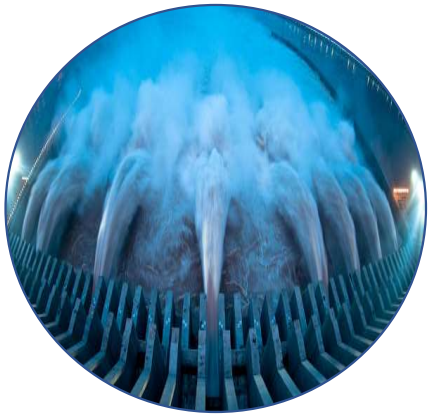
Maintenance & Lubrication Reliability Consultants

Oilsimple™

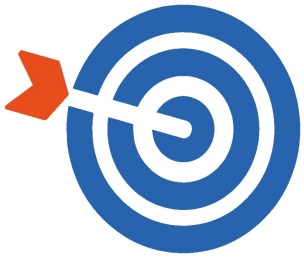
T:+447799540450

E:sean@oilsimple.co.uk

COMPANY PRESENTATION



MISSION, VISION AND VALUES

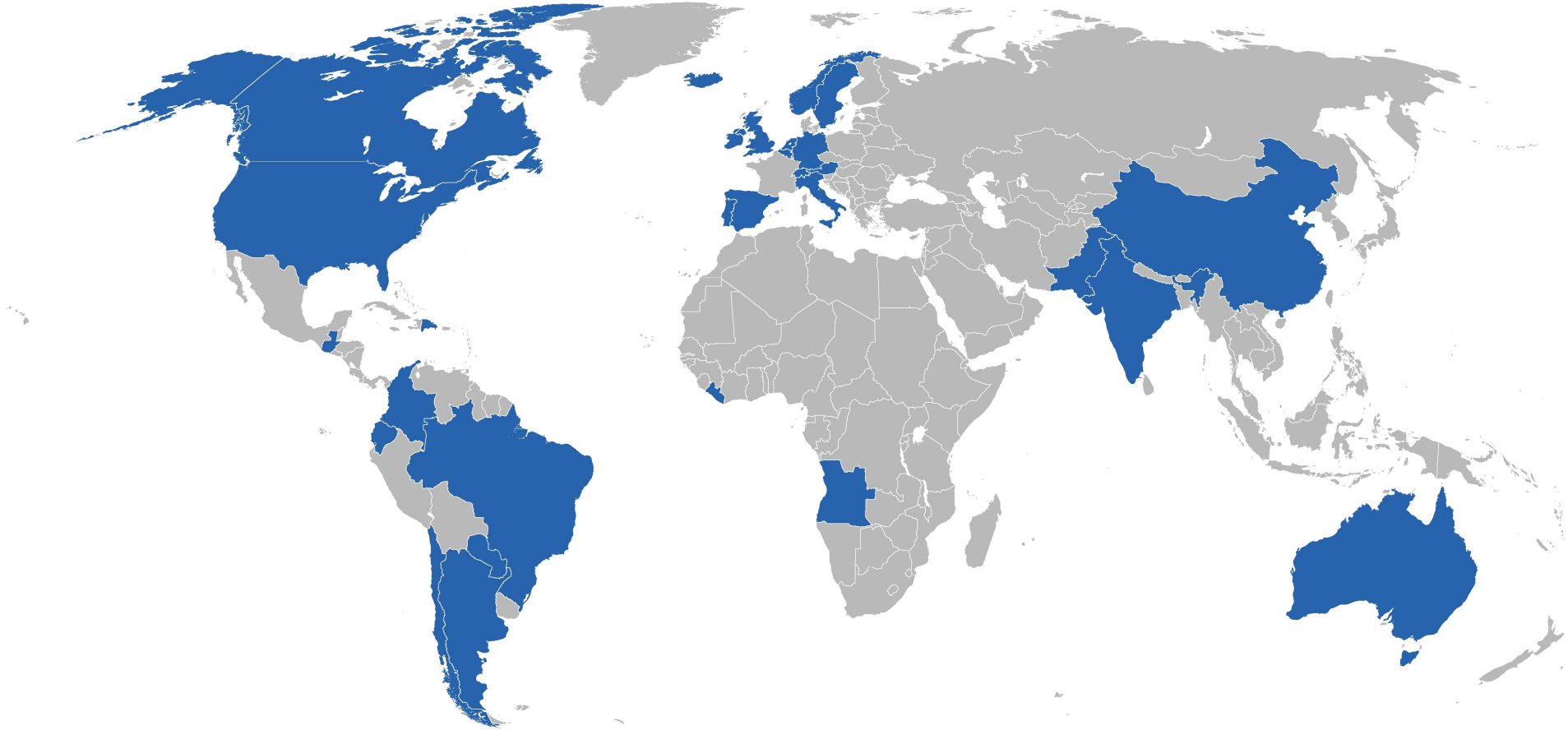


Work on the Industrial Segment delivering reliable solution to our partners and customers to improve their assets and achieve a condition-based operation and maintenance.

