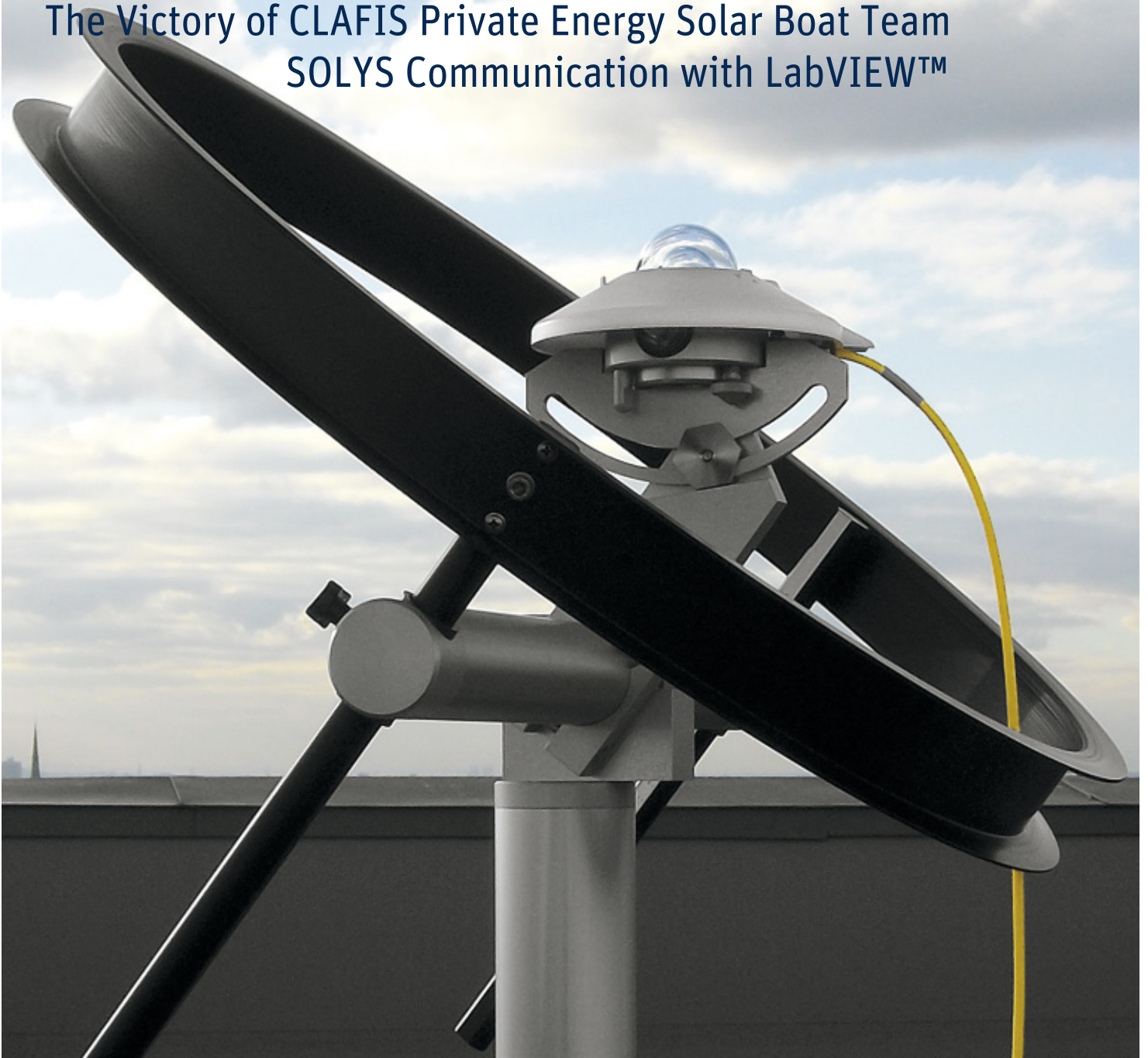


Newsletter 33

New Whitworth Meteorological Observatory
The Victory of CLAFIS Private Energy Solar Boat Team
SOLYS Communication with LabVIEW™



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Contact

If you have a news item for the newsletter 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

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Kipp & Zonen B.V. - 2015

Business Update

At Kipp & Zonen we arrange monthly meetings with our shareholders, where we are informing everybody through a presentation of business updates. I would like to inform you here, in a similar way, of what is happening in Kipp & Zonen roughly one year after the company changed ownership in April 2014.

