News Letter 5

Raman Lidar for Ground Truthing
The Best gets Better
Adcon Telemetry chooses Kipp & Zonen

KIPP & ZONEN
SINCE 1830

Are you the next Kipp & Zonen award winner?

Every year, during the EMS Meeting, we grant the award to an outstanding research paper on Boundary Layer Meteorology by a young aspiring scientist. Go to our newspage on www.kippzonen.com for more information.

Content

July 2008

Contact

If you have a news item for the news letter or want to share your experiences with Kipp & Zonen applications and contribute to our next issues, please e-mail the editor: kelly.dalu@kippzonen.com

Getting ready for Summer

The new corporate style is now a reality! A lot has been changed and during the coming months all the old logos and other old-style details will disappear. During the first half of this year some important new product events took place. We started manufacturing the new SOLYS 2 sun tracker; launched the CHP 1 pyrheliometer, LOGBOX SD data logger and CVF 3 ventilation unit; and improved the UVS Series of UV radiometers.

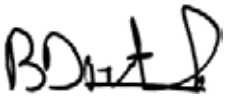
In the first six months Kipp has been successful in acquiring orders for some larger projects. These include two MTP 5-HE temperature profilers, POM-01 and PGS-100 for the USA and a Brewer Mk III, MTP 5-HE, POM-02, X-LAS and sun trackers to China. Moreover the Austrian telemetry specialist Adcon has chosen to use Kipp & Zonen instruments exclusively for measuring solar radiation in their systems.

We will use the summer months to prepare for the conference and exhibition season after the holidays. Some important events coming up are the Baseline Surface Radiation Network (BSRN) and EMS meetings in The Netherlands, IRS 2008 in Brazil and, of course, the AGU in San Francisco. Kipp & Zonen will be a sponsor of some of these meetings and during EMS we will have a dedicated session about our instruments, applications and usage. For those who are interested we will organize a factory tour on Friday 3 October 2008. Details about this tour will be published later.

Our sister company Mierij Meteo Nederland B.V. has been awarded with the contract for supplying the Dutch wind turbine manufacturer, Wind & Water Technology B.V. (WWT), with specialised anemometers for the monitoring, control and protection of the turbine. This contract is a breakthrough for Mierij Meteo in this fast growing market and discussions with other turbine manufacturers are in progress.

I trust that you will enjoy reading this summer edition full of practical information and insights to our company ■

Yours sincerely,



Ben Dieterink, President
Kipp & Zonen BV

UV Radiation and the UV Index

The Ultraviolet (UV) part of the solar spectrum has several beneficial effects for human biology, but too much can be very harmful. The UV region covers the wavelength ranges 100-280nm (UVC), 280-315nm (UVB) and 315-400nm (UVA). All UVC and approximately 90% of UVB from the sun is absorbed by the Earth's atmosphere. UV radiation helps to produce Vitamin D, but it can also burn the skin and cause cancers, melanoma and cataracts.

The Global Solar UV Index is an indicator of UV exposure and its possible detrimental effects. UV reflected from the ground, snow and sea is equally dangerous. The UV Index serves as an important vehicle to raise public awareness and to alert people about the need to adopt protective measures when outdoors.

SKIN TYPE CLASSIFICATION		BURNS IN THE SUN	TANS AFTER HAVING BEEN IN THE SUN
I II	Melano-compromised	Always Usually	Seldom Sometimes
III IV	Melano-competent	Sometimes Seldom	Usually Always
V VI	Melano-protected	Naturally brown skin Naturally black skin	

Classification of skin types

We are very sensitive to small changes in the amount of UVB and this varies a lot, depending on altitude, the height of the sun in the sky, the amount of Ozone in the atmosphere and cloud cover. The human skin's response is not the same at all wavelengths and UVI should only be derived from radiation intensity measurements made according to the action spectrum for UV-induced erythema on the human skin (UVE) that is defined by ISO.

Kipp & Zonen's UVS-E-T radiometer is designed for high quality monitoring of UVE and the output can be simply converted to UVI. The thermostatic control of the detection system, the quartz dome and the Teflon™ diffuser guarantee performance in a wide range of conditions. Our unique UVIATOR software further improves the accuracy of the measurements by correcting for the amount of Ozone in the atmosphere and the solar elevation.

Together, the UVS-E-T and UVIATOR provide the best UVE and

UVI measurements available from a broad-band radiometer. For the ultimate in UVA, UVB, UVE and UVI measurements with correction for atmospheric Ozone and Sulphur Dioxide there is the Kipp & Zonen Brewer Spectrophotometer ■

Appointment of New R&D Manager

The R&D department has been the foundation of many successes in the history of Kipp & Zonen and is a major contributor to the comprehensive product portfolio of solar radiation and atmospheric science measurement solutions that we offer today. Here lies the heart of our expertise and experience.

