

Thies
CLIMA





PRECISION
MEASURING
INSTRUMENTS
& SENSORS
OVER 75 YEARS!

CERTIFICATIONS, COMPLIANCE & PERFECTION

- **Extensive experience**
65,000 meteorological devices/year
- **ISO 61400-12-1, EDITION 1 AND 2**
International standards for wind energy systems
- **ISO 9001, 14001, and 45001**
Management systems for quality, environmental, occupational health and safety
- **Participating in APQP4Wind, a non-profit organization founded by leading global wind turbine manufacturers** and suppliers to create a quality assurance concept for the wind industry.



- **WMO GUIDELINE NO. 8**
Recommendations of the „World Meteorological Organization“
- **MIL Norm**
Military standards for ice accretion resistance
- **INTERFACES:**
Analog, THIES ASCII, PROFINET, PROFISAFE, MODBUS, NMEA 0183
Industrial communication protocols
- **MORE THAN 75 YEARS**
Experience, innovations and tradition

APQP4Wind®

MEASUREMENT PARAMETERS



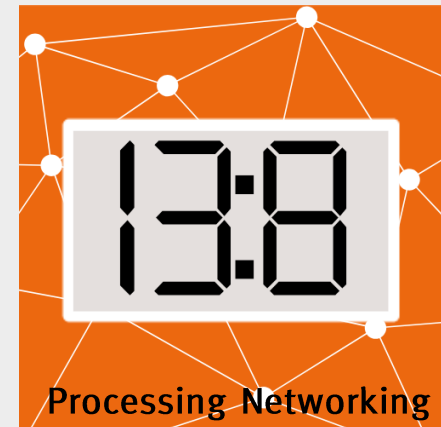
Wind



Temperature



Radiation



Processing Networking



Humidity



Precipitation



Air Pressure



Particulate Matter

Applications

Selected



Compact Weather Station

Next Generation

WSC AGRAR

Specialized in
Smart Farming requirements

WSC ADVANCED

High precision and
comprehensive connectivity

WSC11

The classic with full equipment,
predestined for building
management systems





WSC AGRAR Kit, as a complete package for OEMs

with soil moisture sensor, solar panel, battery set and ground anchor

WSC AGRAR-Kit

Local weather data for smart farming solutions

- Currently in the test phase as an open concept for OEMs
- Robust, durable and easy to install weather data acquisition system
- Can be flexibly relocated, stationary or mobile on vehicles and devices
- Integrated GPS sensor for precise location determination
- Low power consumption enables off-grid operation
- WSC agricultural kit includes soil moisture sensors, solar panel, battery set and measuring mast with ground anchor
- Detection of temperature, humidity, precipitation, radiation, wetting status and wind



WSC AGRAR-Kit

Complete agricultural weather station

- Stand-alone system with solar panel and battery tubes in the anchor rod
- Low power version for year-round 24/7 use
- Compact, symmetrical sensor design
- Optional additional sensors for soil moisture and soil temperature (up to 6) can be connected via SDI12
- Ground anchor and alternative feet
- Professional data infrastructure



