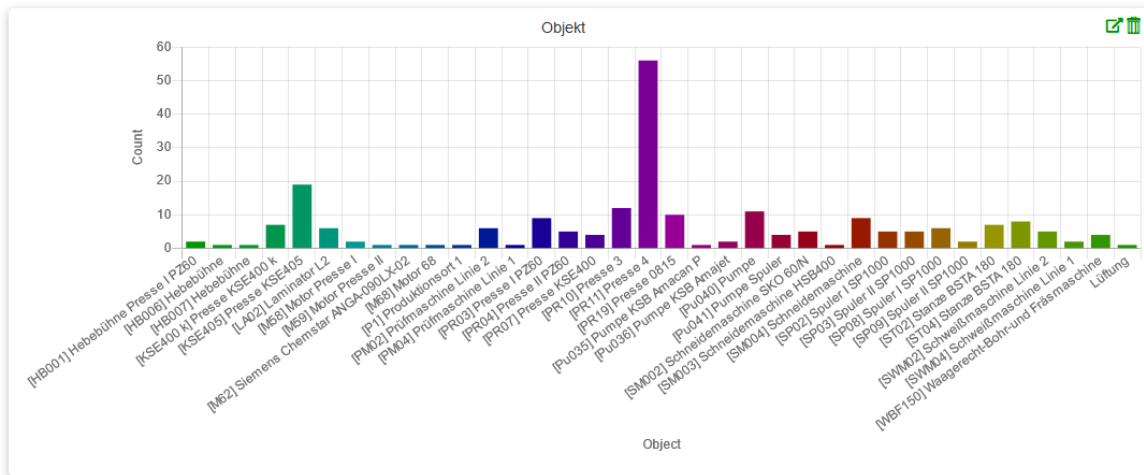
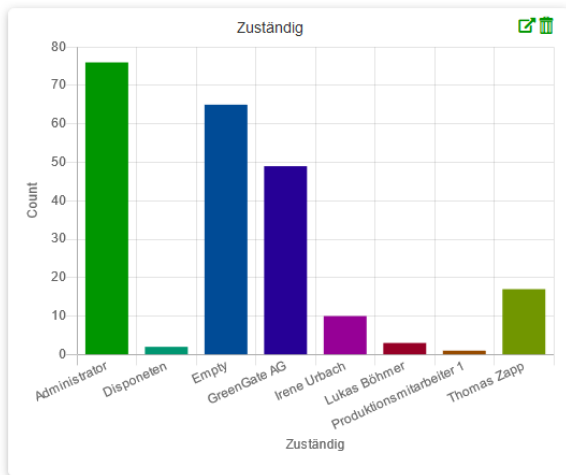
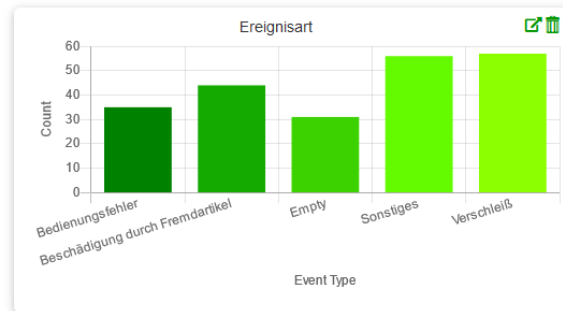
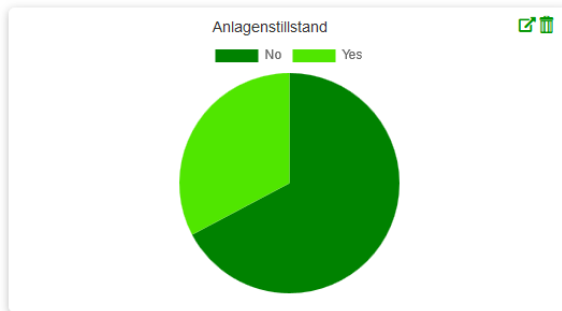