We are pleased to announce the promotion of Dr. Ing. Joop Mes to R&D Manager.

He has a degree in Technical Physics and obtained his doctorate with a dissertation on laser systems and their applications. Following this he became a Research Scientist on the enrichment of isotopes by laser techniques for medical applications. This resulted in added experience in light absorption and optics.

Joop joined our Research & Development department in January 2007 to give a fresh and objective view of our solar instruments. His main project over recent months has been the development of an impressive new net radiometer, which will be released quite soon. He has been involved in many other projects, such as process optimisation, improving our calibration procedures and inter-comparisons of different sensor types.

In this short period of time he has mastered the technologies behind our products and grown to be the pivot of the department. His proven skills and passion for the profession made him a natural choice for the management position.

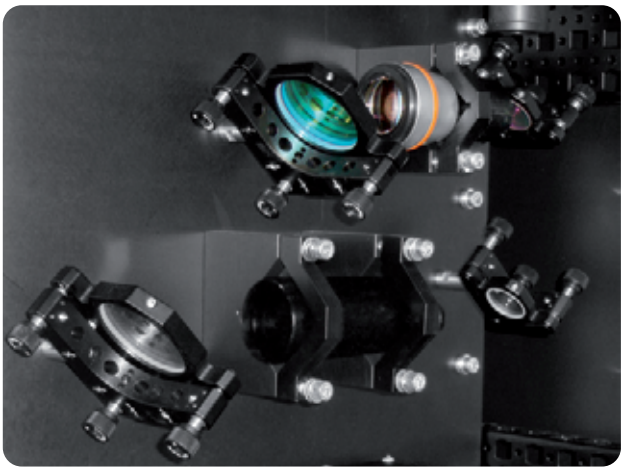
Joop's academic background has always encouraged him to investigate the scientific side of sensors and sensor applications. He brings a scientific perspective to the Research & Development department and expertise to evaluate and improve our instrument portfolio. Joop believes that Kipp & Zonen's knowledge of technology, added to direct feedback from scientific customers and partners, will keep us at the top of the market with the best available instruments for measuring atmospheric properties.

We congratulate Joop and wish him all the best for his future career at Kipp & Zonen ■

Raman Lidar for Ground Truthing ESA/ESTEC Satellite Data

Kipp & Zonen has supplied an advanced Raman Lidar system, designed and manufactured by Raymetrics of Athens, to the European Space Research and Technology Centre of the European Space Agency (ESA/ESTEC). At ESA/ESTEC more than 2000 specialists work on the development and management of projects including Earth observation, human spaceflight, telecoms and satellite navigation.

Lidar (Light Detection and Ranging) is an active remote sensing technique for monitoring atmospheric processes and properties with high temporal and spatial resolution and it is a key part of the ADM-Aeolus mission. This space program makes observations of global wind profiles, vertical aerosol and cloud profiles, using a space-borne Lidar. Its main goal is to improve the quality of weather forecasts and to gain a better understanding of atmospheric and climatological processes.



Inside the Raman Lidar system

A space-borne Lidar system is a powerful measurement tool but, in order to provide accurate measurement data, regular calibration of such a system is required by comparison to ground-based instruments. ESA/ESTEC now has a state of the art Raymetrics Raman Lidar system to perform 'ground-truthing' atmospheric profile measurements within the framework of the ADM-Aeolus mission. The system was installed and commissioned by our experts and ESA/ESTEC personnel received comprehensive training.

The Raman Lidar systems designed by Raymetrics provide high quality data combined with reliable turn-key outdoor operation. In addition, Raymetrics has expert engineering capabilities to provide customization of the Lidar systems at the client's request. For these reasons ESA/ESTEC chose our Lidar system to satisfy their measurement requirements. The system supplied to ESA/ESTEC is a two wavelength Raman Lidar system with depolarization detection. The system emits simultaneous green and ultraviolet laser pulses. It derives accurate atmospheric profiles of aerosol backscatter, extinction and optical depth with a range of over 15 km. The depolarization detection provides information on the shape of the aerosols. The measurement results will be used to calibrate the data from the ADM-Aeolus satellite instruments.

Our Lidar systems incorporate the best available laser, detectors, optics, electronics and a 400 mm receiving telescope to deliver superior performance. Each system comes with a comprehensive user friendly software suite to operate the system, process and visualise the Lidar data with the click of a button.

For more information on this and other Lidar configurations, please visit www.kippzonen.com or contact our product manager Martin Veenstra at Lidar@kippzonen.com.

