

DANA CONTROL & ONDINA

CONTROL SYSTEM
& MEASUREMENT TOOLS

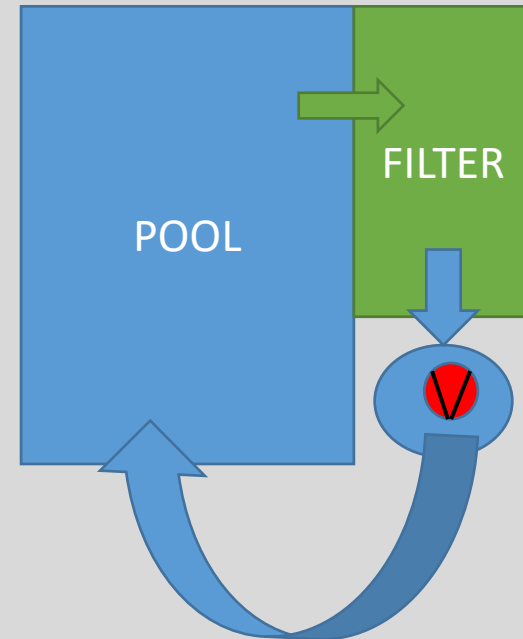


- 1) Control system for natural pools: DANA control box
- 2) Measurement unit for natural pools: ONDINA
- 3) Comparison of the both systems

Control system for natural swimming pools

Can be simple...

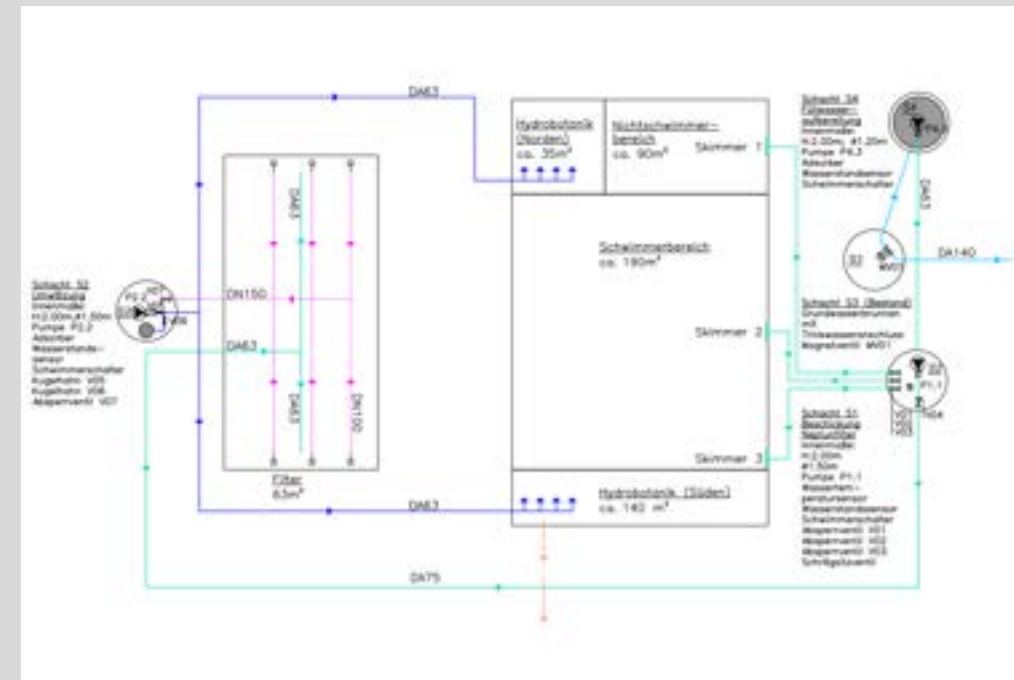
- 1 Pump with timer
- Manual filling water input
- Manual measurement of parameters
- No automatically data transfer into DANA
- Manual DATA transfer into DANA is possible



Control system for natural swimming pools

Can be more complex...

- System with 2 pumps or more
- Measurement of water levels, temperatures and turbidity
- Pumps should be automatically activated depending on water levels or water temperatures
- Filling water should be automatically activated depending on water levels
- data transfer should be automatically to DANA



How to control your complex system and bring data automatically to DANA?

Control system for natural swimming pools

Dana control box

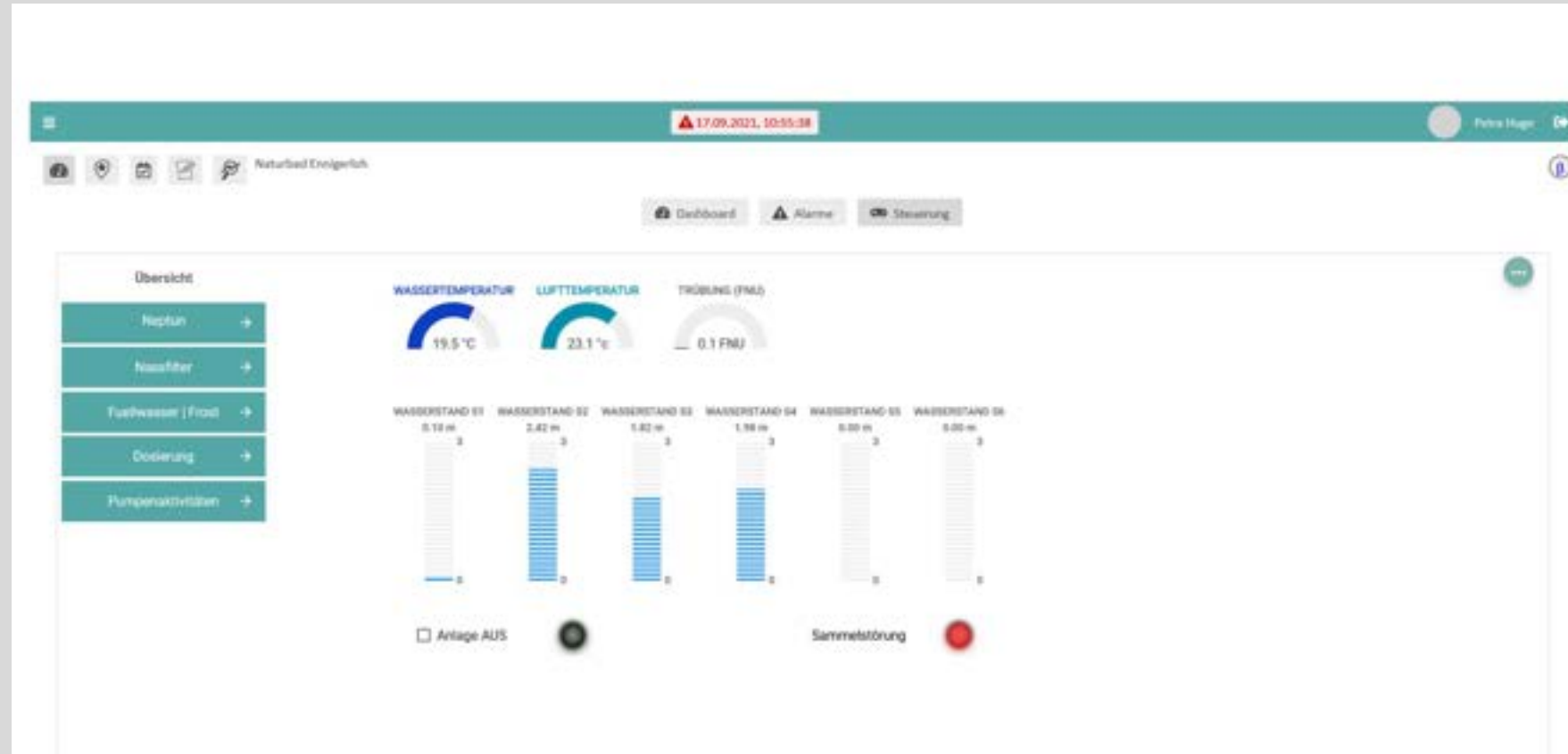
- Connect your pumps
- Connect your sensors for water level and temperature measurement with plug and play connection
- Internal CPU with ready programmed swimming pool control system.
- Filling water is automatically activated when the water level is too low.
- Modem for automatical data transfer to DANA



