

Q4cast

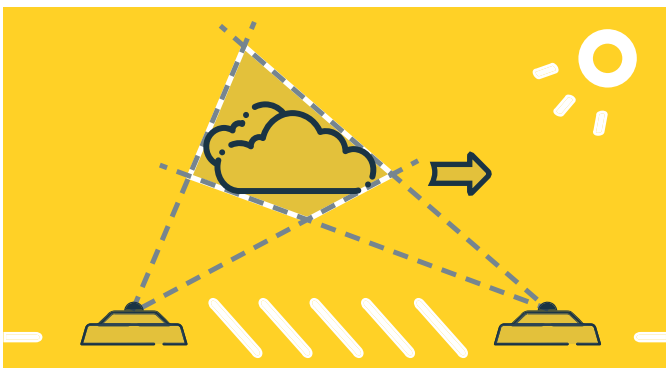
Irradiance
Now- & Forecasting

Q4cast System

Our irradiance forecasting system **Q4cast** provides you with reliable information about the varying solar irradiance on the area of interest.

The sky camera based real-time nowcasting connects multiple cameras and weather stations for the most accurate determination and prediction of solar irradiance in the short-term. The results can be combined with satellite data and numerical weather prediction for mid- and long-term irradiance and weather forecasts.

This makes **Q4cast** the perfect tool for solar power plant and electricity grid operators.



Key Benefits

Optimize electricity market trading

- Improve your power output predictions
- Avoid penalties
- Maximize your revenues

Optimize plant control and maintenance

- Adapt your operation strategy and ramp control
- Receive predictive data to decrease wear of components and to adjust maintenance schedules

Increase power plant yield

- Adjust plant (and storage) operation to real-time irradiance
- Maximize your sun harvest

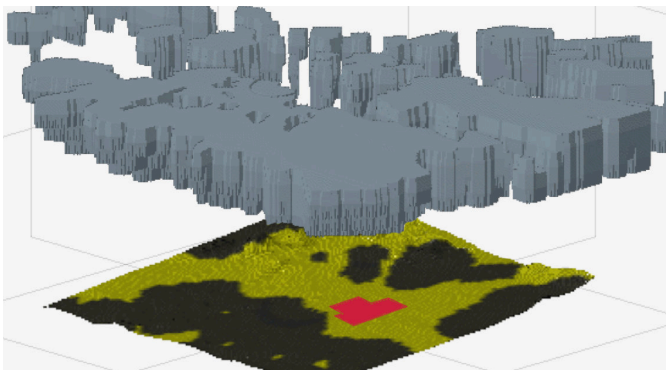
Customized technical solution

- Customized system for site-specific requirements
- Easy system integration with adaptable data interfaces

Functionality



Automatic recording of sky images
Detection of clouds
Geolocation and 3D-modeling of clouds
Determination of cloud height and movement
Irradiance data feed-in from plant's weather station
Calculation of cloud transmittance and shadow map
Generation of irradiance map and forecast
Output of results to plant control

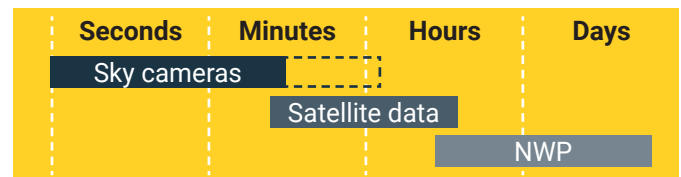


■ Clouds ■ Shadows ■ Solar plant

Specifications

- System with multiple sky cameras
- Stand-alone evaluation software with local or remote data processing
- Solar irradiance map for your plant (DNI, GHI)
- Covered ground area of up to 8 x 8 km² per system
- Cloud movement (height, speed and direction)
- Cloud transmittance

Forecast Horizon



■ Nowcast (sky cameras):

Live - 20 minutes
(customizable resolution and update rate)
The prediction can be extended to 1h and more using an all-sky imager based smart persistence approach

■ Forecast (satellite data):

15 minutes – several hours
(15-minute resolution, 30-minute update rate)

■ Forecast (NWP – numerical weather prediction):

6 hours – several days
(1-hour resolution, 2 – 4 updates per day)

Customized Solutions and Expert Consulting

- System and data interface customization according to your needs
- Temporal & spatial resolution (with aggregation of specific areas) adaptable to individual requirements
- Sky camera system with one or multiple weather stations as reference
- Supply of integrated customized weather stations

CSP Services provides the complete system including on-site implementation and expert advice on how to make practical use of it.

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