To learn more about the ADM-Aeolus mission, go to www.esa.int ■

SUMMARY

The ADM-Aeolus mission of ESA makes observations from space of global wind profiles, vertical aerosol and cloud profiles. The goal is to gain better understanding of atmospheric and climatological processes. Recently ESA/ESTEC acquired our Raymetrics Raman Lidar system to measure accurate atmospheric aerosol profiles with a range of over 15 km. ESA uses these measurements to calibrate the space borne Lidar on the ADM-Aeolus satellite mission ■

The Best gets Better

Kipp & Zonen launches the CVF 3, a new ventilation unit for the pyranometer and pyrgeometer range to replace the successful CV 2 that has been in production for many years.

Ventilation of radiometers improves the reliability and accuracy of the measurement by reducing dust and precipitation of dew on the dome, which would otherwise affect the measurement. It stabilizes the temperature of the radiometer near to that of the ambient air and suppresses the thermal offsets which are produced by cooling down of the domes under calm clear sky conditions or by dome heating due to absorption of solar radiation.

The new CVF 3 features the waterproof connector and signature yellow cable that are used in our other instruments. This makes installation and servicing easier. Cable lengths of 10, 25 and 50 m are available or it can be supplied with the connector plug only, for the customer to fit their own cable. A further improvement is a 'tacho' output from the ventilator fan. This output gives two pulses per revolution and allows remote monitoring of the ventilator fan operation using a data logger.

Components of the CVF 3 ready for production

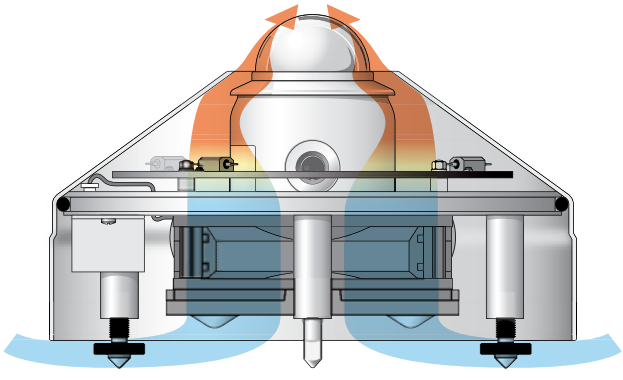
The ventilator of the CVF 3 runs continuously and two levels of heating are available that can be switched on by the operator when required. 5 Watt heating is used under normal conditions and 10 Watt heating in more extreme climates. The integrated heater warms the air flow to help prevent precipitation of snow and frost and stabilises the dome temperature about 1º above ambient. CVF 3 is designed to operate under all weather conditions and is easy to use. The only part that needs maintenance is the removable air inlet filter, which should be checked at regular intervals. A ventilation system does not prevent the dome becoming dirty, but it can reduce the frequency of cleaning.

The new ventilation unit CVF 3

CVF 3 is designed to be used with Kipp & Zonen CMP 6, CMP 11, CMP 21 and CMP 22 pyranometers, the CGR 4 pyrgeometer and the CUV 4 total UV radiometer. CVF 3 is backwards compatible with the older CM and CG radiometers. CVF 3 can be mounted on the 2AP and SOLYS 2 sun trackers and the CM 121C shadow ring. The ventilation fan and heaters run from 12 VDC and the accessory CVP 2 universal AC-DC power supply can operate up to two CVF 3 ventilation units with the heaters on.

CVF 3 is a direct replacement for the CV 2 and will be available in this year's third quarter.

ISO Technical Report 9901 "Solar Energy - Field Pyranometers Recommended Practice For Use" contains an informative chapter on ventilation systems in general ■



Cross section of the CVF 3

Successful Partnership in Austria

Kipp & Zonen has partnerships with leading manufacturers of Automatic Weather Stations (AWS) and monitoring systems for meteorology, hydrology and agriculture. Measurement of solar radiation is now becoming a standard parameter in these applications and when high quality, reliable and consistent sensors are required, companies turn to Kipp & Zonen. For example, Kipp & Zonen is the preferred supplier of solar radiation sensors to Adcon Telemetry GmbH of Klosterneuburg in Austria.

Headquarters of Adcon, Klosterneuburg, Austria

In January this year Adcon held its annual Distributor Conference in Salzburg. 30 distributors from 20 countries joined the conference, coming from as far as Mexico, South Africa and Australia. As part of the education sessions Kipp & Zonen was invited to present an introduction to solar radiation measurement and the features and advantages of the Kipp & Zonen product range.

Adcon's major market is in the supply, installation and maintenance of large networks of 100 or more monitoring stations for agriculture and hydrology, and now expanding into meteorology. Often the locations have no power or communication infrastructure, so radio data communication (telemetry) by UHF, GSM, GPRS or satellite link and low power consumption for use with solar energy are essential.

