VOITH

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Condition Monitoring and Analysis

OnCare.Health Hydro

Unclear machine condition creates operational risk

Unexpected downtime

Developing faults can lead to forced outages and lost production.

Unplanned costs

Reactive maintenance disrupts budgets, resources and schedules.

Changing machine behavior

Load, operating mode and plant conditions influence how the unit behaves.

Critical operating decisions

Operators need reliable information to determine the right response.

Turn condition insight into operational value

Increased productivity

Support predictable plant availability and productive operation.

Reduced costs

Improve the predictability of maintenance and operating costs.

Safety

Support plant and operator decisions with reliable condition

Condition monitoring system OnCare.Health Hydro

OnCare.Health Hydro is a condition monitoring and analysis system developed by Voith, combining the know-how and experience of international hydropower operation and maintenance from Voith and our customers.

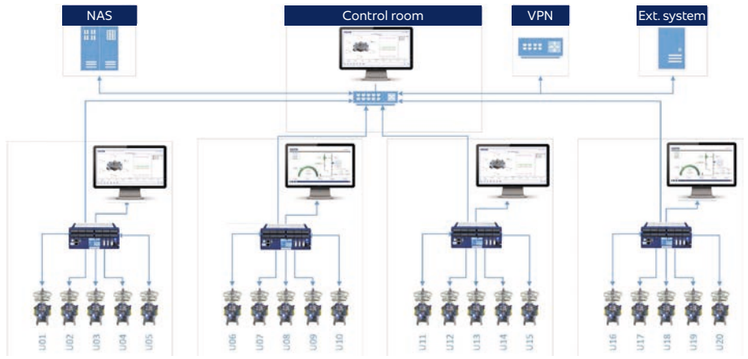
To meet the requirements of different machine types, sizes and operating modes, OnCare.Health Hydro offers:

- Highly scalable system configurations
- Custom-tailored solutions for protection interfaces, monitoring and analysis
- Predefined sensor configurations to support reliable and safe measurement

Its modular architecture allows existing plant and process data to be integrated directly into monitoring, calculations and correlations, reducing the need for duplicate data acquisition. Relevant results and event information can also be exchanged with connected plant systems.

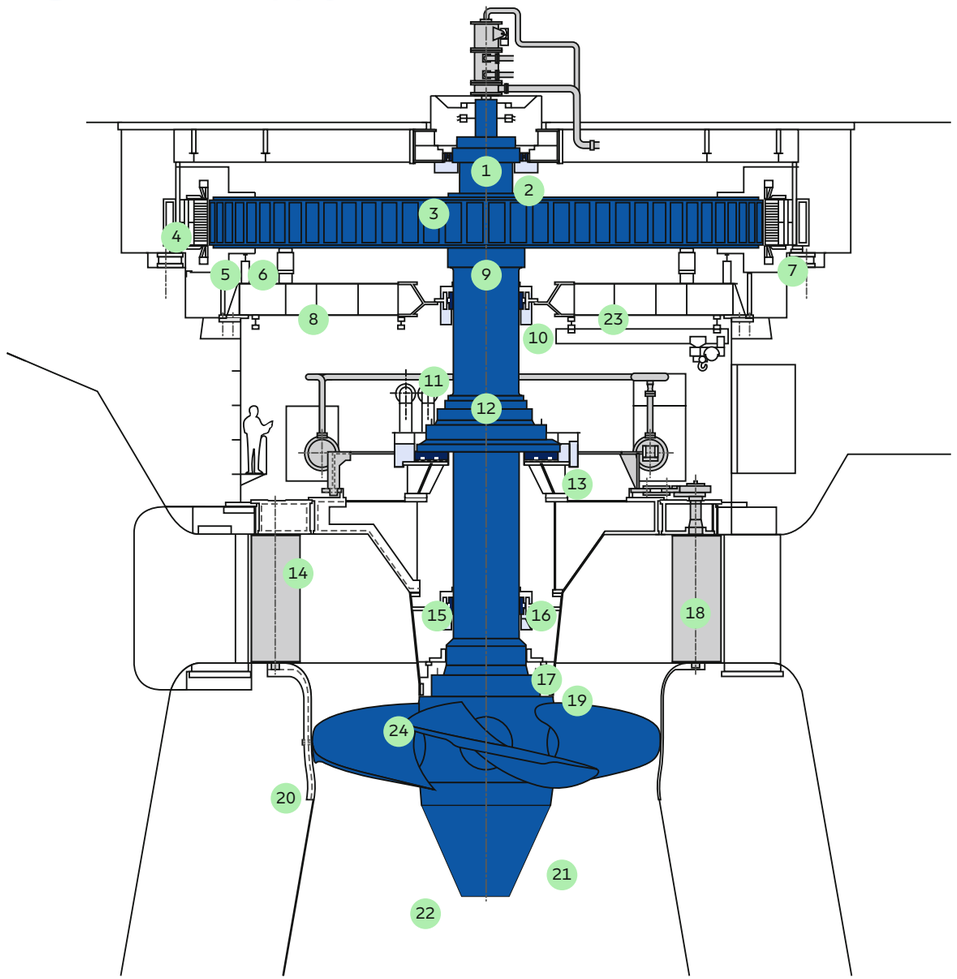
Existing monitoring hardware can be extended or upgraded following a standard site assessment, allowing the system to evolve with changing plant requirements.