WSC Agrar
Weather sensors and position data
compact, robust, symmetrical design

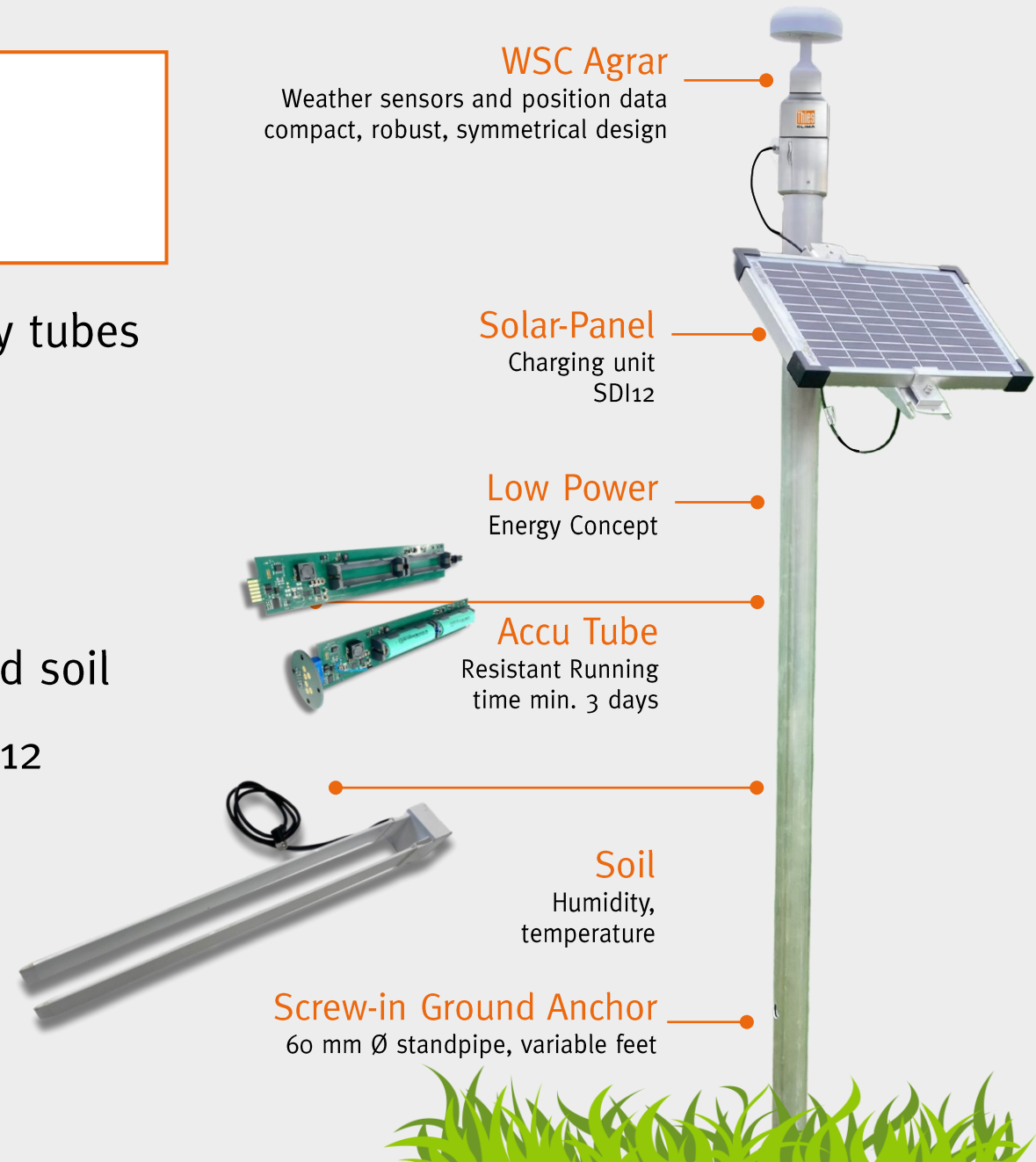
Solar-Panel
Charging unit
SDI12

Low Power
Energy Concept

Accu Tube
Resistant Running
time min. 3 days

Soil
Humidity,
temperature

Screw-in Ground Anchor
60 mm Ø standpipe, variable feet



WSC AGRAR Sensor

OEM's unique selling points based on the hardware and measurement methods.



