



Wireless network connection of an OTT netDL1000 via WLAN

Radio transmission of weather data for a nautical information system



Background

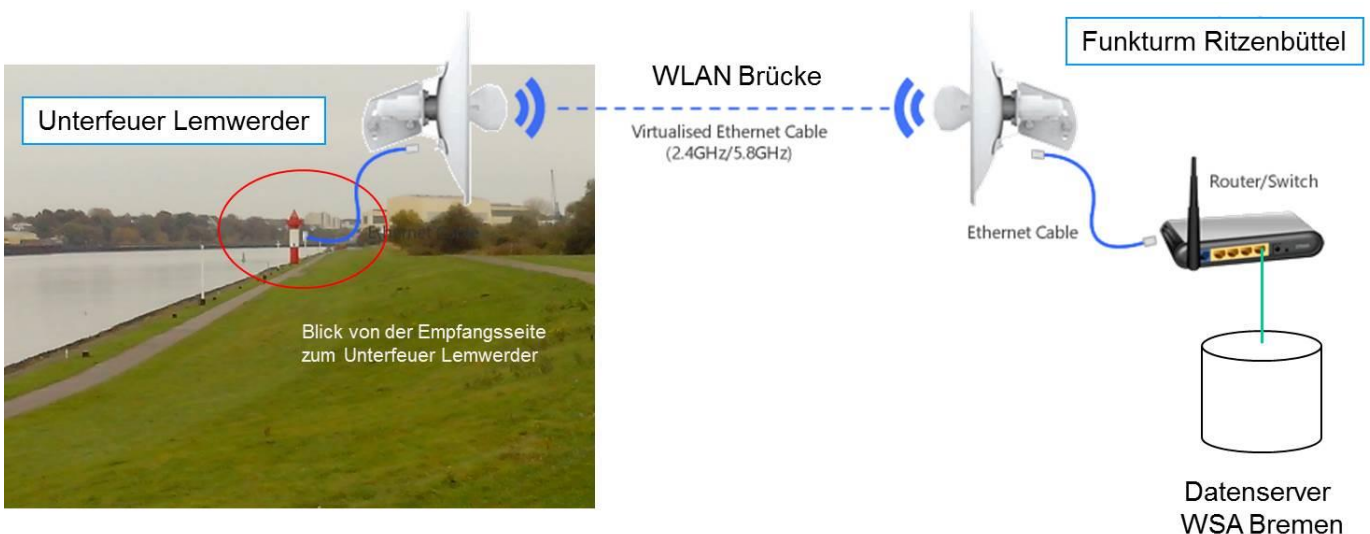
The federal water and navigation administration (WSV) is responsible for safety and ease of ship traffic and for preventing risks and harmful environmental effects of shipping.

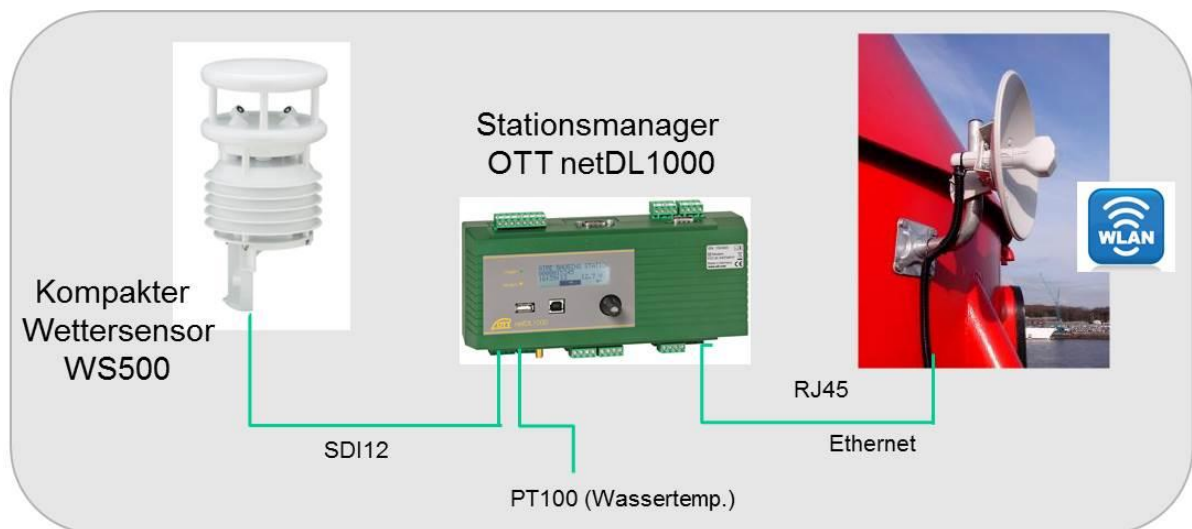
Part of this work is the operation of numerous technical systems to generate the required data to accomplish this task.