Control system for natural swimming pools

DANA control – what you can do in the data base...

- Switch your system on and off
- Check your sensor Data in DANA
- Check your alarm messages in Dana

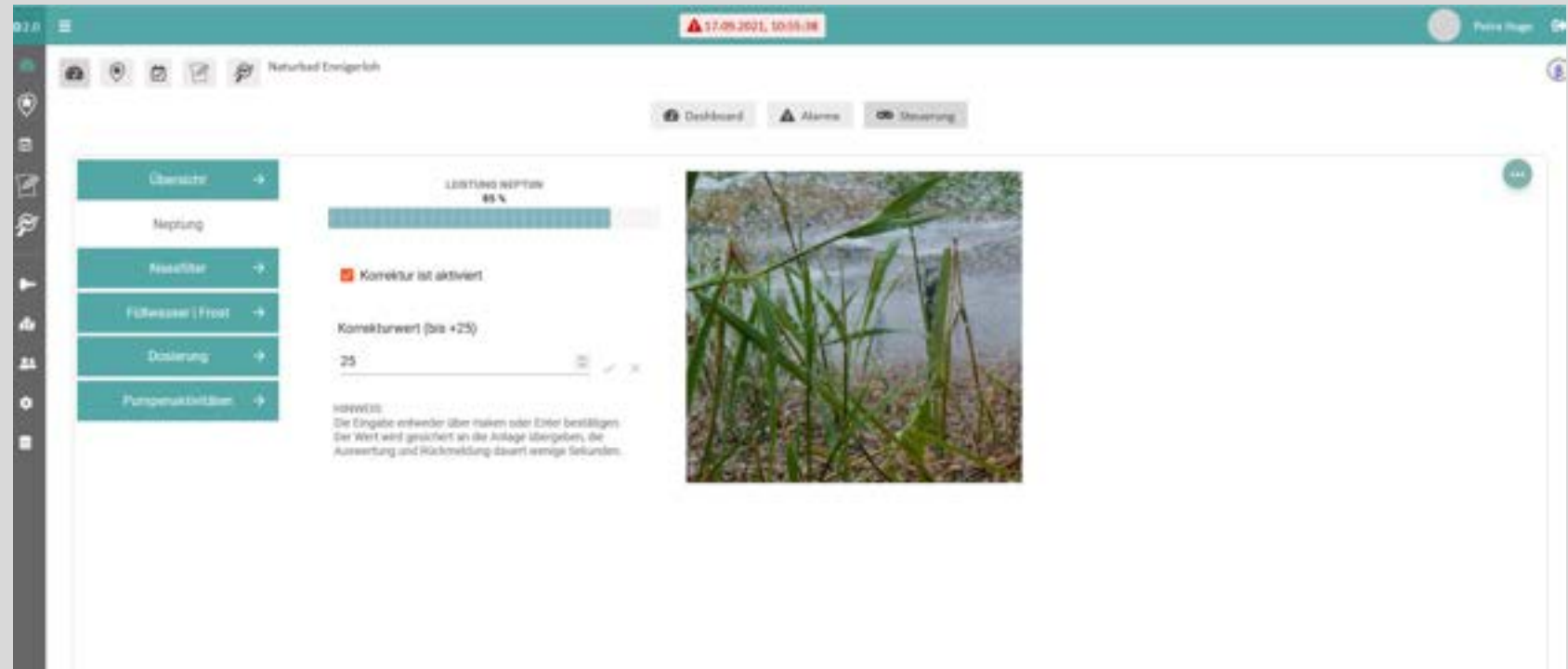


<https://dana2.polyplan-kreikenbaum.eu/de/location/dashboard/15/control>

Control system for natural swimming pools

DANA control – what you can do in the data base...