Precipitation measurement based on THERMACERN®

Status, intensity, (type)
High sensitivity with low precipitation 0-11 mm/h
(microphone, 0-99mm/h)
Wetting status
Capacitive measuring method
Microphone as transducer

Humidity

Humidity (relative, absolute)

Dew

Dew point

Radiation

Global radiation

Wind

Speed, direction
(thermal wind measurement based)

Temperature

Air temperature

Pressure

Barometric pressure

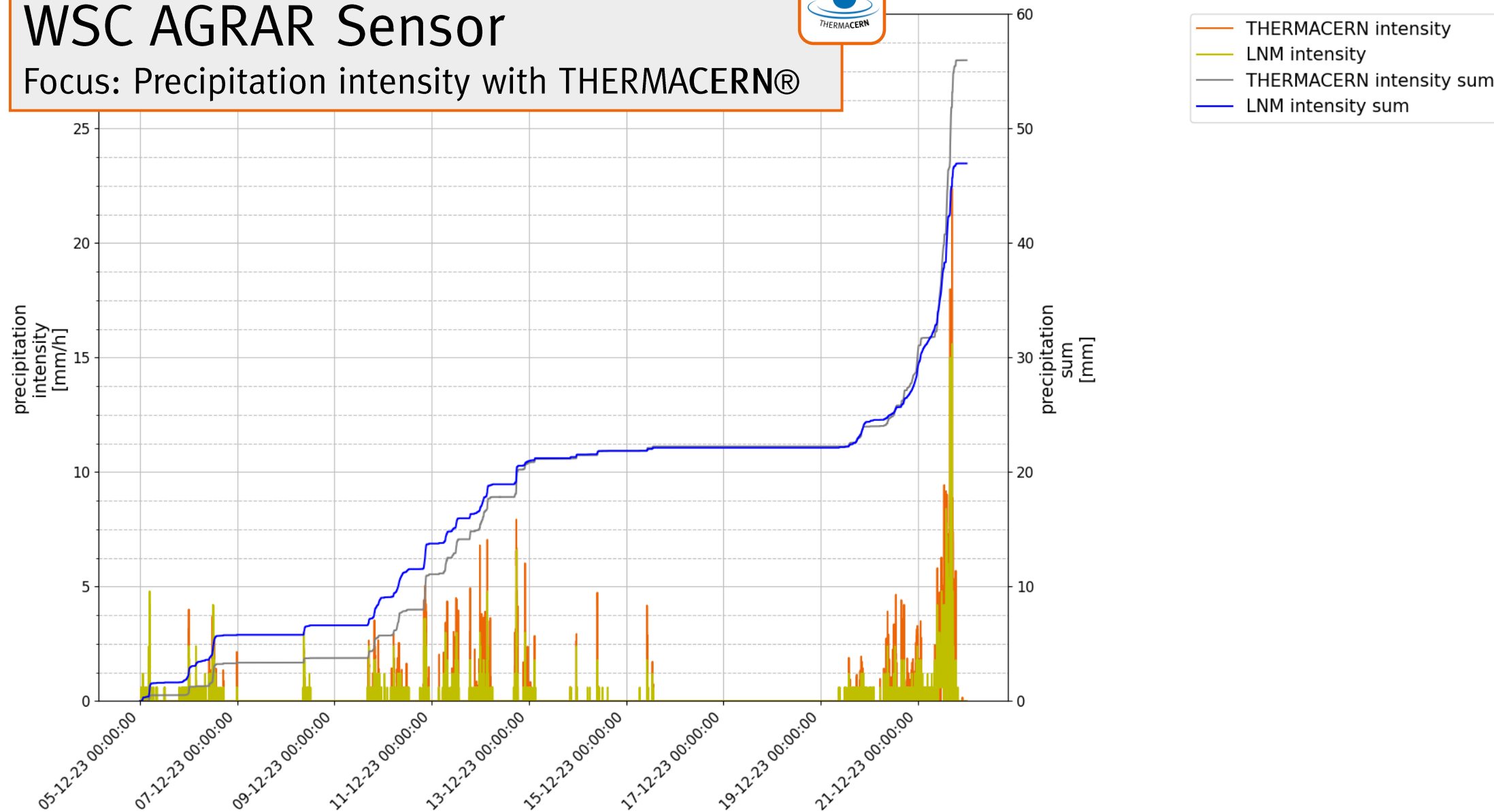
Position & Time

date, geostationary data/GPS Position of the sun (elevation, azimuth)



