

Taking every measure for the planet

MNK:n kokous

2024-03-05

Aki Lilja

VAISALA

Instruments and intelligence for climate action

Global tech leadership since 1936

We equip our customers with devices and data to save resources, drive energy transition, and care for the safety and well-being of people and societies worldwide.

VAISALA



Key figures

Customers in over

150

countries

540_{MEUR}
in net sales

2,300+
experts



59
nationalities



300+
product families

1,400+
shipments weekly



4.1/5
Employee
engagement index

28%
of our people work
in R&D

We operate
around the world
and measure on
2 planets



24

offices

17

countries

400+

partners
worldwide

Our businesses serve the world's leading organizations and governments

Industrial Measurements

Instruments and solutions to optimize processes for lower energy consumption, improved resource efficiency and quality, and less waste.

Customers in various industries with need for reliable measurements in business-critical areas.

Weather and Environment

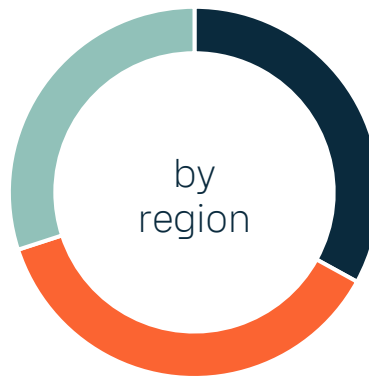
Measurements and data to understand the weather and climate, confidently adapt to varying weather and environmental conditions, and drive energy transition.

Customers span from energy and technology sectors to meteorological institutes and airport operators.

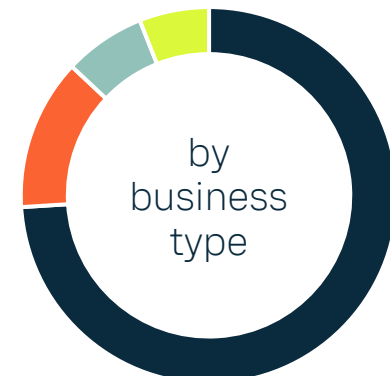
NET SALES
2023



■ Industrial Measurements
■ Weather and Environment

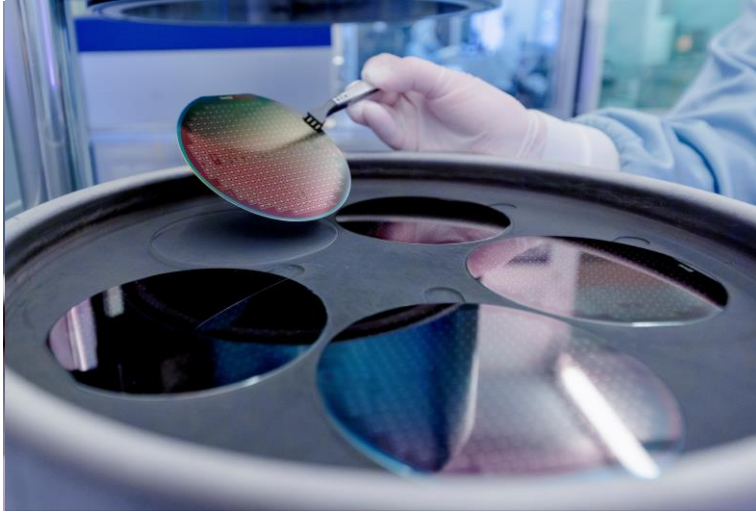


■ EMEA ■ Americas ■ APAC



■ Products
■ Projects
■ Services

We master a broad portfolio of leading products and technologies



Thin-film sensors, optical industrial and weather sensors, and radio frequency technologies.



Measurement sensors and instruments, systems, software, digital solutions, and services.



A total of 300+ product families, which include approximately 9,000 products.

Instruments and intelligence for climate action

MEGATRENDS



Energy transition
& decarbonization



AI & process
optimization



Health
& well-being

PURPOSE

Taking
every measure
for the planet

SUCCESS DRIVERS

Customer understanding
and application know-how



Product and technology
leadership



Excellence in
supply chain



Purpose-driven
culture and talent

STRATEGIC PRIORITIES

Grow in industrial
measurements
with breakthrough
technologies

Expand in energy
transition and
build recurring
revenue in data

Drive profitability
as global leader in
weather systems

Simplify and
scale

VALUES

Customer focus



Innovation & renewal



Strong together



Integrity

Vaisalan sääpuolen liiketoiminta ja metrologia

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Esimerkkeinä kaksi merkittävää sääliiketoiminnan asiakasryhmää

