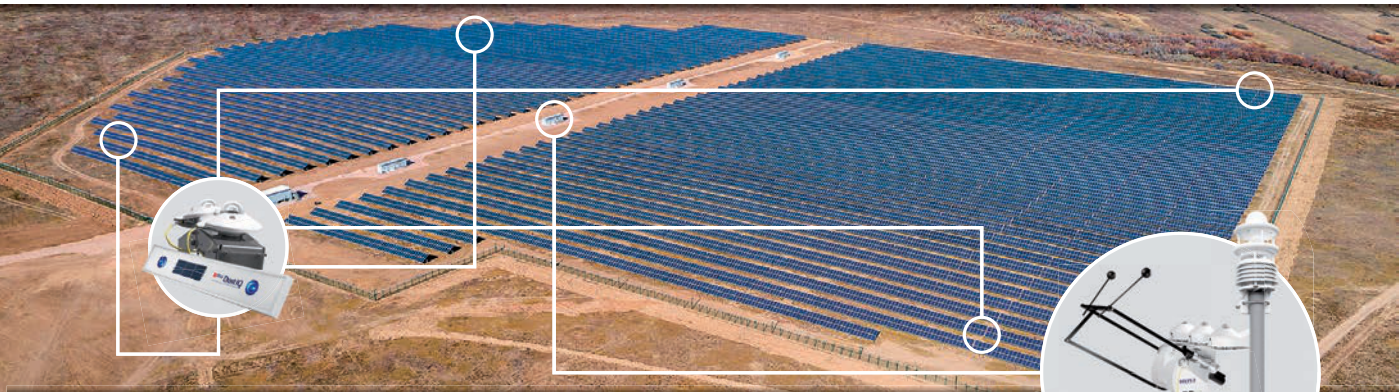




OTT HydroMet brands



Designed to optimize solar energy

Designed to optimize solar energy

“ *‘All you need is sunshine’.*
That’s not entirely true, when working on a solar power project
you need a lot more to get the most energy out of that sunshine. ”

The amount of solar radiation reaching your power plant cannot be changed; however, you can make the most of it by choosing high quality equipment. Not only by selecting efficient generating technologies, but also by installing the industry’s best instruments to monitor the environmental parameters affecting your solar energy project performance.

Whether it is to optimize yield, manage your assets, make investment decisions, schedule plant maintenance or to forecast the energy output reliably, we offer the instruments you need. From smart pyranometers and weather stations, to the unique new DustIQ for continuous monitoring of module soiling. Kipp & Zonen and Lufft have it all.

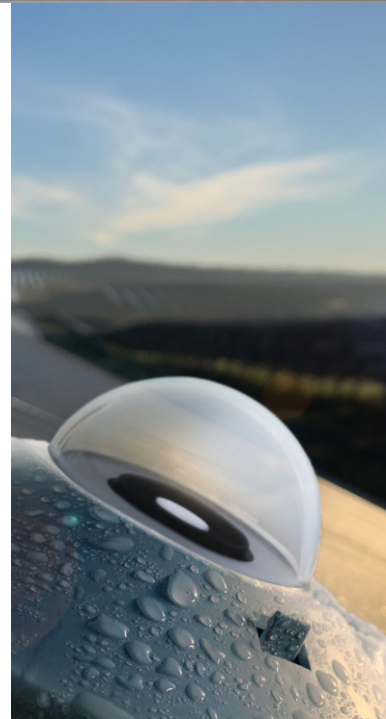


Pyranometers

Widest range of Classic and Smart pyranometers available
The industry standard (SMP12 with tilt sensor, internal SPDs and solid state heating)
SMP models with digital Modbus® output
5-year warranty
MTBF in excess of 10 years

For the accurate measurement of solar radiation industry experts use high quality pyranometers. Global Horizontal Irradiance (GHI) is important because it is the parameter measured in weather and climate networks, derived from satellite instruments and calculated with clear sky energy models.

A pyranometer tilted in the Plane of Array (POA) of the PV modules measures the irradiance available to the cells and is used for calculating energy yield and Performance Ratios. This is why you will often see pyranometers in pairs, one horizontal and one tilted.



Find the full specifications at www.kippzonen.com/pyranometers

DustIQ Soiling Monitoring System

Know exactly when and where to clean
The only maintenance-free solution
Simple on-site calibrations for the local dust type
Digital Modbus® signal
PV panel temperature sensor soon to be included

Soiling of PV modules results in lost energy production. Cleaning is the answer, but it costs time, money and resources; so you don't want to do it too early. On the other hand, lost energy also costs money and not reaching contractual targets can incur penalties; so you don't want to be too late.

What to do?

Fit DustIQ. A simple to install and use system that continuously measures the soiling ratio. You can now calculate the loss of power produced by your modules at different locations across the plant in real-time, and can initiate cleaning of the modules and the DustIQ when the critical level of loss has been reached.