System architecture



- 1- Up to 100 DAQs managed from one server
- Multiple clients with centralised asset visibility
- Simple local screens for inspection and quick response
- Automatic data backup
- Integration with SCADA and other data platforms

Voith scope of turbine and generator supply



1 Keyphasor
2 Absolute bearing vibration
3 Shaft relative vibration
4 Stator end winding vibration
5 Air gap
6 Magnetic flux
7 Stator core vibration
8 Generator temperature monitoring
9 Partial discharge
10 Absolute bearing vibration
11 Shaft relative vibration
12 Shaft current monitoring
13 Axial thrust vibration / movement and oil film thickness
14 Turbine headcover vibration
15 Turbine temperature monitoring
16 Shaft relative vibration
17 Absolute bearing vibration
18 Wicket gate vibration
19 Labyrinthe gap (Francis)
20 Runner gap (Kaplan / Bulb)
21 Cavitation monitoring
22 Pressure
23 Ozone monitoring
24 Sediment monitoring

More than monitoring

Understand behavior, not only alarms

OnCare.Health Hydro evaluates measurements and characteristic values in relation to the unit's operating mode and operating point. Flexible monitoring limits and hydro-specific analysis help identify relevant deviations, investigate possible causes and support condition-based maintenance decisions.

Operating-point evaluation

Compare machine behaviour under relevant operating conditions.

Hydro-specific tools

Use frequency analysis, characteristic values and monitoring parameters developed for hydro units and based on applicable ISO standards.

Actionable interpretation

Move from deviations to investigation and maintenance decisions.

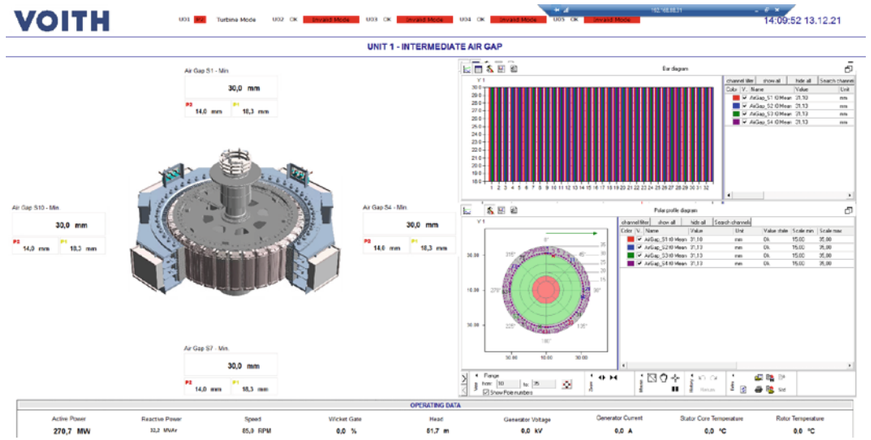
300+
Installations

Up to 25 h
Additional availability per unit / year

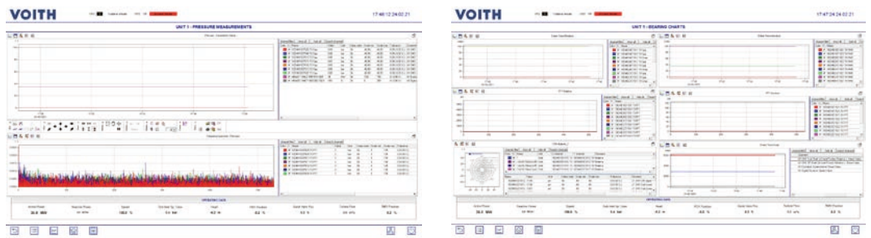
Up to 53 %
Potential reduction in corrective maintenance

