Ammonit NEWS 1/2012

Dear Reader,

The year 2012 has just started and we are going to offer you a great New Year's gift: After several test periods, during which we received a lot of positive feedback, fixed some minor problems and extended the feature list of Meteo-40, we are proud to **release Meteo-40 for customer projects**.

The calibration protocols (click ***here***) prove that Meteo-40 delivers precise measurement data and works smoothly. ***Starting today you can order your Meteo-40***. Please ask our partners or sales engineers for a quote.

Meteo-40 is a sophisticated and easy-to-use data logger. In order to get started with the new data logger, please feel free to visit our website to watch some ***tutorial videos***: *http://www.ammonit.com/support/tutorial-videos*

Additionally, ***AmmonitOR 2.0 will be available from the middle of January.*** The new release will be compatible with Meteo-40 projects. So you can monitor measurement data acquired by Meteo-40 via Ammonit Online Report!

Enjoy reading, Vincent Camier

What's new at Ammonit

Meteo-40 released for customer projects

Finally after having tested Meteo-40 thoroughly and after proving our test results in a calibration, **we are happy to release Meteo-40 for customer projects!**

In November a first small measurement campaign with Meteo-40 has been set up and a second campaign followed in December. Starting today Meteo-40 can be ordered for customer projects using the following order numbers:

Data Logger	Order-No.
Meteo-40S	M11000
Meteo-40M	M21000
Meteo-40L	M31000

Meteo-40 is designed user-friendly and thanks to the web interface the data logger can comfortably be configured. Nevertheless, should you face any problems, we recommend our tutorial videos (*http://www.ammonit.com/support/tutorial-videos*). Here you can see how you install and upgrade the data logger as well as how sensors can be configured.

Moreover, Meteo-40 offers online help. The context-sensitive help is accessable at any time using the help menu in the web interface.

If you are looking for electrical connection plans, please have a look in the Meteo-40 manual (*http://www.ammonit.com/support/downloads/216-ammonithandbuecher#Manuals*). Further connection plans will be added step by step.

Meteo-40 is also designed to be very flexible. It offers various methods to retrieve measurement data:

- Email
- FTP / SCP file upload
- File upload to AmmonitOR
- Data download via web interface
- Data download direct on USB memory stick (without accessing the web interface)

Additionally, Meteo-40 offers various communication methods:

- Direct access via tunnel
- W-LAN
- LAN
- SCADA via TCP/IP or RTU
- Point-to-point cable connection between data logger and host PC using an Ethernet or USB cable

Meteo-40 can be used for measurement campaigns as well as for wind farm monitoring within a SCADA system. All common sensors can be connected with Meteo-40.

Meteo-40 for SCADA

Use Meteo-40 within your SCADA (Supervisory Control and Data Acquisition) system to provide reliable comparative meteorological data. With the help of measurement data recorded by Meteo-40, e.g. predictions about the annual production of a wind farm can be verified.

With its configurable Modbus Register Map, Meteo-40 is designed to operate in any existing SCADA system. The necessary parameters are configured via the user-friendly web interface of Meteo-40.

In order to install Meteo-40 in a SCADA system, it has to be connected via RS485 or Ethernet (TCP/IP) to the wind farm network. Meteo-40 uses the standard protocols Modbus TCP/IP and Modbus RTU for data transmission. The measurement data can be retrieved via the Modbus Register Map. For further details please refer to the data sheet on our website (*http://www.ammonit.com/products/data-logger-wind/meteo-40*) or ask the Ammonit experts.

New Order Number System

Parallel to the launch of Meteo-40, Ammonit updated its order number system. Now Ammonit offers most sensors with plugs, which are easier to replace in case of sensor defects.

The new data sheets are now on our website. They contain connection diagrams, which describe, how sensors have to be connected to Meteo-40.

Ammonit focuses on TMR wind vanes

To use the analog voltage channels of Meteo-40 efficiently, we focus on offering digital TMR (Tunnel Magneto Resistance) wind vanes: Thies First Class TMR and Compact TMR (each 10-bit serial-synchron). Considering both commercial and technical aspects, TMR wind vanes have decisive advantages.

Digital TMR wind vanes:

- are offered at a lower price than potentiometer wind vanes.
- thanks to their solid state design, they are subject to less mechanical wear than potentiometer wind vanes. TMR wind vanes do not have moving parts, except for the bearings. Thus digital TMR wind vanes are more reliable and less susceptible to failure.
- deliver more precise measurement values (see table below).