Read more at www.kippzonen.com/DustIQ




Duxido
Solar



SOLYS 2

Solar Monitoring Stations

Monitors all solar irradiance components: DNI, DHI, GHI
No regular sun tracker maintenance
For every climate, work load and performance
Configure your own SOLYS station
RaZON⁺ integrated solution

All solar energy generating technologies use radiation from the sun and sky as their source. Concentrating technologies use reflectors or lenses to focus the Direct Normal Irradiance from the sun and it is also commonly monitored for solar prospecting and the O&M of PV plants.

DNI is measured using a pyrheliometer mounted on an automatic sun tracker to stay pointed directly at the sun throughout the day. Usually, GHI and Diffuse Horizontal Irradiance (DHI) are also monitored, DHI with a pyranometer shaded from the direct sun beam.

We offer both a high-end solar monitoring station, based on our SOLYS sun tracker equipped with a pyrheliometer and two pyranometers, and the innovative RaZON⁺ an all-in-one solar monitoring system with built-in data logging.

Lufft All-In-One Weather Stations



Simple installation

No moving parts

Digital Modbus® signal

Choice of measurement parameters

Optional PV panel temperature sensor

At sites where solar radiation is measured it is usually required to monitor other environmental and meteorological parameters that affect the output of solar energy plants. Lufft UMB series weather stations combine several meteorological sensors in one convenient housing, with simple installation and a single cable for power and data.

The model most commonly used for solar energy site assessment and plant monitoring is the WS500-UMB, with measurements of air pressure, ultrasonic wind speed and direction, and fan-ventilated air temperature and relative humidity. The WS600-UMB adds a radar precipitation sensor.





RT1 Smart Rooftop Monitoring System

Easy to install
Soiling resistant design
Digital Modbus® output
Solar irradiance measurement
PV panel temperature measurement

Most commercial size rooftop PV installations do not have any operational monitoring and to simply solve this problem we offer a specially designed duo-sensor that fits directly onto a module corner without the need of any tools.

RT1 is fully weatherproof and measures the incoming Plane of Array solar irradiance with a silicon diode and diffuser, the design of which is largely self-cleaning. RT1 also comes with a temperature sensor for the PV panel, providing you with all the information you need to monitor your rooftop power installation.



Read more at www.kippzonen.com/RT1



Albedometers

Two pyranometers and a mounting
Large area for satellite data validation
In PV plants for bifacial modules
All ISO 9060 classes available
Analog or digital output
Easy to assemble

Bifacial PV modules generate extra power from light on the rear side that is primarily reflected from the surface below. However, this varies with the type of surface, weather conditions, angle of the sun and shading effects. These variables make it necessary to measure how the albedo of the surface changes.

The albedometer is mounted low, around 1.5 m, and does not need a lower glare screen. Two similar pyranometers are mounted horizontally, to measure incoming and reflected irradiances in W/m^2 . The ratio of the two is the albedo of the surface below.

Read more at www.kippzonen.com/albedometers

Dataloggers

Keep up with fast moving communications technology - 3G, 4G, and cellular IoT

Custom programming with Python scripts (available with XLink 500)

Two-way communication and remote configuration

Collect more data more often while in alarm

Easy interaction through USB flash drive

Simple and intuitive software

Secure communication - HTTP(S), FTP(S) and Socket (TCP/IP) transmission protocols

Small datalogger footprint - SDI-12, RS-232, RS-485

Supports multiple interfaces and protocols

Our dataloggers have a highly modular design that is scalable to handle simple to complex requirements. Designed for maximum value and functionality, our datalogger is a high-performance data recorder and communications device ideal for remote real-time data acquisition, control, and communications.

Our SUTRON datalogger has the ability to simultaneously take measurements and transmit information for a wide range of applications. Choose the right datalogger for your application.

Read more at www.sutron.com/datalogger





Lufft CHM 15k

Lufft CHM 8k

Ceilometers

- Rugged housing and service-friendly operation**
- High accuracy and simultaneous measurements of several parameters**
- Observation of up to 15,000 m high cirrus clouds**
- Creation of aerosol backscatter profiles**
- Robust against fogging, precipitation, freezing or overheating**
- High accuracy and simultaneous measurements of several parameters**

How high are the clouds? How many cloud layers are detected? Is the cloud detection limited by precipitation or mist? These are questions among others around the topics of clouds and visibility which a solar plant or a meteorology division is dealing with. An answer is delivered by cloud height meters / ceilometers which work with lidar technology. ceilometer detects aerosol profiles & structures, cloud bases, penetration depths, vertical visibility and the sky condition index in up to 8 km and beyond.

Exact results due to high sensitivity of the used lidar sensor technology! Reliable and accurate results at any time of the day or night are ensured by long-life laser sources, filters with narrow bandwidth and high-sensitivity photodetectors.



For more information, please contact:

OTT HydroMet

Consulate -1, No.301, 302, 303
3rd Floor, Richmond Road
Bengaluru
Karnataka 560025

solar-india@otthydromet.com
+91 6366-887213
in.hach.com/otthydromet



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