It always takes time to start working with new shareholders, as everybody has to get used to each other, reporting is different, some business processes have to change, etc. Fortunately, the new shareholders are knowledgeable, involved, and really good to work with.

After April last year we decided to prepare a new strategic plan for Kipp & Zonen. Strategic plans are useful tools to define company goals and outlooks for the next few years. We are aware that globally the growth in the solar energy business is slowing down and we have to work out our strategy for future sustainable growth. After some good sessions we have developed our plans and we are ready to execute them. A key person in these sessions has been our new Business Development Manager, Xander van Mechelen.

One of the things we have already done is to appoint a Kipp & Zonen Sales Manager in China, Robin Zhang. We have an excellent distributor in China (Beijing Techno Solutions Ltd., BTS), but because of the enormous size of the country and the expected growth in solar energy activity there, Robin will help to grow the business in China.

More information about Xander and Robin can be found on page 7 in this newsletter.

From the strategic discussions it also became clear that the 'Kipp & Zonen' brand is still very strong and valuable. Our value proposition is that we want to be (and remain) the best in the world in manufacturing instruments for measuring solar radiation. Our instruments already are the best in the world, and we aim for improvements and innovations to stay in this first position. And we are all still proud about this!



Foeke Kuik - C.E.O.
Kipp & Zonen B.V.

The Victory of the CLAFIS Private Energy Solar Boat Team was Prepared with the SMP11

By Mark Scholten, Stichting Furia One - The solar boat racing season has started! The Dutch championship for solar boats held in Akkrum, Friesland on 15th and 16th of May was the first official race for our team. What a great start it was with 1st and 2nd positions for our two solar boats as the result! Our next race will be the Solar 1 Monte Carlo Cup in Monaco, 9 to 11 July. In 2014 we won both races, and we are determined to bring in the grand prize from the Monte Carlo Cup as well this year.



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Thanks to sponsorship by Kipp & Zonen our team used a SMP11 smart pyranometer to optimise the Maximum Power Point Trackers and solar panels in preparation of this year's solar races (MPPT's are the energy converters between the solar panels and the battery). By measuring the actual solar irradiance and the output power of the MPPT's we were able to compare the performance of the different tracking algorithms in order to create the optimum situation with the best possible efficiency of the MPPT's and solar panels.



The SMP11 has a Modbus® interface that provides digital values update every second. By implementing this in the test set-up we could log and analyse the data over a longer period which gave us a reliable impression of the to-be-expected performance of the MPPT's and solar panels.

The quick response time, combined with the high accuracy of solar radiation measurement and Modbus® interface, definitely made the SMP11 the perfect choice. Due to the development of high efficient MPPT's with fast tracking algorithms the SMP11 seamlessly matched the demands and objectives we needed.