To be present in the industrial segment and to be recognized for the high quality and technical competence which, over the years, have reached the status of technological reference.

Provide high technical excellence with transparency and clear communication, respecting the people and the environment.

OUR EXPERTISE OVER MORE THAN 20 COUNTRIES…



IN ALL 5 CONTINENTS.

REFERENCES

INDUSTRIAL SEGMENT	COUNTRY	SUMMARY
Hydro Plant	Argentina and Paraguay	Biggest Argentinian and Paraguayan Power Plant. System troubleshooting and recommissioning
Wind Plant	China	Engineering and Factory Acceptance Test. 4 x 1.5 MW
Mining	Brazil / Chile	Proposal, Engineering, Commissioning and Start for 3 Pulleys
Hydro Plant	Brazil	Engineering + Maintenance + Troubleshooting + Commissioning on more than 20 power plants
Hydro Plant	Brazil / Paraguay	Engineering + Maintenance + Commissioning + Monitoring at Brazil/Paraguay Power Plant 20x700MW
Hydro Plant	EU and UK	Engineering + Maintenance + Commissioning + Monitoring at more than 50 power plants.

PORTFOLIO

Oilsimple is a company focused on Machine Condition Monitoring for the industrial business.

Technical Advice and Consulting

- Technical Requirements during incubation phase and project specification;
- Technical Advising for troubleshooting;
- Machine Improving Plan and Data Analysis.

Engineering and Manufacturing

- Documentation
- Hardware supply, including cabinets, sensors, installation, etc.;
- Software Configuration (Data processing and UI);
- Factory Acceptance Test

Commissioning and startup

- Installation Supervision;
- Instrumentation calibration;
- System Commissioning and field adjustments;
- Integrated Acceptance Test (with sub systems).

Training and operation support

- System Training;
- Good practices on Machine Operation;
- Training to Data Analysis and conventional behaviors.

Monitoring Systems - Core

Main components:

- Data Acquisition Hardware
- Data Service (SW)
- Paito CMS Tool (SW)
- Paito CMS Web (SW)
- Paito Data Center (SW)
- Paito Custom High Level HMI interface (Custom Interface SW)

Hardware features:

- Number of synchronous analog inputs: 4, 8, 12, 16 (*different devices*)
- 4 digital inputs for frequency measurement up to 1 MHz
- 4 analog outputs
- 8 digital outputs
- Sampling rate: up to 50 kHz per channel
- Sensor type: IEPE(ICP), mV, mA (*direct connection)*
- Integrated comparators for Phase Reference sensors
- Up to 16 GB data logger memory
- *In-device display* for reading data on-site
- Pluggable screw terminals, DIN rail-mounting
- Processor technology, based on powerful FPGAs
- 24-Bit A/D converters ensure high precision.
- Any type of sensor can be connected to the input using adequate signal conditioners
- Existing sensors can be used

Software features:

- Data Service
  - *In-device software, used for controlling the embedded computer, system configuration, internal database management, Alarm management.*
- Paito CMS Tool (*license required*)
  - PAITO CMS Tool *is a Windows-based tool for measurement and process data acquisition, test stand automation and measurement technology.*
  - *The application range for the measurement technology software is from simple data archiving and visualization to complete automation solutions with automated reporting.*
- Paito CMS Web (*license required*)
  - PAITO CMS *Web for "IoT measurement and monitoring tasks".*
  - *Measurement data can now be acquired decentralized, stored centrally and viewed from anywhere using any type of user device.*
- Paito Data Center (*license required)*
  - *A centralized measurement data management system that networks, centrally stores, monitors and analyses the measurement data of systems, machines and test stands.*
  - *The measurement data is archived in a valid and traceable way and can access it within seconds, whether on a network, via PC or mobile via smartphone or tablet.*
- Custom High Level HMI interface (*license required*)
  - Run-time software designed to attend the client specific needs.
  - Standard template available, for quick start.