WSC AGRAR Sensor

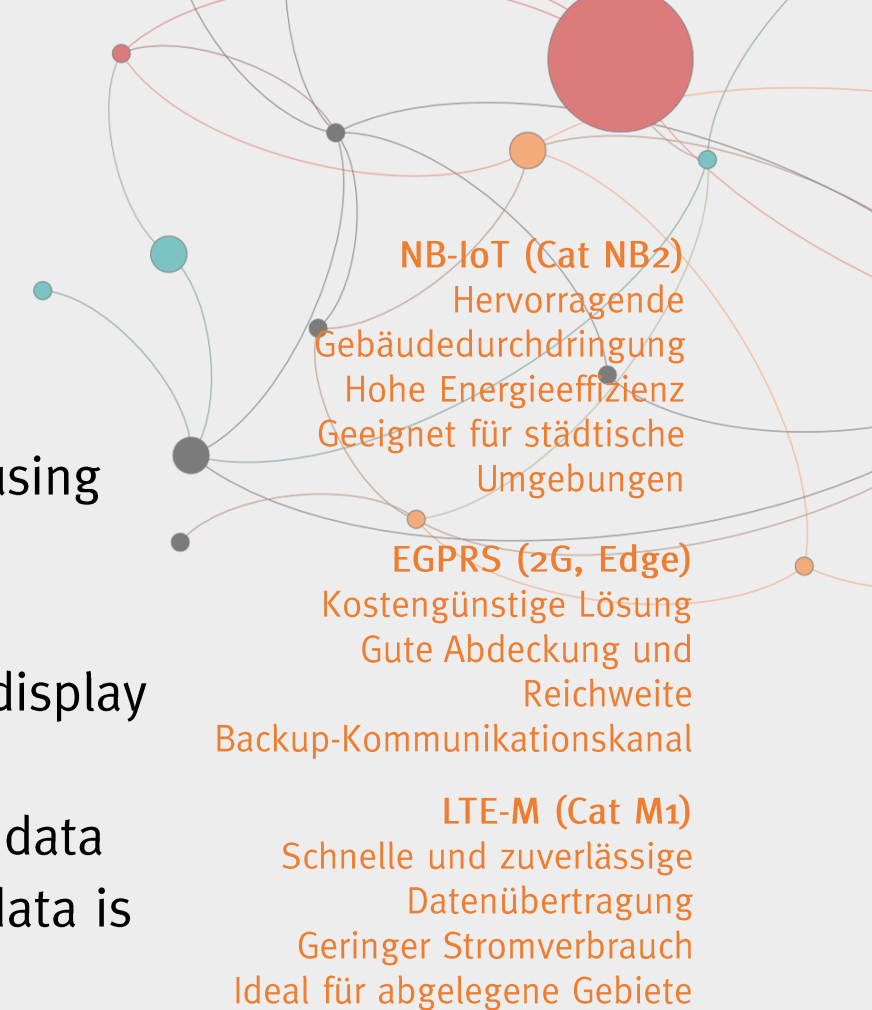
Focus: Precipitation intensity with THERMACERN®