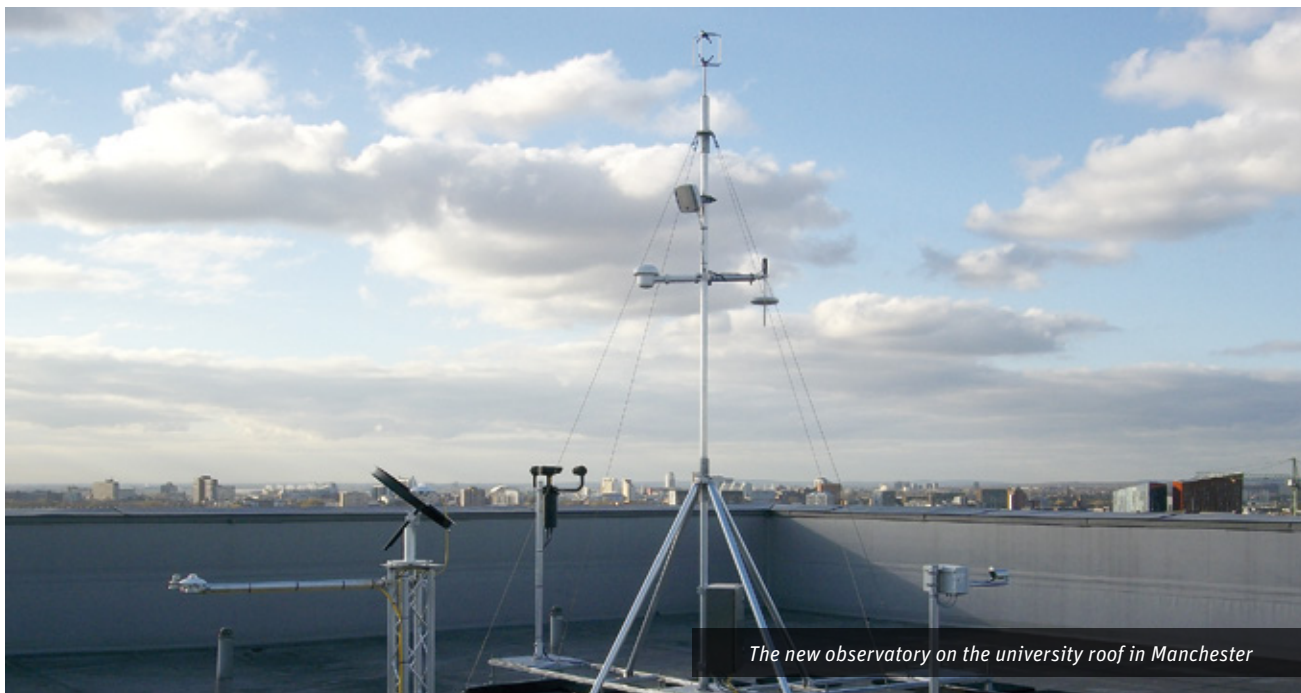
Thanks Kipp & Zonen for the support!



If you would like to stay updated on our race results, please check our website at www.furiaone.nl or our Facebook account ■

New Whitworth Meteorological Observatory, Manchester, England

By Dr. Michael Flynn, Centre for Atmospheric Science, School of Earth, Atmospheric and Environmental - The new Whitworth Meteorological Observatory is a fully automated state of the art meteorological observatory located on the campus of The University of Manchester, England, in the centre of the city. It is operated by the School of Earth Atmospheric and Environmental Sciences at the university and is part of the Centre for Atmospheric Science.



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Measurements of standard meteorological parameters including wind, temperature and humidity, solar radiation, pressure, precipitation, cloud height and visibility are made continuously with data being made available publicly in real time via the internet.

The current observatory was established in 2010 and is a replacement for the original observatory that was set up and located in Whitworth Park in August 1892. Funding for this new observatory came from the legacy of Sir Joseph Whitworth, which established and maintained the original observatory as a source of data for scientific, education and popular interest until its demise in 1958.

A Little History

In 1893 the Residuary Legatees of the late Sir Joseph Whitworth, the Manchester Whitworth Institute and the Owens College (which later became The Victoria University of Manchester which merged with UMIST in 2004 to create The University of Manchester) provided through endowment an agreement for the maintenance of the 'Meteorological Observatory in Whitworth Park' which had been in operation since August 1892.

This observatory was to serve as a source of scientific and popular interest and of education. Data from the Whitworth Observatory were provided by the University to the Guardian newspaper for daily and weekly weather reports for the benefit of Manchester citizens. They were also forwarded to the Met Office. Unfortunately the observatory subsequently fell into disrepair due to repeated and extensive vandalism in the park location where it was situated and eventually burned down in 1958.

At that time the Victoria University of Manchester, which had taken over the endowment, decided to capitalize the funds until the future of the observatory could be decided. It was agreed in 2003 that the shares in the fund and the unspent balance should be transferred to the School of Earth, Atmospheric & Environmental Science since we 'do work relevant to the purposes listed in the original 1893 Agreement.'

The increase in urbanization, and concerns with the climatic and health impacts of pollution from the urban environment have highlighted the need for high quality meteorological information in urban areas. In 2009 it was felt to be an

opportune moment to re-visit the original legacy and its aims, thus a new observatory was constructed to provide data both for scientific research within growing cities on urban environment and climate issues, as well as for dissemination to the general public.