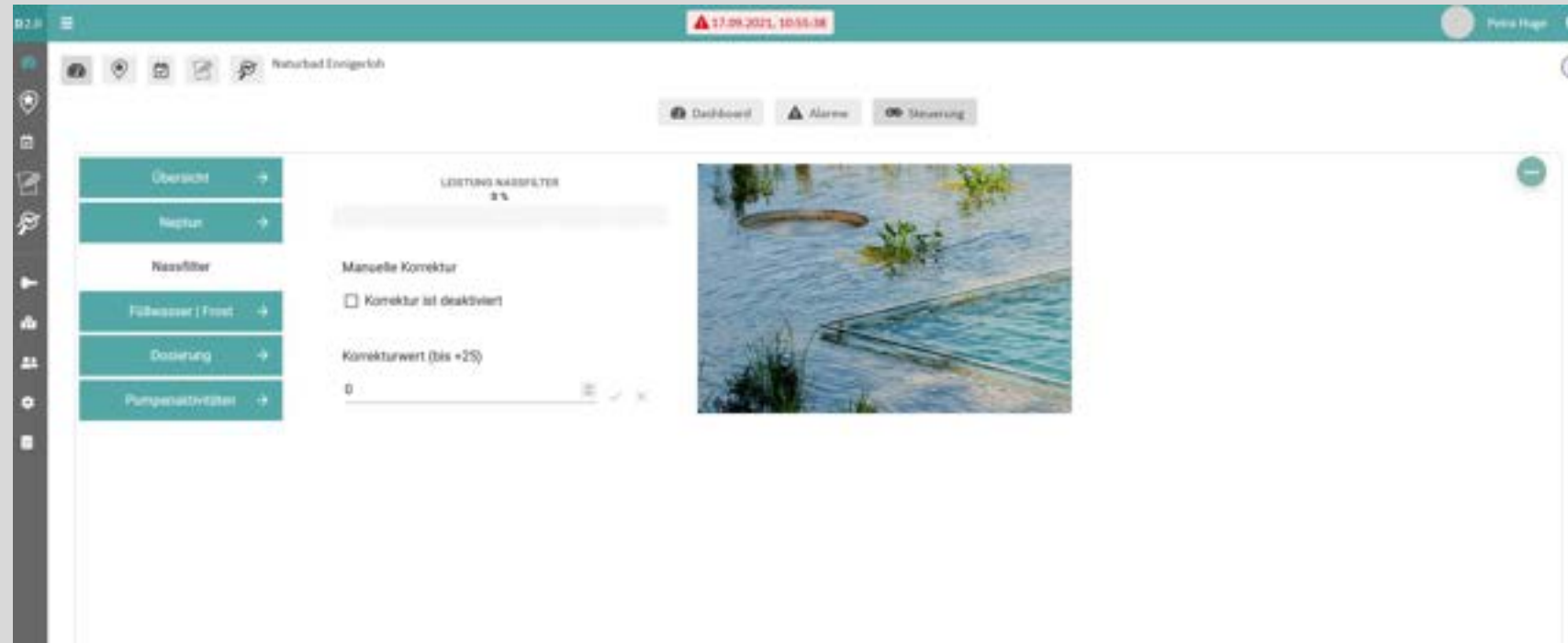
- Check the setting of your filter
- Adapt your filter performance



Control system for natural swimming pools

DANA control – what you can do in the data base...

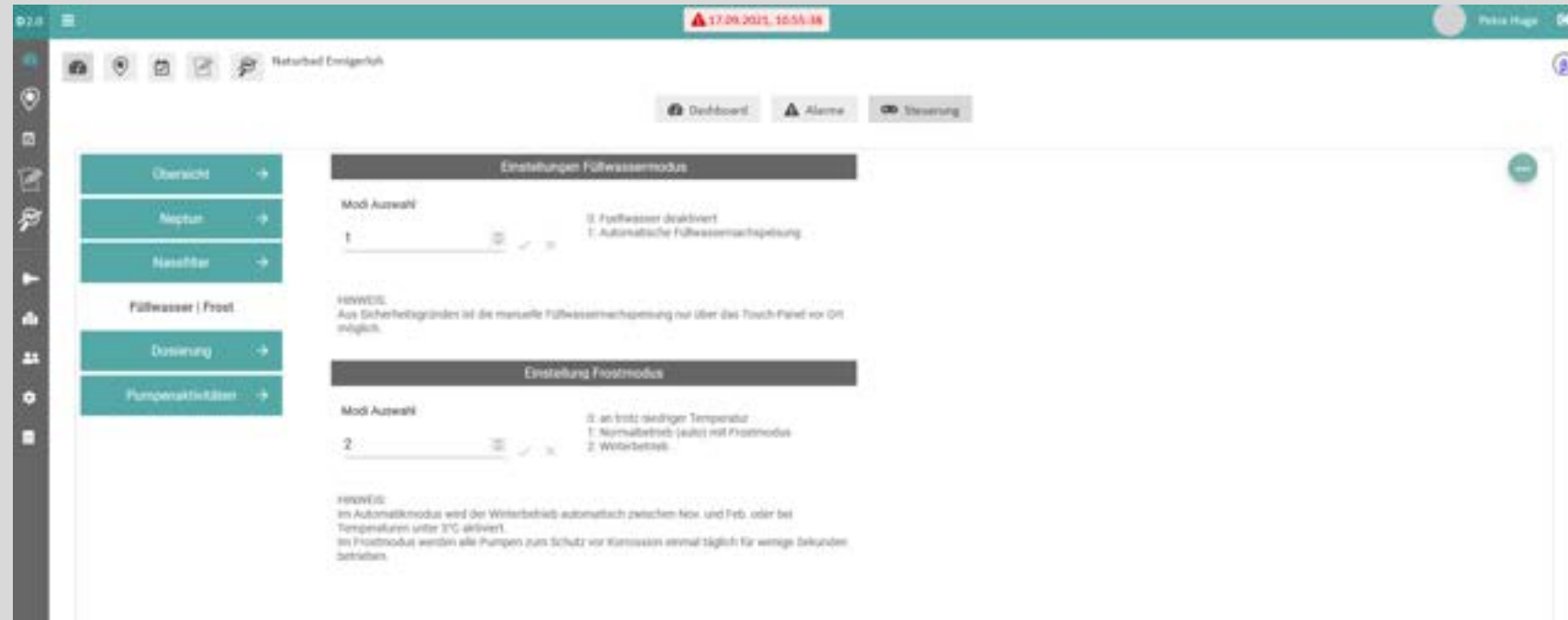
- Check the setting of your filter
- Adapt your filter performance



Control system for natural swimming pools

DANA control – what you can do in the data base...

- Activate or deactivate your automatic filling water mode.
- Activate or deactivate your automatic winter or summer mode



Control system for natural swimming pools

DANA control – what you can do in the data base...