Typical Applications

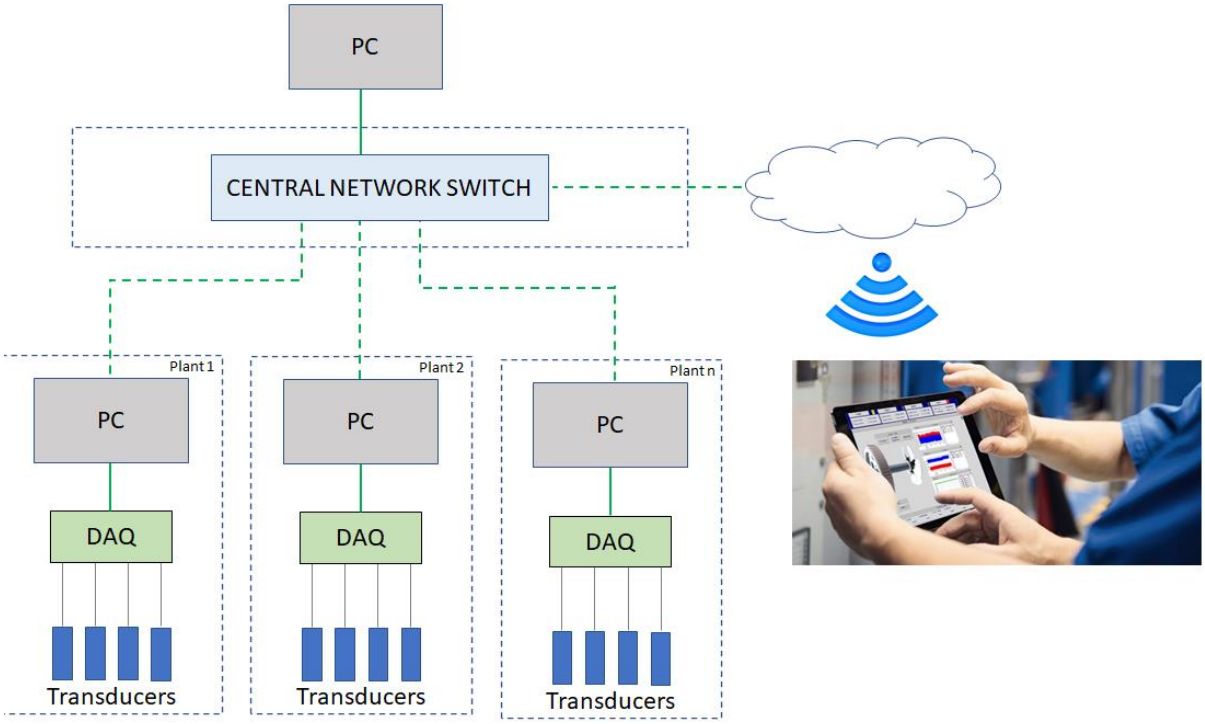
- Monitoring of measurement data from remote locations
  - *WWAN/LTE*
  - *encrypted VPN connections*
- Remote Monitoring for Industry 4.0 systems
- Monitoring of mobile applications
- Alarm management for remote and unstaffed sites

Types of system assembly:

- Permanent Monitoring System (Cabinet)
- Portable monitoring System (Carrying Case)

System Topology

- At one plant, many devices can be connected by means of
  - Ethernet
  - Fiber Optic
- Several Plants, at different locations can be integrated and share important information to a central control system.



Databases (in-site and/or cloud system)

- Realtime
- Short-Term
- Long Term

Data processing and analysis

- Time signal (raw data)
- Frequency analysis
- Characteristic values (rms, peak-to-peak, average, max, min, etc.)
- Online real time calculations
- Alarm management
- Smart limits
- SMS and e-mail messages on alarm
- Custom data processing (real-time-online)
- Automatic reports (customized)

System Integration (evaluation necessary)

- use of existing sensors
- Integration with existing plant systems

Remote support

- Hardware
- Software
- Plant troubleshooting
- Periodic system reports

Diagnostics and Technical Support

Temporary measurements

- Troubleshooting
- Operation improvement
- Machine performance

Support for technical specifications

- New monitoring systems
- Expansion from existing monitoring system
- Integration of Control System and Monitoring Systems

Solutions

Equipment

- Vibrations
  - *Bearing case, Shaft, Stator core, Stator frame, End winding*
  - *Foundation and Structure*
  - *Rotor axial displacement*
  - *Phase reference*
- *Axial thrust*
- *Air gap*
- *Magnetic field*
- *Oil*
  - *Water in oil, humidity, water activity, temperature*
  - *Wear Debris ,Fe & Non-Fe Particles, Ferrography*
  - *Oil quality, Viscosity, dielectric constant, density*
  - *Particle count, NAS1638 & ISO4406*
- *Sound Pressure Level*
- *Ozone*
- *Load angle*
- *Operational Parameters*
  - *Electrical parameters*
  - *Water level, flow, and pressure – main waterways and cooling systems*
  - *Air temperature, flow, and pressure*
  - *Temperatures: bearing oil, water, stator winding, stator core,*
  - *Ambient temperature and humidity*

BUSINESS CASE

Project phases

- Site assessment necessary (locally or remote by video call depending on Internet Connection)
- Client meeting (Management, Operation, Maintenance, Data Analysis Company)
- Draft
- Design review
- Final proposal

Check list

Equipment or process to be monitored

- ☐ Parameters to be monitored (Vibration. Temperature, Humidity, etc.)
- ☐ Number of equipment
- ☐ Plant control system type (if applicable)
- ☐ Internet available?
- ☐ Mobile network available?
- ☐ Plant layout

Economic aspects

Monitoring system can be temporary or permanent.

Temporary measurements can be done using the carrying case (*limited number of points*) or installing a monitoring cabinet.