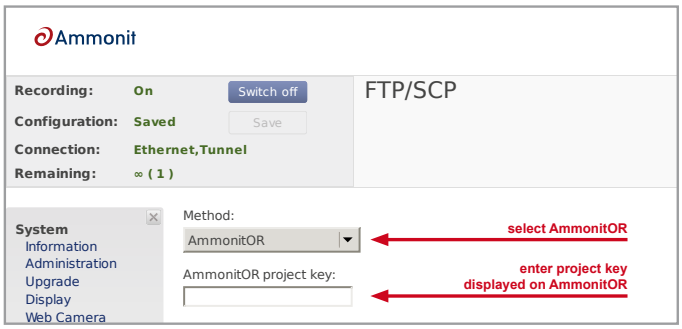
Wind vane	Accuracy
Thies Compact TMR	± 1°
Thies Compact Potentiometer	± 2°
Thies First Class TMR	± 0.5°
Thies First Class Potentiometer	± 1°

- are internationally well-known. They have been in the market for more than 4 years. So far Thies has successfully manufactured and sold more than 5,600 digital TMR wind vanes.

AmmonitOR 2.0 release

The new version 2.0 of AmmonitOR (Ammonit Online Report) will be available from the middle of January 2012. This version includes some major improvements. Most important is the **compatibility of AmmonitOR with Meteo-40 projects**.

With the help of a project key, you can easily add your upcoming Meteo-40 projects to AmmonitOR. The project key is displayed after creating a new project in AmmonitOR. By selecting AmmonitOR in the Meteo-40 web interface (see screenshot below), your measurement data will automatically be archived on the online platform.



Additionally, AmmonitOR is now **faster and more flexible**. This is because of an improved database structure.

Another big improvement with this release is security. We have further enhanced the encryption for AmmonitOR. So during data transfer your measurement data is **encrypted with 2048 bit** which is unbreakable using todays technologies.

If you have installed AmmonitOR on your own server, please perform an upgrade to use the new features. If you want to start using AmmonitOR, an account is required and you have to be registered. Please send an email to support@ammonit.com to register.

Case Study:

Fortum wind measurement project in Lapland close to the arctic circle

The wind power capacity in Finland is 197 MW, 130 wind turbines (May 2011). Wind power production in 2010 was about 292 GWh, which is 0.3 % of the Finnish electricity consumption. As a comparison: Germany, one of the leading wind power countries, had a wind power capacity of 27.2 GW (21,607 wind turbines) in 2010. The wind power production was about 37,300 GWh, which was 6.2% of the German electricity consumption.

At present Finland produces electricity from hydro, nuclear and thermal power.

- Conven. thermal power 33.3 TWh
- Nuclear power 22.5 TWh
- Hydro power 12.6 TWh
- Wind power 0.2 TWh

Over the past few years wind power was not particularly promoted by the Finish government. Finland did not use feed-in tariffs, fixed premiums, green certificate systems or tendering procedures. At the beginning of 2011 Finland finally introduced feed-in tariffs for wind power and bioenergy.

Nevertheless the target to increase the share of renewable energy from 28.5 percent in 2005 to 35 percent in 2020 was dropped to 31.5%. According to the „Renewables Global Status Report" Finland aims to increase renewable energy only by 2 % in 13 years. This objective is among the modest of all EU countries.

However, wind power is the most popular energy resource in Finland. In September 2007 about 90% of the Finish public supported further investments in wind power.

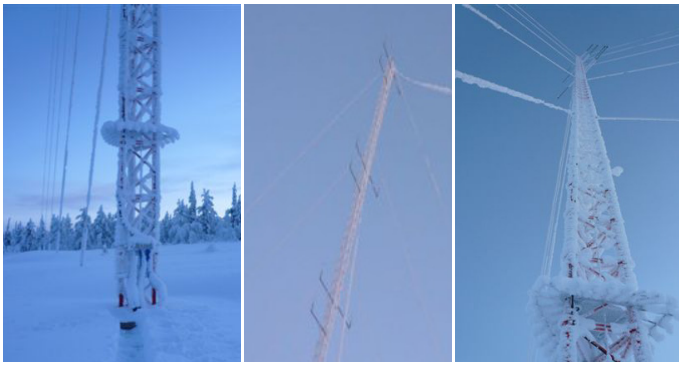
The Project
In 2010 Fortum, which is one of the three largest energy producers in Finland, initiated a wind measurement campaign. A first met mast was planned for Lapland. Fortum is a NASDAQ OMX Helsinki quoted company whose activities cover the generation, distribution and sales of electricity and heat.