- Activate or deactivate your automatic dosing of precipitator

The screenshot displays the DANA control system interface for a natural swimming pool. The interface is divided into several sections:

- Header:** Shows the date and time: 17.05.2021, 10:55:38. The user is logged in as Peter Hagen.
- Navigation:** A sidebar on the left contains icons for various functions. The main navigation bar includes 'Dashboard', 'Alarme', and 'Steuerung'.
- Left Panel:** A vertical menu with buttons for 'Übersicht', 'Reparatur', 'Nachfilter', 'Fallwasser / Frost', 'Dosierung', and 'Pumpenaktivitäten'.
- Main Content Area:** Displays settings for two dosing pumps:
 - Einstellung Dosierpumpe FeCl3:** Shows 'Modus Auswahl' set to 1. A status indicator shows 'Pumpe aktiviert'. Below this, a 'HINWEIS' section explains the modes: 'Im Modus 1 wird die Pumpe automatisch in Abhängigkeit der Trübung betrieben. Im Modus 2 sind die Trübungswerte nicht relevant, zum nächsten Zyklus (meist Nachts) wird die Pumpe aktiviert. Anschließend stellt sich der Standard-Modus 1 wieder ein.'
 - Einstellung Dosierpumpe H2O2:** Shows 'Modus Auswahl' set to 2. A status indicator shows 'Pumpe aktiviert'. Below this, a 'HINWEIS' section explains the modes: 'Im Modus 1 wird die Pumpe automatisch in Abhängigkeit der Trübung betrieben. Im Modus 2 sind die Trübungswerte nicht relevant, zum nächsten Zyklus (meist Nachts) wird die Pumpe aktiviert. Anschließend stellt sich der Standard-Modus 1 wieder ein.'

Control system for natural swimming pools

DANA control – what you can do in the data base...

- Check your pump running times
- Check your valve running times



The screenshot displays the DANA control system interface for a natural swimming pool. The top bar shows the date and time: 17.06.2021, 09:58:38. The main content area is titled 'Natural Control' and features a navigation menu on the left with options: 'Übersicht', 'Neuplan', 'Massfilter', 'Fußheizer / Frost', and 'Dosierung'. Below the menu, the 'Pumpenaktivitäten' section lists various pumps and valves with their respective running times in hours.

Device Name	Running Time (h)
Pumpe 11 Neuplan Roll	4185.15 h
Pumpe 12 Neuplan Roll	4825.56 h
Pumpe 21 Neuplan Roll	3513.65 h
Pumpe 22 Neuplan Roll	3869.82 h
Pumpe 23 Adexler	90.47 h
P 21 Neuplan Quark	5676.57 h
Pumpe 32 Fontaine	1714.88 h
Pumpe 41 Massage	865.58 h
Pumpe 42 Hotteck	843.15 h
Shv1 Solar probe	632.17 h
Shv2 Solar sensor	495.60 h
Shv3 Wärmepumpe	2027.40 h
Shv4 Wärmepumpe	2605.57 h
Shv5 Gaskessel pri	1701.43 h
Shv6 Gaskessel sek	3502.12 h
Shv7 AFH pri	0.12 h
Shv8 AFH sek	4.22 h
Max Fußheizer	547.13 h
FaCO Gaskessel	146.92 h
HCO Gaskessel	0.00 h

Conclusion DANA control box

Connect your swimming pond system to your control box, check your parameters in the data base and change system settings via Dana.



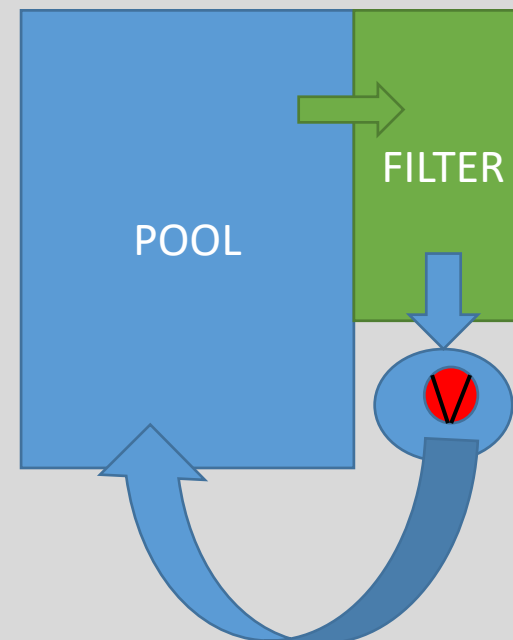
ONDINA
POWERED BY DANA

...plug and play measurement tool

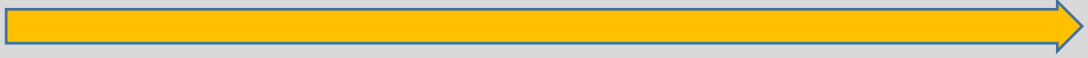
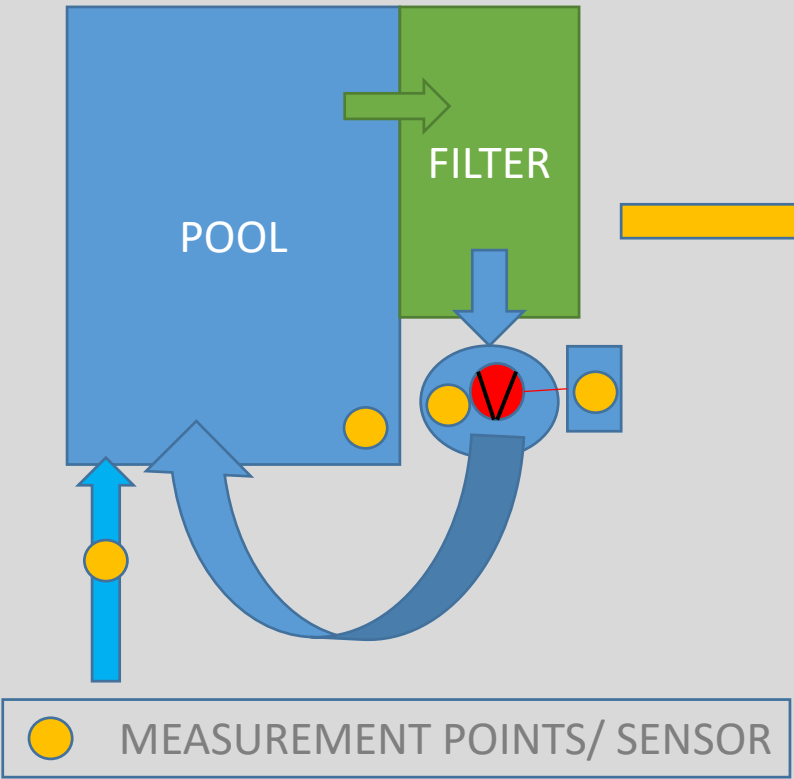
Application of ONDINA...

The pool control system can be simple...