Clear information for faster decisions

Component overview



Trend and detailed analysis



Machine condition
Current status and developing changes at a glance.

Machine runnability
Information to support decisions on continued operation.

Trends & correlations
Behavior across time, load and operating points.

Detailed analysis
Diagnostic views for specialist investigation.

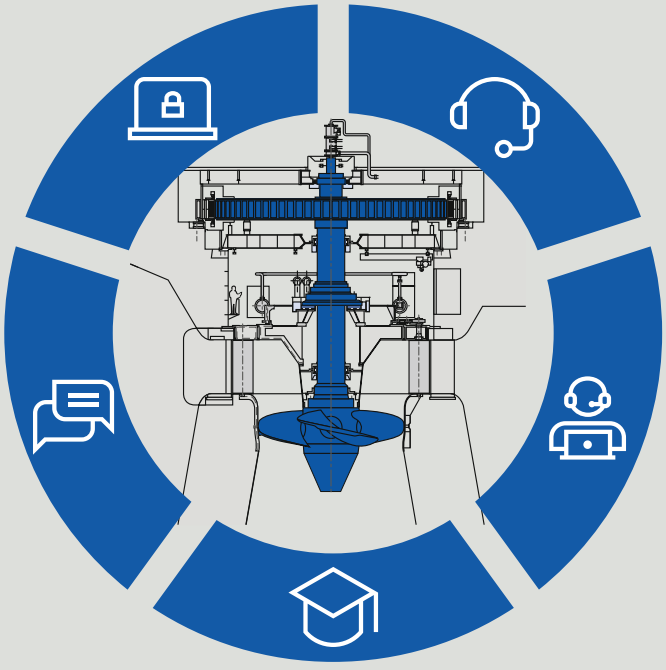
> **The right information, to the right people, at the right time.**

Build the service package that fits your needs

> **Voith offers you the option to select the OnCare.Health Hydro service components that match your plant, system and internal capabilities.**

1 – Remote system care

- System check
- System settings optimization
- System backup



2 – Remote monitoring assessment

- Remote data assessment
- Monitoring reporting with recommendations
- Regular expert support calls

3 – Remote support service

- Software services and upgrades
- Remote support and troubleshooting with recommendations