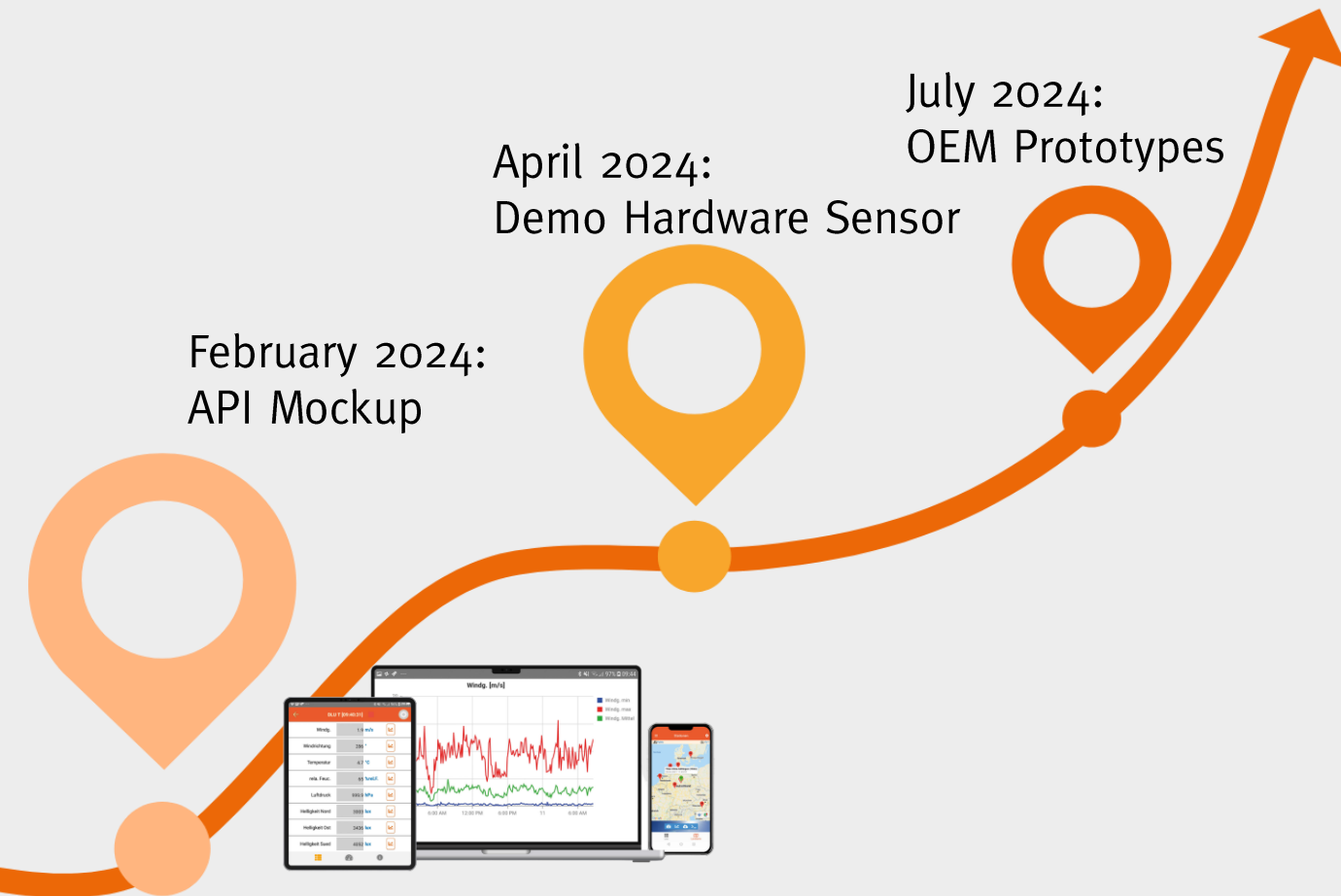
Data Infrastructure

Scope for OEM customers in data integration

- E-SIM cards for wireless communication
- Data transmission via mobile networks (LTE-M, GPRS, NB-IoT) using an integrated modem
- Data is sent to a cloud infrastructure
- Separate databases per customer for data protection reasons/ display of weather station IDs, no personal data visible
- Variable archive intervals: averaging interval defines how often data is averaged Transmission interval defines how often averaged data is transmitted to the cloud
- MQTT-based communication between the weather stations and the cloud. The cloud infrastructure acts as an MQTT broker
- RESTful API for accessing the stored data.
- Example APP



Perspective



Advantages

Robust, fully integrated weather station to make weather data available online wirelessly and autonomously at any location at any time. Ideal for the application fields of irrigation technology and planning/organization of field cultivation (sowing, fertilizer and crop protection)

Unique selling points

- Fully integrated weather station with only one sensor component
- Integrated solid-state precipitation measurement with high sensitivity at low precipitation levels
- Smallest compact weather station



Thank you for your attention.

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(subject to technical changes)

THE WORLD OF WEATHER DATA