# Offshore Deployment Tool



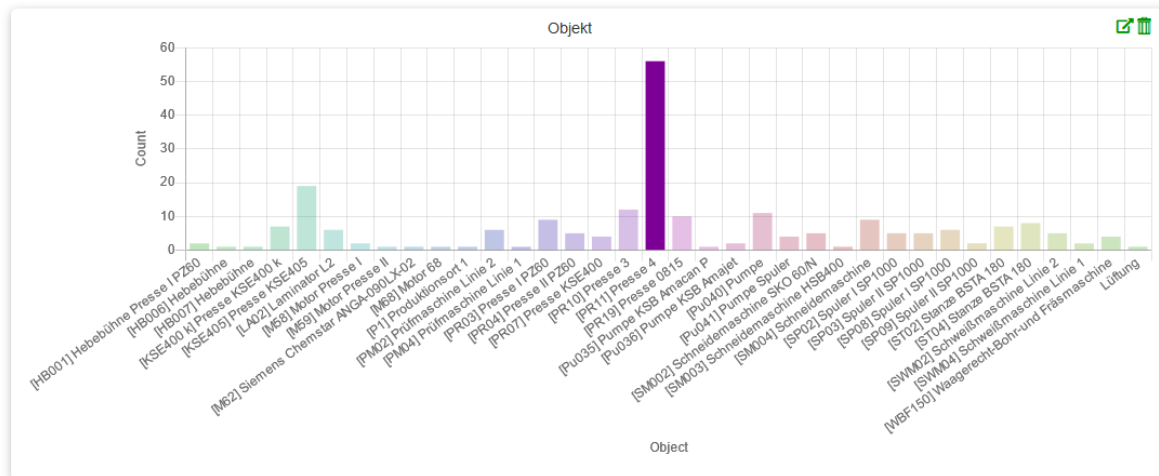
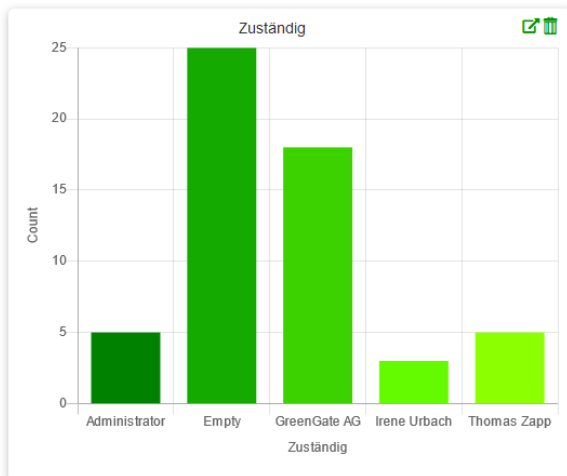
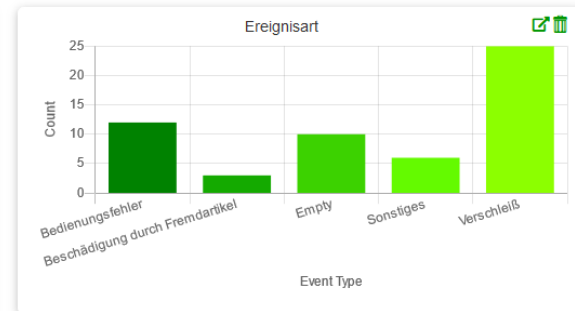
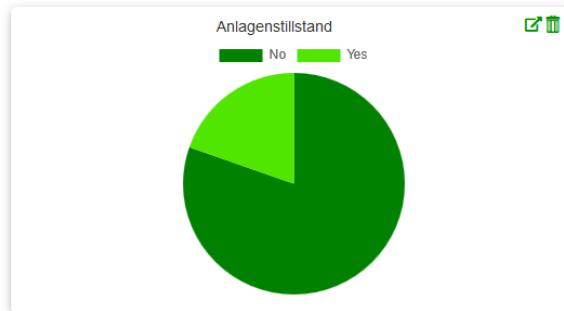
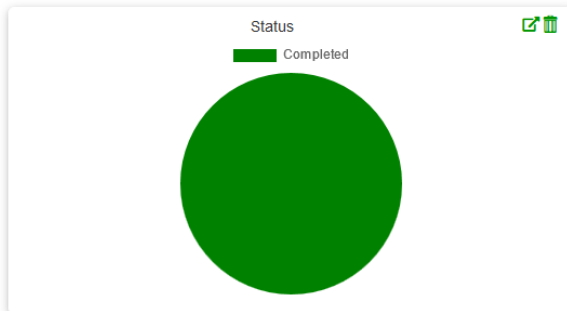
# Reports