Adcon has key expertise in these areas, developing and manufacturing ultra-compact, very low power solutions for data logging and communication. Base station gateways and database management software can integrate 1,000 or more monitoring stations into a single, fully automated, network.

These monitoring stations require sensors for measuring various physical parameters and the company has selected a number of well-known manufacturers as key suppliers.

Adcon was looking for a manufacturer of high quality and reliable solar radiation sensors with excellent local support. Through the expertise and customer focus of our Austrian distributor, Recomatic Electronics Handels GmbH, Kipp & Zonen has been the preferred supplier of solar radiation sensors to Adcon since 2004.

Adcon primarily uses SP-Lites for agricultural and hydrological stations, but also high-end models for research projects, such as the German Aerospace Centre weather station network in Brandenburg. Kipp & Zonen sensors are configured to be plug-and-play compatible in Adcon systems.

What makes Kipp & Zonen so attractive to Adcon? Bernhard Pacher, Managing Director of Adcon says: "Kipp & Zonen sensors are not the cheapest - but neither are we. However, they are the best, and they perfectly match our requirements for quality, accuracy and reliability" ■

Dr. Bernhard Pacher, Managing Director of Adcon

SUMMARY

Adcon Telemetry GmbH of Austria needs high quality, accurate and dependable solar radiation sensors, with excellent local support, for use in telemetry-based monitoring networks around the world – and chooses Kipp & Zonen through our distributor, Recomatic ■

A New Logo calls for a Celebration

We have taken the redesign of our logo and house style as a perfect opportunity for a celebration. That is why everyone from the headquarters was taken out for a surprise afternoon of team work, education and fun.

An old American school bus took the whole crew to a secret venue called the “Kookfabriek” (Dutch for cooking factory). At the Koofabriek we split into 3 teams that were faced with the challenges of cooking a four-course menu. Each team member was appointed to one of the four courses; a profiterole of truffle cream and goat cheese, Norwegian salmon with a salad of wild spinach, a roulade of lamb and bacon with ratatouille, and a desert of banana pastry with frangipane and sabayon of almond. Each team also completed a questionnaire to display their knowledge of cookery.

Enthusiastic teamwork at the “Kookfabriek”

Everyone showed great enthusiasm and the results were very tasty. We did not know that we have so many talented chefs on board to pull off such a good job!

It was difficult to decide on the winning team. However, the disqualification of Team 2 made the decision easier. Team 2 thought they were smart by using modern technology (the mobile internet) to consult food websites for the questionnaire, but this was judged to be an unfair advantage! In the end Team 1 was awarded the prize, but after a great day of fun, and a full stomach, everyone felt like a winner ■

Group picture of the headquarters team

Meteorological Network Port of Rotterdam

Mierij Meteo has just commissioned the 6th MET Mast at the Port of Rotterdam for the Port Authority. This new meteo-mast measures wind speed, wind direction, air temperature, relative humidity and visibility.

The MET Mast sends verified data to the database of the Port Authority. They use the combined data for managing the traffic of the vessels in the port and to prevent potentially hazardous situations from developing. In Rotterdam the professional class wind vane model 508-P and anemometer model 018 are used. The 15 meter high tower was also supplied and commissioned by Mierij Meteo.

Since 1992 Mierij Meteo is the preferred supplier of the Rotterdam Port Authority. Due to the expansion of the port and the increase in shipping traffic, this summer the next MET Mast will be installed and another two are planned for 2009 and 2010.

Besides harbour installations for the Port Authorities of Antwerp, Amsterdam, Den Helder, Delfzijl and Eemshaven, over 100 MET Masts are installed at refineries, petro-chemical plants, cargo facilities, ferry terminals and other industrial locations.

The main applications are for safety and process control and the systems are customized to suit the customer requirements. Mierij Meteo offers full maintenance and calibration services with every MET Mast.

For more information go to www.mierijmeteo.com ■

Fairs & Events

SPIE Remote sensing - Wales	15 - 19 Sept ‘08
EMS - Amsterdam - The Netherlands	29 Sept - 3 Oct ‘08
Hortifair - Amsterdam - The Netherlands	14 - 17 Oct ‘08

Passion for precision

Kipp & Zonen is the worldwide authority in measuring solar radiation and atmospheric properties. Our passion for precision has led to the development of a large range of high quality instruments: from all weather radiometers to complete measurement networks.

We promise our customers guaranteed performance and quality in various markets: Meteorology, Climatology, Hydrology, Industry, Renewable Energy, Agriculture and Public Health & Safety. We hope you will join our passion for precision.

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