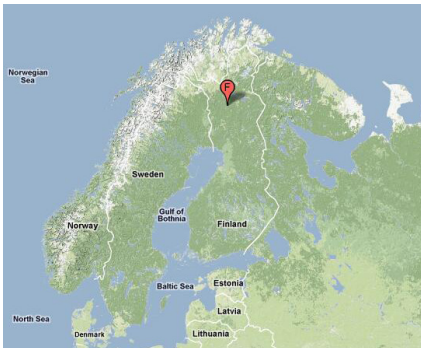
Meventus, a Scandinavian service company, which specialises in wind measurement campaigns, won the bid for the project. For about two years Meventus has been part of the global Ammonit partner network. In order to erect met masts, Meventus closely cooperates with Windhunter, which is a consulting and service company that specialises in wind measurement particularly in the installation of professional met masts. Since 2003 Windhunter has been part of the Ammonit partner network.

The Met Mast
The met mast was installed in the region of Kuolavaara-Keulakkopää near Rovaniemi - close to the arctic circle. The region is remote and almost uninhabited. Particular challenges arise from the specific climatic conditions caused by snow and ice. Windhunter erected the met mast and installed the required sensors without using any cranes or heavy machines. A team of industrial climbers built the met mast step by step using hoists to lift each segment.

Based on the arctic conditions, with top wind speed of up to 40m/s as well as cold and snowy winters, the 92m lattice mast is made of more robust material than met masts installed in Central Europe. Occasionally the anchor cables are covered with up to 20cm of snow and ice. In addition to the stronger materials used for the mast construction, Ammonit calculated and distributed special winterproof cables and a heating system to keep not only the sensors but also the booms free of snow and ice. These heating wires are wrapped around each boom.

The Sensors
The met mast is equipped with standard sensors, e.g. anemometers, wind vanes, barometers, as well as humidity and temperature sensors. Wind speed and wind direction are measured

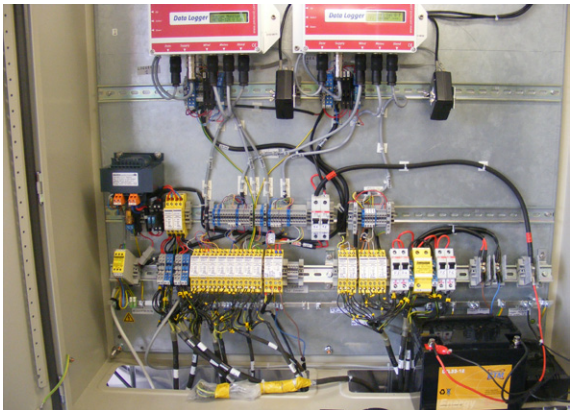




at several heights: high, middle and low level. Air pressure, humidity and temperature are measured at two heights to get values at top and low level. In order to acquire further measurement values, Windhunter installed four heated ultrasonic anemometers at top, high, middle and low level - so wind speed and wind direction are measured in parallel.

Noteworthy is an ice sensor which indicates if there are any risks of ice. Finally, 15 sensors have been installed on the met mast which is more than needed for a standard wind measurement campaign with 6 to 10 sensors. Ammonit delivered all of the electrical equipment including sensors, heatings and obstacle lights.

Considering the number of sensors, Ammonit needed to provide two Meteo-32X data loggers to record measurement data and calculate the required statistics.



Power Supply
Compared with a standard wind measurement system, the Fortum system requires significantly more power when the installed heating wires and the number of sensors are considered - especially heated ultrasonics, as well as sensor heating systems. In order to supply the measurement system with the necessary power, it had to be connected to the grid. Since there was no access to the grid available, Fortum installed a medium voltage power line of about 2.5km and a road to the site of the met mast.

In summary, the Fortum project was very ambitious for all partners involved. All partners had to work together closely and reliably to successfully implement such a challenging project. Ammonit, Meventus and Windhunter did this effectively as one team.

Many thanks to Meventus and Windhunter for providing the photo material.