## Dashboard Ereignisse



# Reports

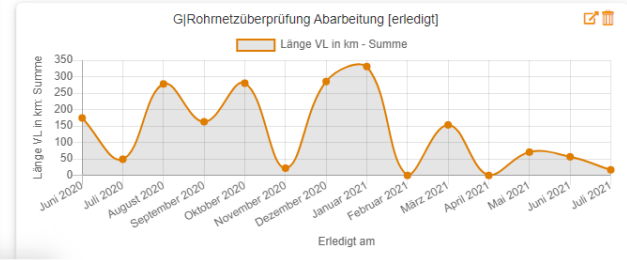
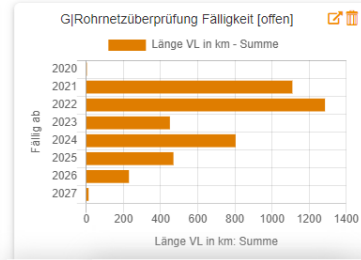
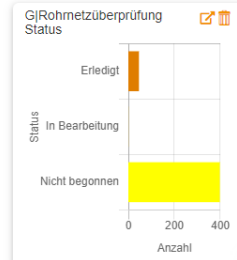
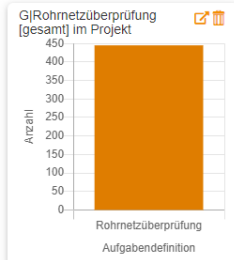
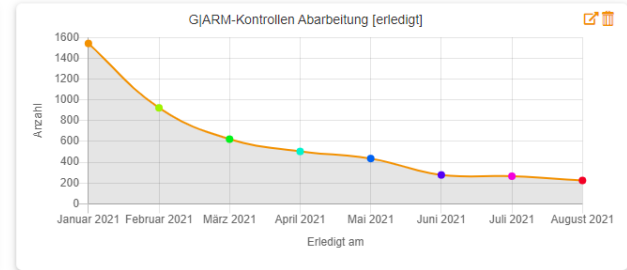
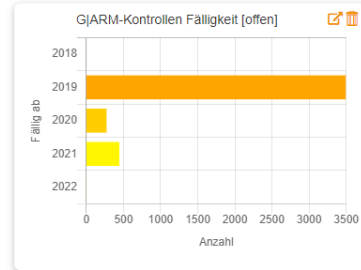
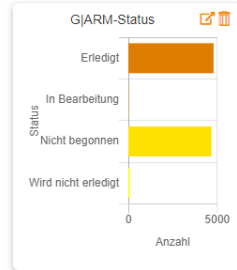
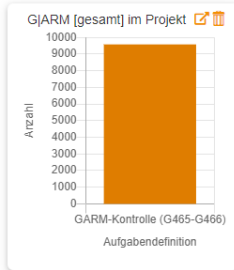
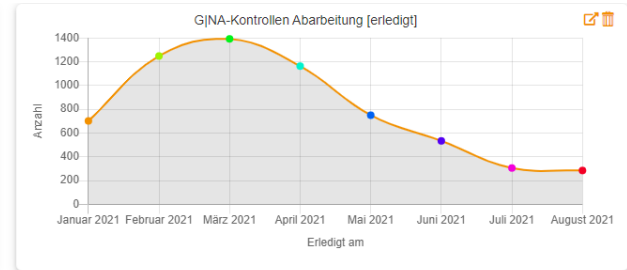
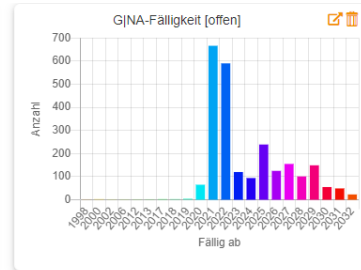
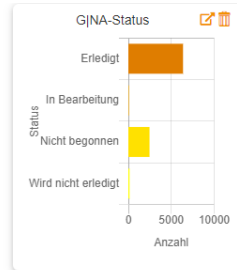
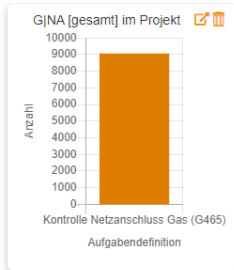
## Dashboard Ereignisse