Location

Rather than place the new observatory in a park, or elsewhere at street level, a rooftop location was chosen. While this was partly because of security concerns, the rooftop location means that the measurements are not overshadowed by surrounding buildings or otherwise influenced by local effects of the city landscape. The observatory is located on the roof of the George Kenyon Building on the University of Manchester South Campus (N 53.467374, W 2.232006, Alt 43 m). At a height of 49m the George Kenyon Building is the tallest building in the immediate vicinity.

Equipment

When designing the new observatory it was decided to use the most modern and best quality instrumentation that was available within the budget for the project. These instruments include an ultrasonic anemometer for wind measurements, laser disdrometer for precipitation measurements, laser ceilometer for cloud height measurements and digital sensors for temperature humidity and pressure. A full list of the instruments used and their specifications can be found on the observatory website.

Of particular interest for this article are the solar radiation instruments supplied by Kipp & Zonen. A pair of Kipp & Zonen CMP 11 pyranometers was installed, one of them fitted with a Kipp & Zonen CM 121B shadow ring. This configuration allows measurement of both global and indirect (diffuse) solar radiation from which direct solar radiation and sunshine hours can be calculated.

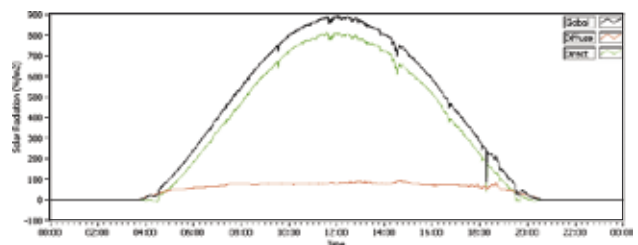
While it would have been preferable to install a solar tracker to make the direct and indirect solar radiation measurements, this was not possible within the budget available and the shadow ring was chosen as the next best option. While this does need regular adjustment (we have found weekly

adjustments to be adequate) the adjustments are simple and no other maintenance has been required.

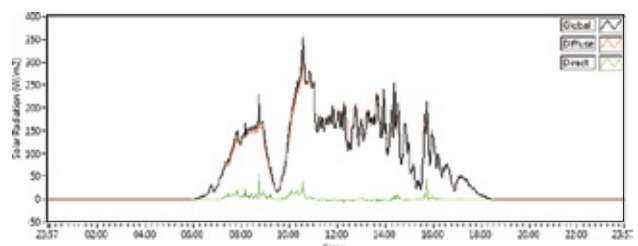
Usage

Data from the observatory has been used in support of scientific research projects focusing on urban climatology and air quality. It has also been extensively used to support projects by undergraduate and postgraduate research students from across the university and for a variety of purposes.

The plots of solar radiation data from the Whitworth Observatory show the contrast between a typically overcast Manchester day on 20th March 2015 and full sunshine on 4th June 2013. The effect of the recent solar eclipse is clearly visible on the plot from 20th March, being responsible for the significant dip in radiation between 9 am and 10 am.



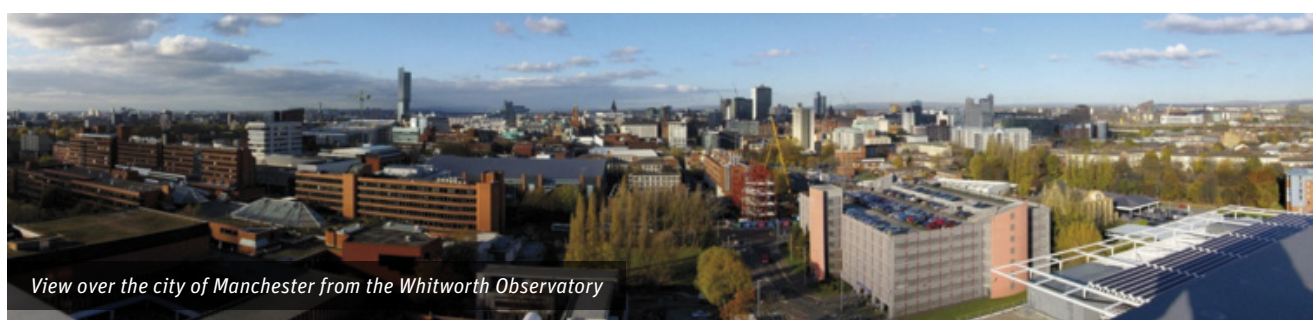
4th June 2013 - clear sky



20th March 2015 - overcast sky

The solar radiation data has regularly been used in student projects to assess the potential for electricity generation from photovoltaics. It has also been used by a large commercial provider of domestic solar panels to assess the operational efficiency of their installations.