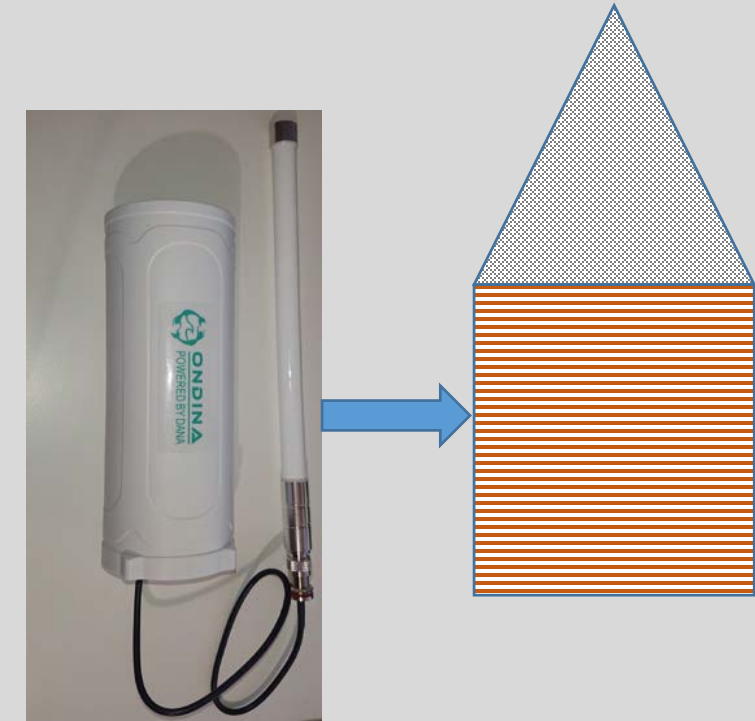
- 1 Pump with timer
- Manual filling water input
- Manual measurement of parameters *switched to automatically measurement with ONDINA*
- No automatically data transfer into DANA *switched to automatically data transfer with ONDINA*
- *Addition to Blue connect, different parameters.*



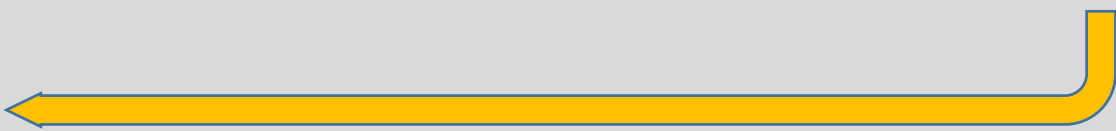
Measurement system for natural swimming pools



- wire less data transfer with LoRaWAN
- High distance up to 1km



ONDINA GATEWAY: installation outside/ house wall



→ Automatically data transfer to DANA via LTE

ONDINA GATEWAY

- Connect antenna
- Connect electricity
- Fix the gateway outside of your house
- Check control light for sensor connection



1.6 LED Indicators



There is a waterproof triple color LED on DLOS8 enclosure, the meaning of the LED is:

- ✓ **SOLID GREEN:** DLOS8 is alive with LoRaWAN server connection.
- ✓ **BLINKING GREEN:** a) Device has internet connection but no LoRaWAN Connection. or b) Device is in booting stage. In this stage, it will **BLINKING GREEN** for several seconds and then **RED** and **YELLOW** will blink together.
- ✓ **SOLID RED:** Device doesn't have internet connection.

ONDINA SENSOR 1: AIR TEMPERATURE + HUMIDITY + WATER TEMPERATURE

- Fix the air temperature sensor somewhere outside
- Connect sensor for water temperature and put it into the water to be measured
- Activate device by pressing a button more than 3 sec.



ONDINA SENSOR 2: WATER TEMPERATURE + WATER LEVEL

- Put sensor into water (water depth 50-80 cm)
- Fix sensor node somewhere close by, outside the water
- Activate sensor node by putting the yellow jumper to activate the electricity flow.



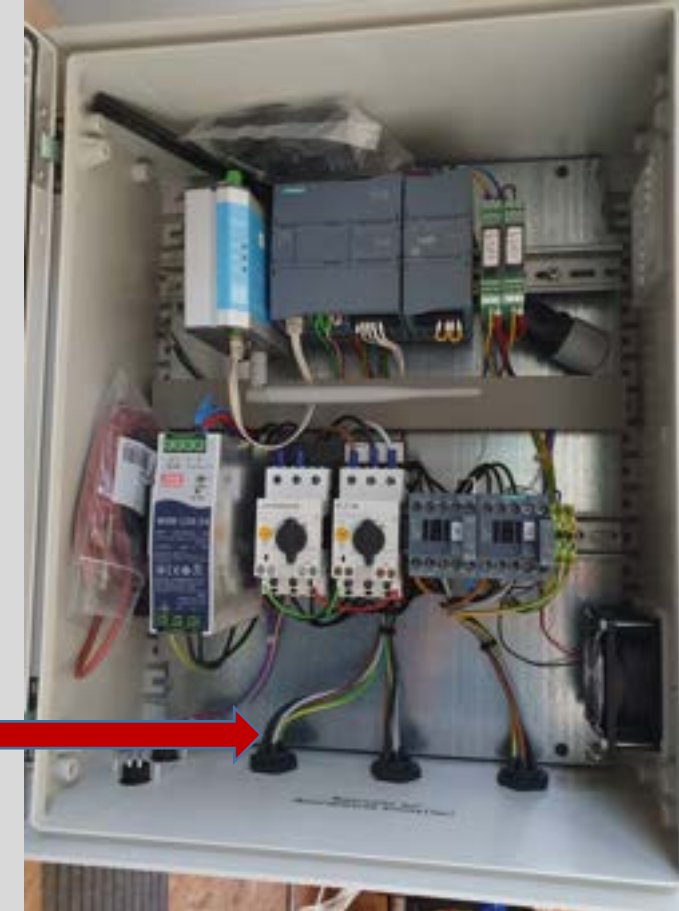
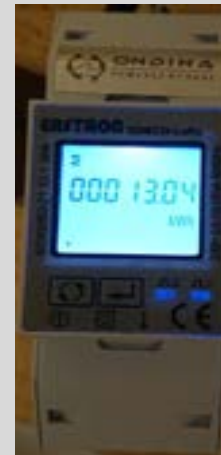
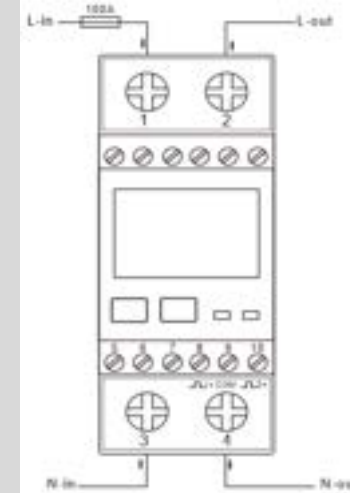
ONDINA SENSOR 3: WATER LEVEL

- Put sensor into water (water depth 50-80 cm)
- Fix sensor node somewhere close by outside the water
- Activate sensor node by putting the yellow jumper to activate the electricity flow.