# Live-Reporting



- Mein Bereich ▼
- Schäden Hochwasser ⚠
- Disposition ▼
- Einsatzplanung 📅
- [AS] Dashboards 2.0 ▼
- [AS] G Dashboards** 🎯
- [AS] S Dashboards 🎯
- [AS] W Dashboards 🎯
- [AS] G|NA-Kontrolle 🎯
- [AS] G|ARM-Kontrolle 🎯
- [AS] W|ARM|HYD-Kontrolle 🎯
- [AS] Zeitbuchungen ▼
- [AS-W1] erledigte Aufgaben 📅
- [AS-W2] erledigte Aufgaben 📅
- [AS-W3] erledigte Aufgaben 📅
- [AS-W4] erledigte Aufgaben 📅
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- [AS-W1] Zeitbuchungen 🕒

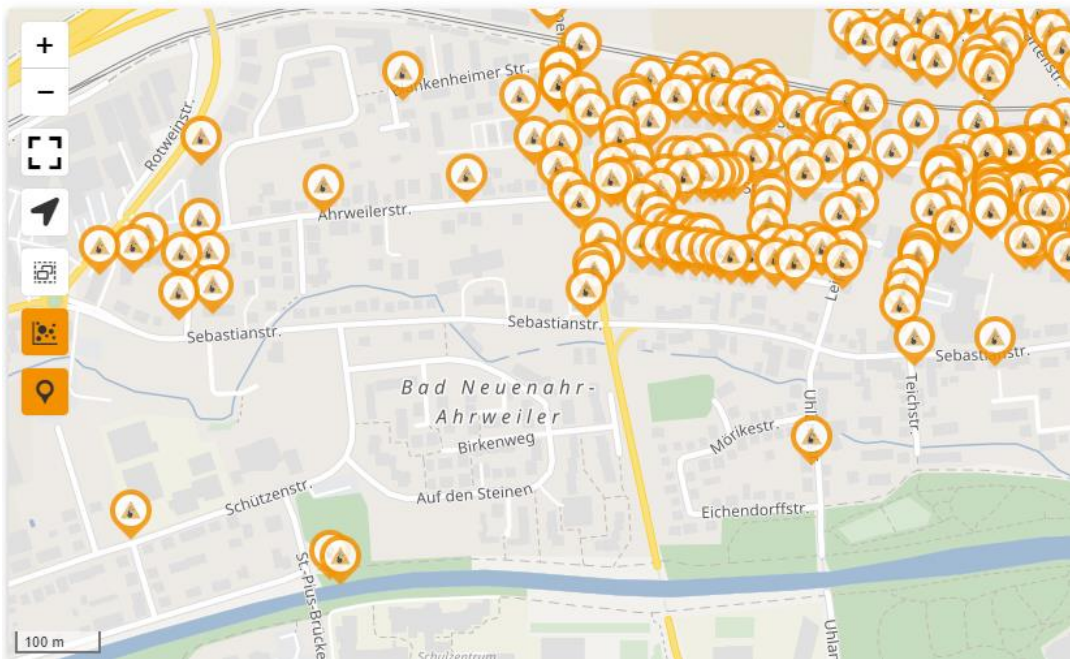




# Support for the flood disaster in the Ahrtal

☰ GS-WEB | Energienetze Mittelrhein GmbH & Co. KG Schäden Hochwasser

## Schäden Hochwasser



## Digital application for flood damage management

- **133 km** of destroyed gas pipelines with **7,220** affected grid connections
- All connections must be capped and sealed, and later returned to operation.
- Mobile applications are used to record the damage and coordinate the activities.
- 250 mobile devices are used for this purpose.



**Thank you  
for your attention  
and interest**



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Sales Engineer

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t.zapp@greengate.de



**Digitalization in the supply chain**