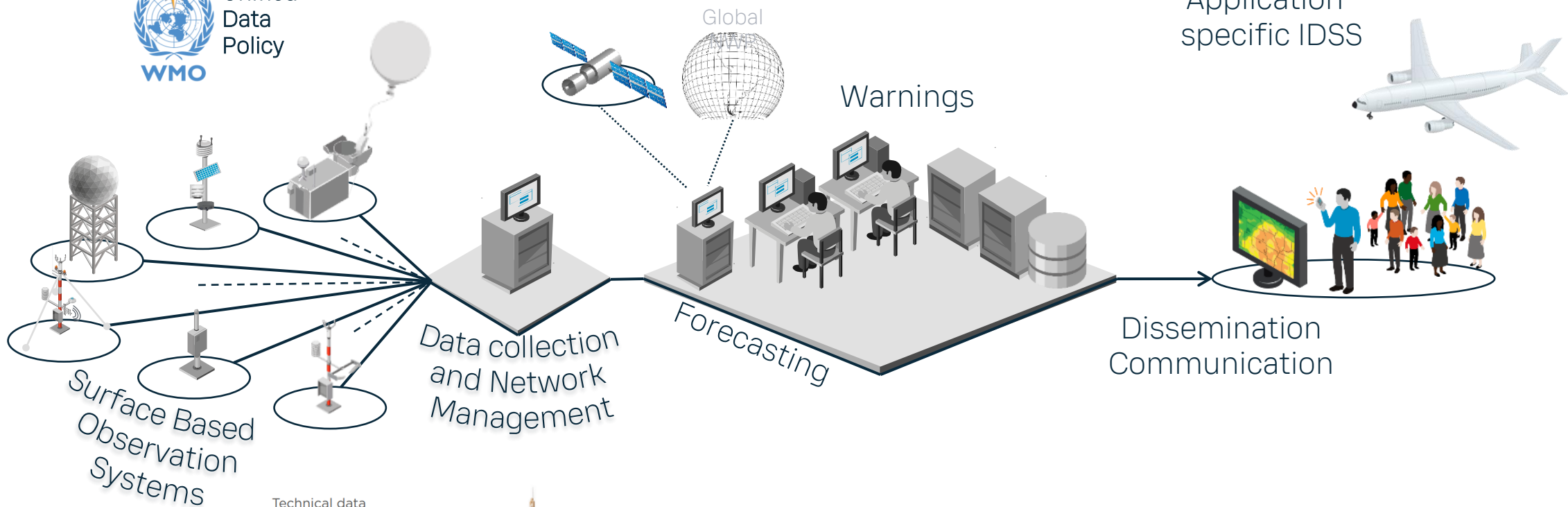
- Meteorologia



- Ilmailu- ja lentokenttäsää



Value chain of meteorology



Technical data	
Measurements	
Measurement cycle	1s
Temperature sensor	Type: Platinum resistor
Repeatability in calibration	0.1 °C
Combined uncertainty after ground preparation	0.2 °C
Combined uncertainty in sounding < 16 km	0.3 °C
Combined uncertainty in sounding > 16 km	0.4 °C
Reproducibility in sounding ²⁾	> 100 hPa: 0.15 °C
	< 100 hPa: 0.30 °C
Combined uncertainty in sounding	4 %RH
Reproducibility in sounding ²⁾	2 %RH
Pressure	Type: Calculated from GPS
Measurement range	From surface pressure to 3 hPa
Resolution	0.01 hPa
Accuracy:	
Combined uncertainty / Reproducibility in sounding ²⁾	> 100 hPa: 1.0 hPa / 0.5 hPa
	100-10 hPa: 0.3 hPa / 0.2 hPa
	< 10 hPa: 0.04 hPa / 0.04 hPa



$$\mathbf{x}^a = \mathbf{x}^b + \mathbf{W}[\mathbf{y}^o - \mathbf{H}(\mathbf{x}^b)]$$

$$\mathbf{W} = \mathbf{B}\mathbf{H}^T(\mathbf{H}\mathbf{B}\mathbf{H}^T + \mathbf{R}^{-1})^{-1}$$

Supercomputer models, e.g.:



RS41: SI traceability of working standards used in production

- Significant for continued confidence of customers to use RS41
- >75% of the measurements in Global Reference Upper Air Network are performed with Vaisala RS41 radiosondes
- Excluding manufacturer's domestic supplier, the number is >90%
- Significant reference in many countries also for operational meteorological radiosoundings

RESULTS

Traceability and uncertainties in calibration

Traceability

Both temperature and humidity calibrations of RS41 are traceable to SI-units. For temperature calibration the reference platinum resistance thermo-meters (PRT) and the involved resistance measurements are traceable to National Institute of Standards and Technologies (NIST, USA), as illustrated in Figure 1. Likewise, for the humidity calibration the prevailing dewpoint is SI-traceable to NIST, and for the temperature information needed in relative humidity calculation the chain of traceability is similar to RS41 temperature calibration, Figure 1.