ONDINA SENSOR 4: ELECTRICITY COUNTER

- Electricity counter wire less
- Can be used in mobile units
- Automatically data transfer to DANA



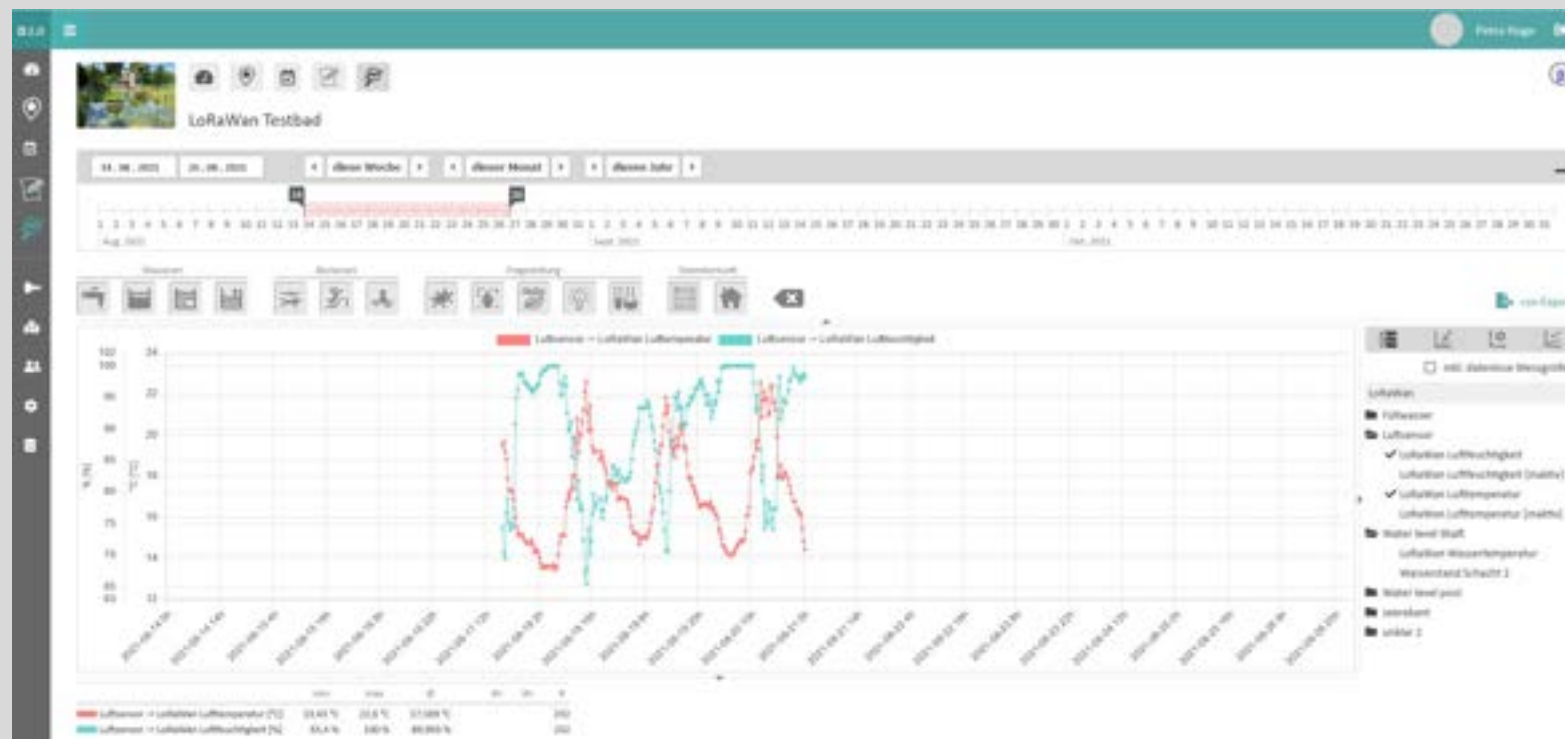
ONDINA SENSOR 5: WATER METER FOR FILLING WATER

- Water meter wire less
- Can be used in mobile units
- Automatically data transfer to DANA



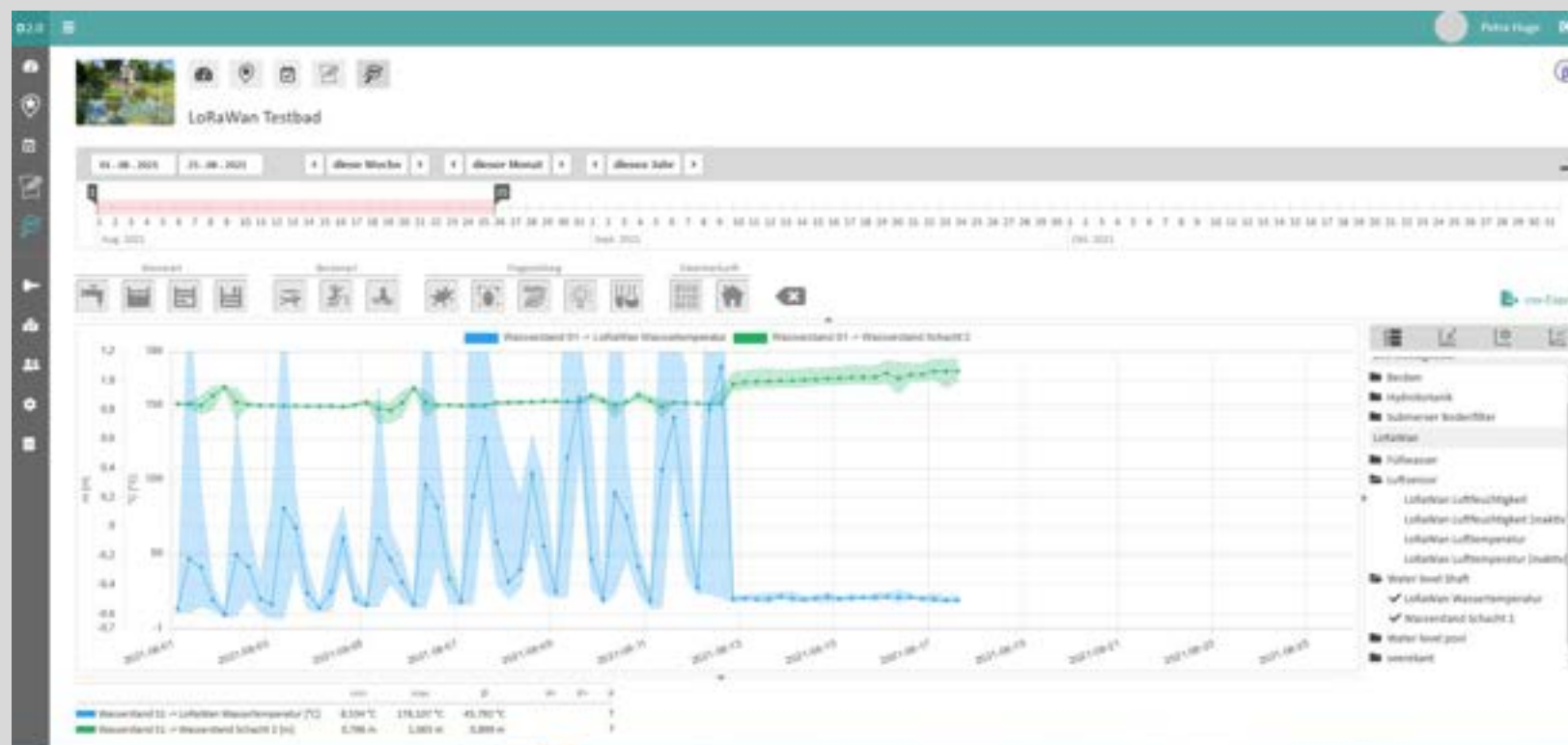
WHAT YOU SEE IN DANA...