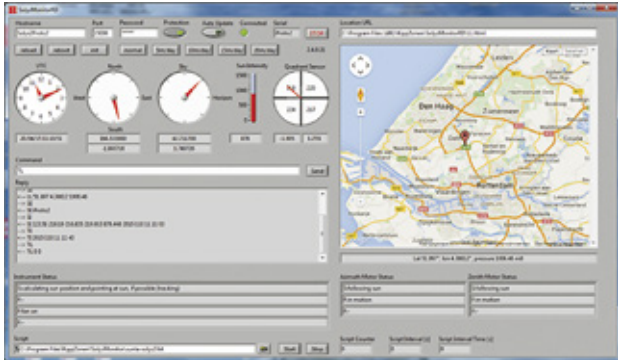
Visit www.cas.manchester.ac.uk/restools/whitworth for more information about the observatory and to see real-time data ■



View over the city of Manchester from the Whitworth Observatory

SOLYS 2 and SOLYS Gear Drive Communication with LabVIEW™

By Ruud Ringoir, Product Manager, Kipp & Zonen - Both the SOLYS 2 and SOLYS Gear Drive sun trackers can be set up without the need of a PC or external software. However, if monitoring of the tracker status is required the new 'SOLYS Monitor' software program can be used to set up communication and to view or log its status.



Display of the SOLYS status, parameters and location in the LabVIEW™ program

Customers familiar with National Instruments LabVIEW™ can take it a step further and create their own communication or controlling software for the SOLYS. To do this, we have made an example program, with the source code available, to show the possibilities.

The program monitors the status of the SOLYS over Ethernet. It shows the location, calculated sun position, motor positions, visualizes the sun sensor activity and shows the global position of the connected SOLYS on Google Maps.

Both the SOLYS 2 and the SOLYS Gear Drive can be used as a sun tracker or as a two-axis positioner. This second option is not so well known but it means that, instead of

tracking the sun, the SOLYS can be used to move and point a mounted instrument (such as a camera) towards any other object around it.

In the SOLYS manual all the commands are given to switch from sun tracking to positioning and how to control the movements. LabVIEW™ could be a great tool for creating a sequence of commands to track and monitor objects or to scan certain areas over time. In this way the SOLYS Gear Drive can be used to move payloads up to 80 kg with an accuracy of 0.1°.

Both the compiled program (250 MB) and the Virtual Instrument (VI) source code (600 kB) are available from the SOLYS product pages on our website, under downloads.

This software can be freely used under GPL conditions: www.gnu.org/licenses/licenses.en.html ■

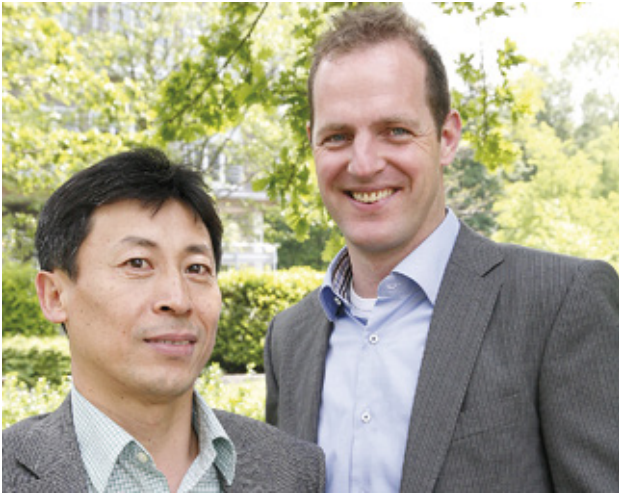


Welcome to our Team Members Xander and Robin

Kipp & Zonen is proud to introduce you to two of our new team members; Xander van Mechelen and Robin Zhang. Both have been appointed to expand the reach of Kipp & Zonen in the world, but each from a different angle and location.