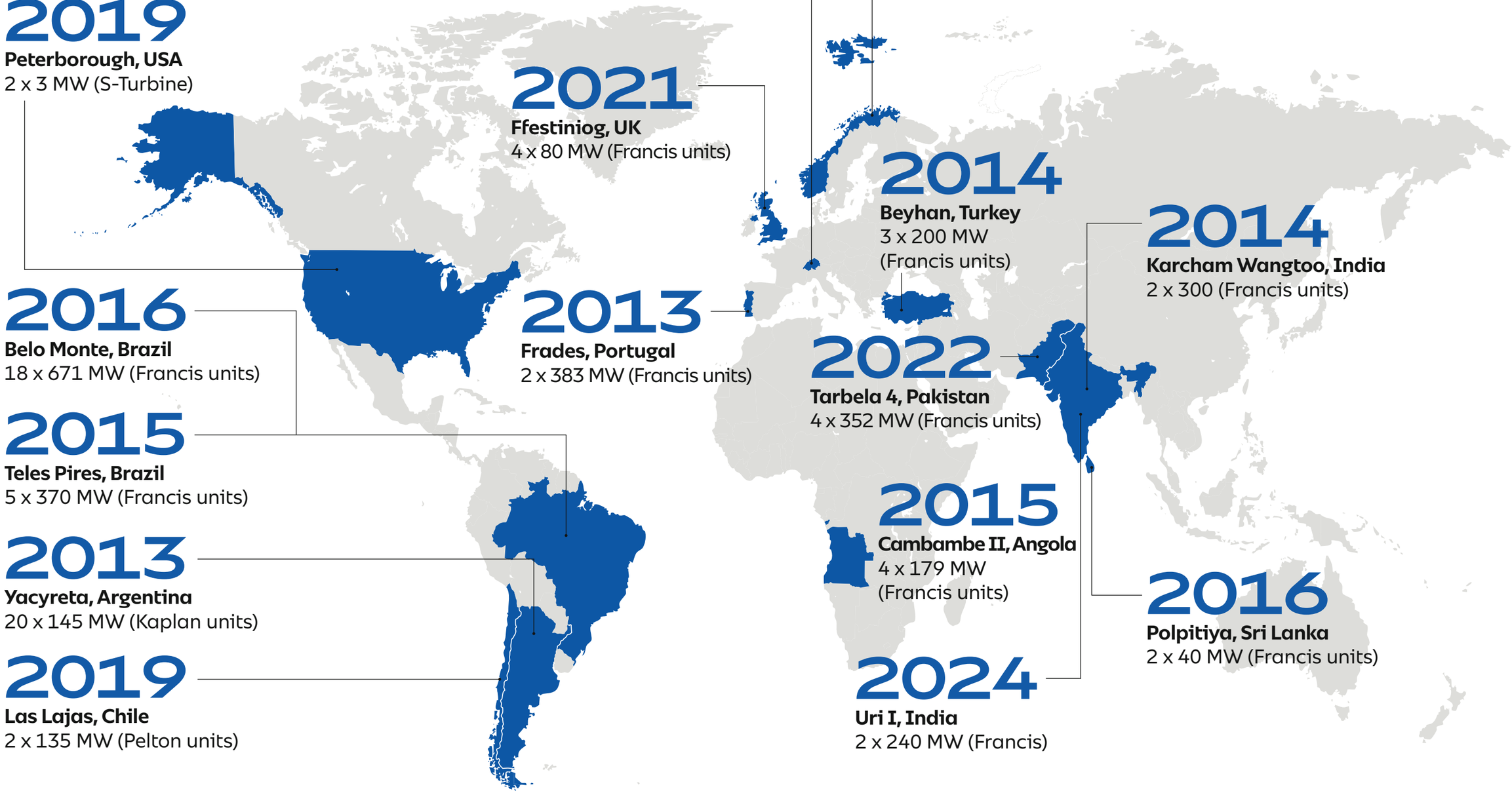
4 – Hydro monitoring school

- First level monitoring training
- Expert monitoring training

5 – On-site consulting

- On-site evaluation of OnCare.Health Hydro (HW / SW)
- Discussion of challenges and configurations
- On-site training

References in recent years



2019
Peterborough, USA
2 x 3 MW (S-Turbine)

2016
Belo Monte, Brazil
18 x 671 MW (Francis units)

2015
Teles Pires, Brazil
5 x 370 MW (Francis units)

2013
Yacyreta, Argentina
20 x 145 MW (Kaplan units)

2019
Las Lajas, Chile
2 x 135 MW (Pelton units)

2021
Ffestiniog, UK
4 x 80 MW (Francis units)

2013
Frades, Portugal
2 x 383 MW (Francis units)

2026
Sedrun, Switzerland
3 x 50 MW (Pelton)

2018
Vamma, Norway
2 x 90 MW (Kaplan units)

2014
Beyhan, Turkey
3 x 200 MW
(Francis units)

2014
Karcham Wangtoo, India
2 x 300 (Francis units)

2022
Tarbela 4, Pakistan
4 x 352 MW (Francis units)

2015
Cambambe II, Angola
4 x 179 MW
(Francis units)

2016
Polpitiya, Sri Lanka
2 x 40 MW (Francis units)

2024
Uri I, India
2 x 240 MW (Francis)

VH3401, en, 2026-08, BDI. All data and information without obligation. Subject to change.

Voith Group
Voith Hydro Holding GmbH & Co. KG
Alexanderstr. 11
89522 Heidenheim, Germany

P +49 7321 37-9990
digital-hydro@voith.com
voith.com/digitalhydro

VOITH