- See your pool data history in graphs
- Compare your data to each other
- Air temperature and humidity:



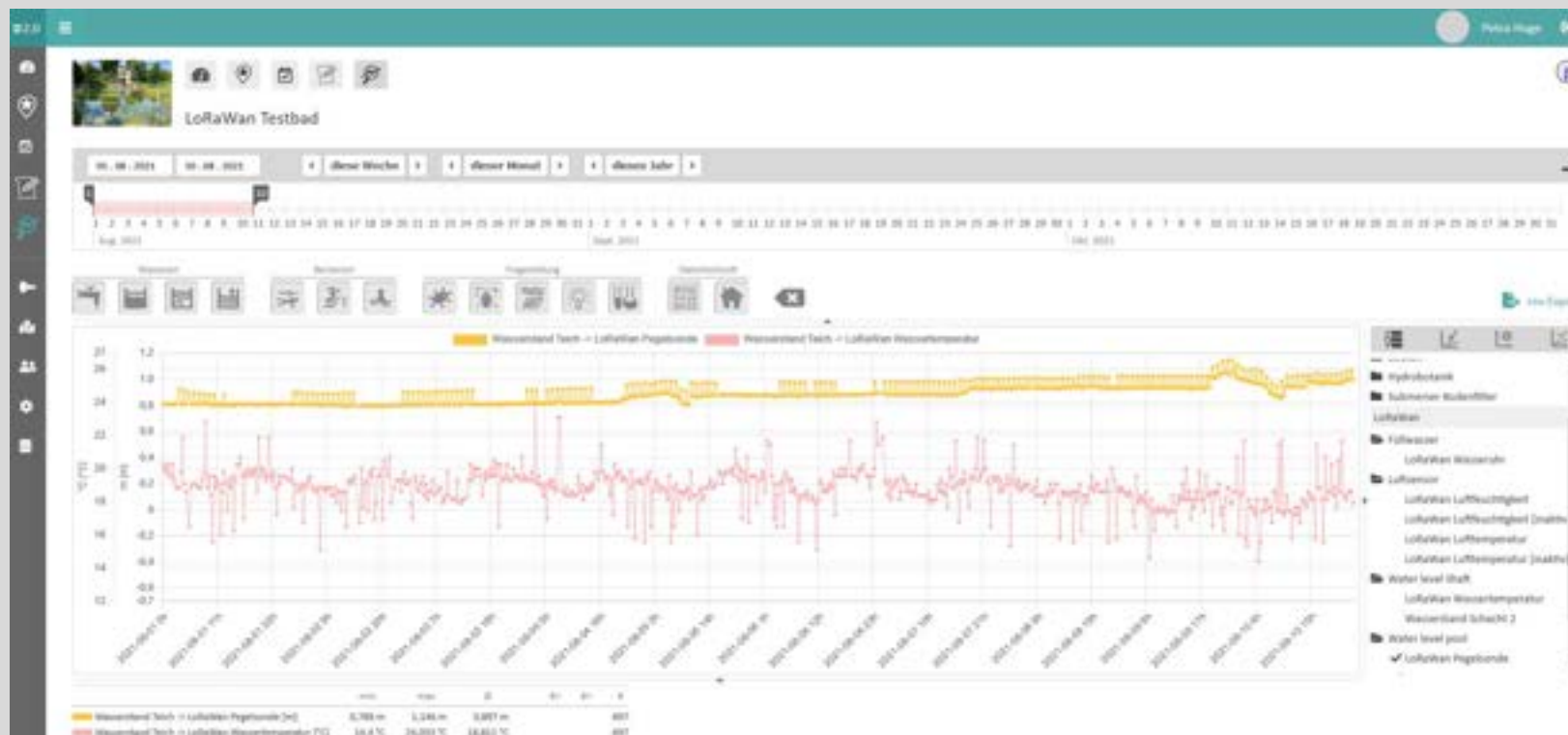
WHAT YOU SEE IN DANA...

- See your pool data history in graphs
- Compare your data to each other
- Water temperatures and water levels:



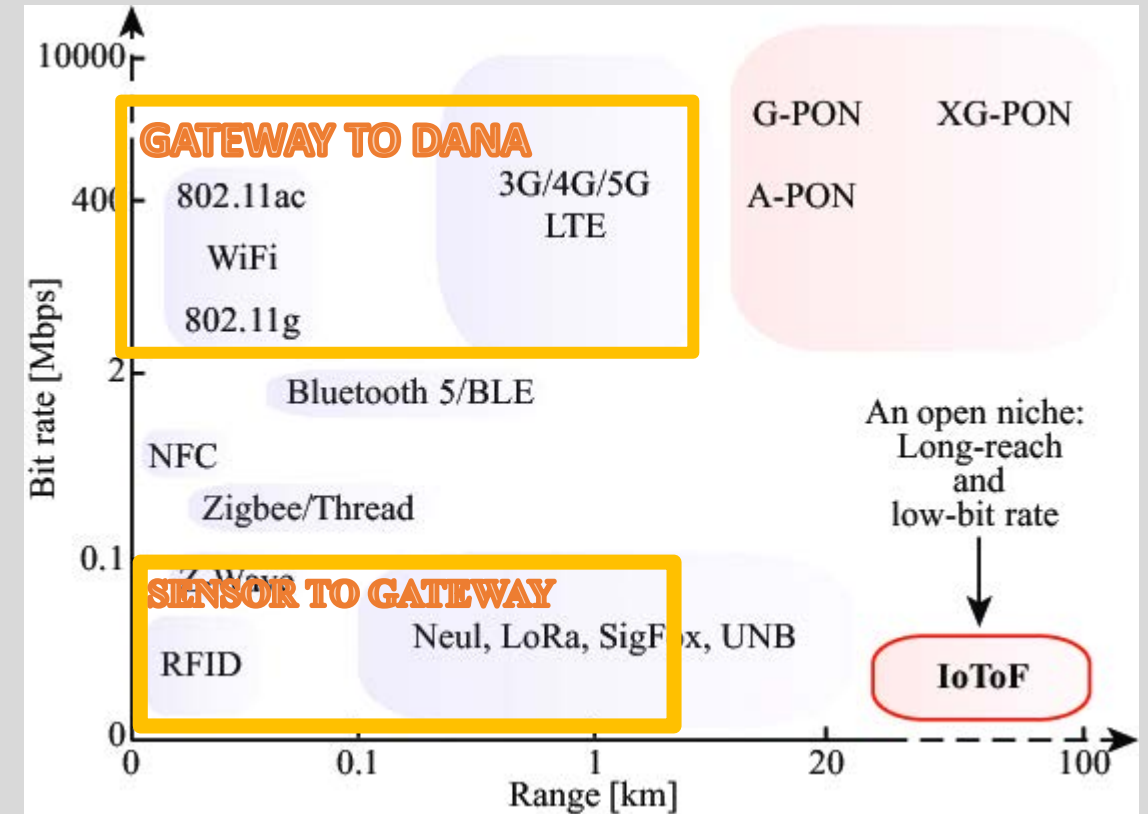
WHAT YOU SEE IN DANA...

- See your pool data history in graphs
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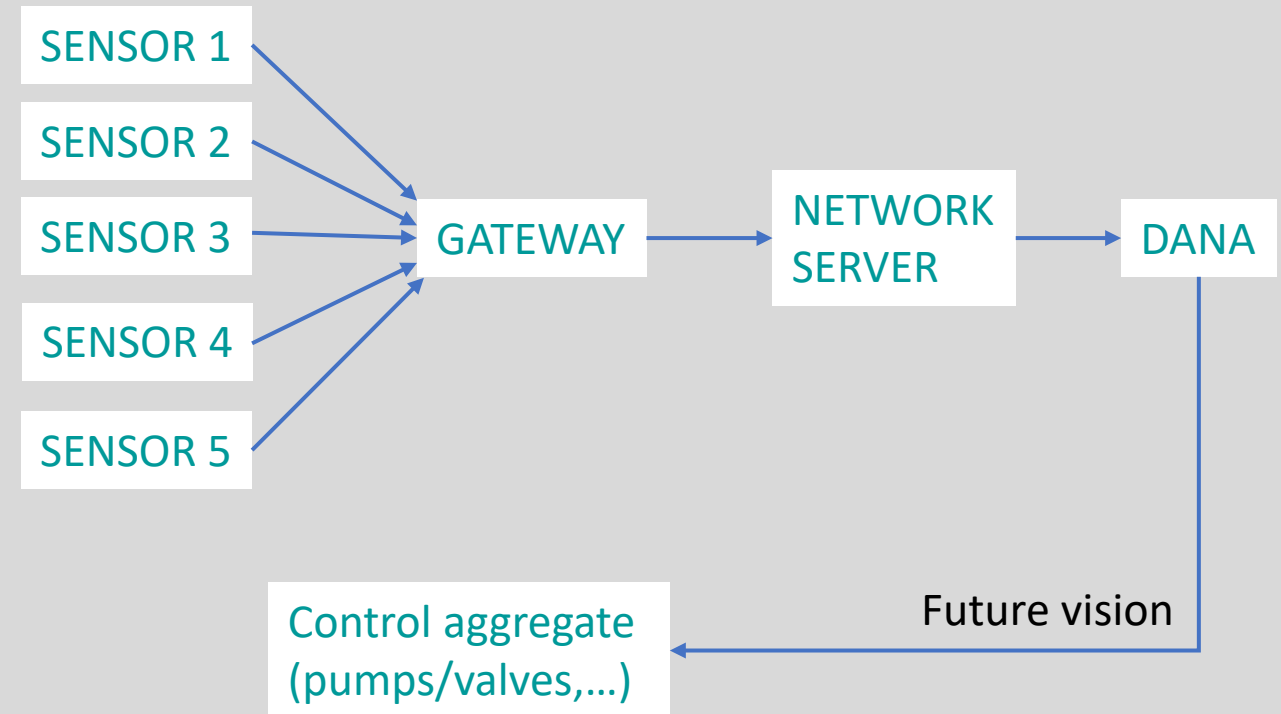
WHY LoRaWAN for sensor connection?

- Long Range Wide Area Network : Distance sensor to gateway up to 1km
- Low bit rate sufficient for sensor data
- Low power: Sensor Batteries hold 2 years, normally 3 years, up to 10 years
- No cable between sensor and gateway
- High security, sensor data are encrypted



ONDINA DATA TRANSFER

- Sensor sends DATA to Gateway with LoRaWAN
- Gateway sends DATA to Network server with LTE
- Network server sends DATA to Application server → Database DANA
- Perspective: Bidirectional sending is planned in LoRaWAN net soon, control possibility.



Measurement and control systems for natural swimming pools

	DANA CONTROL BOX	ONDINA
Control possibility	yes	No
Measurement system	Yes, 4 Parameter	Yes, 8 Parameters
Sensor data transport to Gateway wireless	no	Yes
Automatically DATA transfer to DANA	yes	Yes
Fix installed system	yes	No

Thank you for your attention 😊

Measurement and control systems for natural swimming pools

	DANA CONTROL BOX	ONDINA
Control possibility	yes	No
Measurement system	Yes, 4 Parameter	Yes, 8 Parameters
Sensor data transport to Gateway wireless	no	Yes
Automatically DATA transfer to DANA	yes	Yes
Fix installed system	yes	No
Purchase costs	3800,- €	2600,- €
Yearly costs	240,-€	240,-€