Xander van Mechelen is our new business development manager at the head office in Delft, the Netherlands. Last year Foeke Kuik moved to the position of CEO. Foeke tried to combine both his former and current work but it soon became clear that it required someone's full attention to be the link between service, sales, marketing and the network of distributors to our customers all over the world.

Robin Zhang is our new sales manager for China. Although we have a solid sales network in China, with Beijing Techno Solutions as our exclusive distributor, the country's size asks for more. The primary target of the new sales manager in China is to support Beijing Techno Solutions, partners and customers, as well as exploring new business opportunities in various markets such as solar energy and agriculture.



Xander and Robin met in early May in Beijing and later in the month Robin came to the head office in Delft. A perfect moment to sit down and share their first impressions.

Robin: I've read that you have a background in business economics combined with mechanical engineering and that you have built your career in B2B. What were you're main activities?

Xander: My key activities were always in development and change; from concept to operation, technical, commercial, creative or organizational. I developed and introduced new products and services in the telecom, refining, dairy, office furniture, automotive and energy industries and for the last two years I was general manager of a public/private foundation in biogas.

I'm sure this broad background and my skill in successful market innovations and managing change will be put into practice at Kipp & Zonen soon. The wide range of applications challenges me to find new paths in existing markets.

Xander: What about you Robin. What is your background?

Robin: I studied meteorology. Atmospheric dynamics was my speciality. But interestingly, since my graduation, I'd never pursued any work related to meteorology until I joined another meteorological instrument company in 2011.

Xander: So you are not new to the business! You have worked with Kipp & Zonen in the past before. Can you explain?

Robin: My first hands-on experience with Kipp & Zonen came from a demo installation! In the year of 2013 when working at my previous employer, we participated in the China Meteorological Society annual conference with an exhibition. To showcase the latest automatic weather station, we independently installed a demo weather station with state-of-art sensors and technologies from the market, including a CMP 6 pyranometer from Kipp & Zonen!

Through 2013 to 2014 there was one project with China Academy of Sciences where more than 40 sets of Kipp & Zonen sensors (CMP 6, CMP 11 and CUV 5) were integrated and deployed for nationwide environmental monitoring.

Did you ever hear of Kipp & Zonen before you applied for the job as business development manager, Xander?

Xander: No, I didn't. Though I have been active in the renewable energy business, especially biogas and solar, the business of solar measurement instruments and the meteorological world is new to me. I was looking for an entrepreneurial management job in a technical environment within a smaller company that operated worldwide. I am still surprised that I found that 100% match in Kipp & Zonen.

Robin: Since you have started in March, what has been the most educational experience?

Xander: I think it is the dynamic environment that Kipp & Zonen operates in. There's so much to do, so many opportunities, but with a smaller company it is really important to focus your resources on the right things, and choose them. Also, I am aware that it takes time to create a vision and build personal credibility in this new business and new network to me, and it is a real challenge to get to know and manage my own team, the sales channels, important customers and strategic companies at the same time. An inspiring challenge to enter!

Xander: What will be your biggest challenge in your first year?

Robin: I think Kipp & Zonen has long been recognized by Chinese users as the leading brand in this niche market and this is good foundation for my work here. However, it also introduces the biggest challenge for me; how to develop the business and bring the brand awareness to the next level.

We are very happy to have both Xander and Robin on board and hope you will take the opportunity to meet them at one of our exhibitions in person ■

Fairs & Events

Intersolar South America • São Paulo • Brazil	1 - 3 September
EMS • Sofia • Bulgaria	7 - 11 September
Solar Power International • Anaheim • USA	14 - 17 September
EU PVSEC 2015 • Hamburg • Germany	15 - 17 September
Meteorological Technology World Expo Brussels • Belgium	13 - 15 October

Passion for Precision

Kipp & Zonen is the leading company 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 systems.

We promise our customers guaranteed performance and quality in; Meteorology, Climatology, Hydrology, Industry, Renewable Energy, Agriculture and Public Health.

We hope you will join our passion for precision.

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