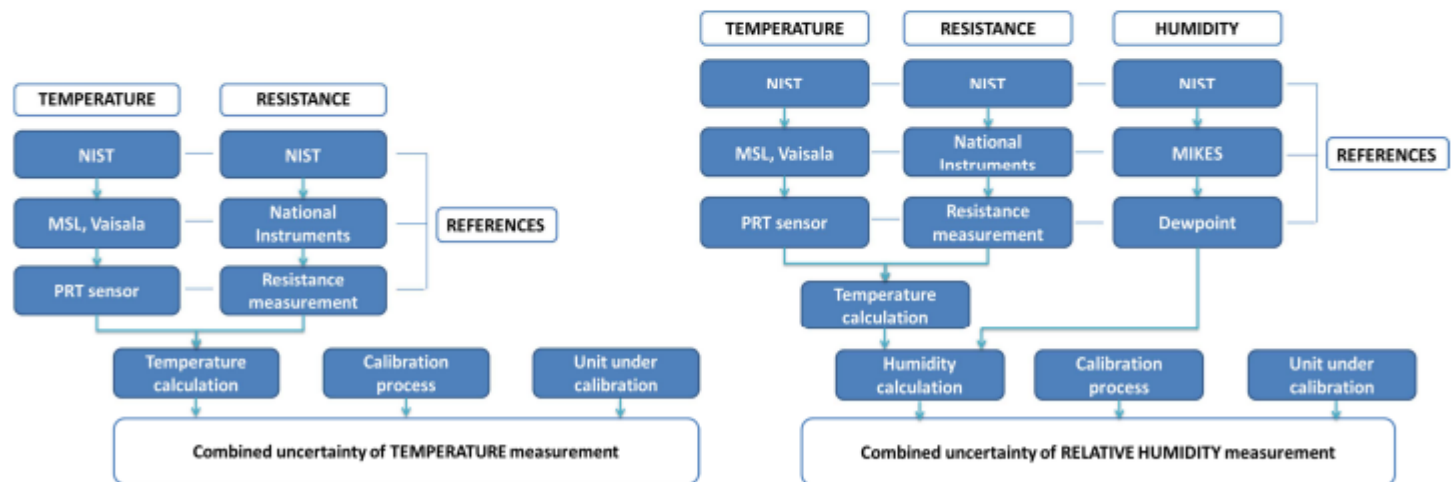


Figure 1. Chain of traceability and uncertainty components in RS41 temperature (left) and humidity (right) calibration.

Ilmailumeteorologia

- Ilmanpaine, lämpötila, kastepiste (kosteus)
- Pilvenkorkeuden ja kiitotienäkyvyyden mittaukset
- Sadepilvet (Cb) ja ukkospilvet (TCu)
- "Sääkoodit", salamat
- Siirtyminen havainnontekijöiden tekemistä havainnoista automaattisiin havaintoihin
- Haaste: jos ihminen ja automaattinen laite ovat eri mieltä, kumpi on oikeassa?
- Pitääkö/kannattaako automaattisen laitteen pyrkiä identtiseen havaintoon ihmisen kanssa eri tilanteissa?

VAISALA



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METAR EFHK 041150Z 02007KT 350V050 9999  
BKN006 00/M00 Q1027 BECMG CAVOK=
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METAR EFOU 041150Z AUTO 20003KT 170V240  
9999 FEW024 03/M02 Q1032=
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ICAO3 summary: " In summary, while automatic devices enhance efficiency and accuracy, human observers remain an important backup and validation resource for RVR measurements."



Accredited calibration

A high-quality calibration service accredited according to ISO/IEC 17025 by the world's leading accreditation authorities

Accredited calibration is the right option if your instrument is used in regulated industries, used as a reference instrument or your quality standards require a calibration complying with the strictest regulations.

Our Accredited Service Center Calibration service includes:

- Functional testing
- Traceable calibration to SI units
- Instrument adjustment to meet its specification when needed
- Filter replacement when needed
- Calibration certificate with as-found and as-left results
- Software update when available
- Service report
- Calibration dates, label and setting update 6-month warranty for the work and used parts

Order calibrations or request for a quote

Humidity, dew point & temperature: [DL2000](#), [DL1000](#), [HMT331](#), [HMT333](#), [HMT334](#), [HMT335](#), [HMT337](#), [HMT338](#), [PTU301](#), [PTU303](#), [DL1416](#), [DMP74B](#), [HMP75](#), [HMP77B](#), [HMP76](#), [RFL100-HMP115](#), [RFL100-HMP110](#)

Carbon dioxide: [GMP252](#), [GMP251](#)

Pressure: [PTU301](#), [PTU303](#), [PTU307](#)

Watch a short video of the [calibration order and service process](#).

[Browse by model](#)

Valsala Boston Service Center,
the United States



Valsala Beijing Service Center,
China



Valsala Helsinki Service Center,
Finland



Valsala Tokyo Service Center,
Japan



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