The traffic centre of the authority for water and navigation (WSA) in Bremen monitors and eventually regulates the shipping on the river Hunte and a part of the river Weser. For this purpose hydrological and meteorological data is monitored, processed for the nautical personnel and visualized according to their professional requirements.

In addition to voice communication- and radarsystems and the AIS (*Automatic Identification System*) this information completes the technical equipment to fulfil the statutory tasks. Every hour, a status report including the current water levels, weather reports, visibility range and special incidents in the area is sent out assist navigation.

For example a wind sensor enables the assessment of local wind conditions and this information helps the pilots to coordinate safe docking and undocking of the big car carriers.





Task

The WSA Bremen wanted to realize measurement of wind direction and wind speed on minute intervals at the front light in Lemwerder at the river Weser. Later on, a water temperature sensor is supposed to be added.

Measurement data is collected on a server system coupled via FTP. The server uses a local network to provide the already processed current data for an information system. Integration into the WSA Bremen traffic network is made via the radar tower in Ritzenbuettel. That means, wireless data transmission between the front light and the radar tower has to cover a distance of approx. 600m.

Monitoring Solution

Measurement of wind direction and wind speed, air temperature, humidity and barometric pressure is made by a compact weather sensor, type WS 500 (Fa. Lufft) with ultrasonic anemometer. The sensor is installed on top of the front light on a tiltable mast and is connected via SDI12 to data logger and station manager OTT netDL1000.

Later, a PT100 for water temperature measurement can easily be connected to the analogue input card of the data logger which is connected to a WLAN directional antenna via the Ethernet port of the OTT netDL1000. A second identical antenna forms the counterpart in a pre-configured transparent WLAN-Bridge (Ubiquity NanoBridge). It is mounted at the radar tower in Ritzenbuettel and is connected to the traffic network of the WSA via a router.

Measurements and data transfer take place in minute intervals. Via FTP the data are stored directly on an internal server and from here are forwarded to Bremen Traffic for visualization for nautical purposes.

In parallel, the data is made available for other users within the WSV (Level Data Centre, Hydrology, WISKI, VISILINK, etc.).

The internal GSM modem of the station manager OTT netDL1000 enables not only an alternative IP-based remote data transmission via GPRS, but also remote access for configuration and maintenance.

The system with OTT netDL1000, power pack (OTT PCU12) and batteries for autonomous power supply was delivered in a fully wired stainless steel cabinet and set up for operation by an OTT Hydroservice technician.

The advantages:

- Open, standardized interfaces (SDI12, RS485), transmission protocols (HTTP(S), FTP, SMTP) and data formats (among others: XML, ASCII) for smooth integration in existing IT structures
- Easy installation thanks to "turn-key" systems with pre-configured components in a fully pre-installed cabinet
- A complete system from a single source: conception, system integration, installation and commissioning

Summary / Outlook

The system described here is in operation since fall 2013 and has been providing valid data without any gaps for more than one year

The compact weather sensor as an alternative to mechanical devices for wind measurement has proven to work perfectly even under the harsh conditions encountered near the coastline.

The system convinces by the proven reliability and the state-of-the-art data logger concept. Open, standardized interfaces, protocols and formats enable convenient integration into existing IT-structures.

Further stations are projected.

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