Performance monitoring of motor-driven devices such as Pumps, Compressors, and Turbines

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- Manufacturer, with equipment and services in 21 countries on 5 continents. Offices in Australia (Joondalup, WA) and UK

- Monitoring of pumps and compressors: Energy efficiency - reducing maintenance costs - accurate flow rate measurements

- Expertise based on accurate differential temperature measurement to better than 0.001°C accuracy
Global electricity demand by end-use (IEA 2011)

- Motors: 46%
- Light: 19%
- Electronics: 10%
- Electrolysis: 3%
- Heat: 19%
- Standby: 3%
Estimated share of motor electricity demand by application (IEA, 2011)

- Compressors: 32%
- Mech. movement: 30%
- Fans: 19%
- Pumps: 19%

Motor applications
Potential savings

• **Reports from the European Union and the USA**
  Pump energy costs could be reduced by up to 40% by suitable monitoring, design, and control.

• **Our technology** provides the information required to optimise systems, and reduce both electricity and maintenance costs.
Water is compressed in the pump and has a higher internal energy per unit mass at discharge ($T_2 > T_1$ ; $P_2 > P_1$)

Differential temperature $dT = T_2 - T_1$
Differential pressure $dP = P_2 - P_1$

Measured parameters for water

Fluid in $T_1, P_1$

Fluid out $T_2, P_2$

Pump
Blower
Water turbine

Electric motor
Diesel engine
Steam turbine

Power in
Speed (optional)
## Main market sectors

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Recent installation for continuous monitoring - 10 units in 3 pump stations for new pipeline

- T1 – suction temperature
- T2 – discharge temperature
- P1 – suction pressure
- P2 – discharge pressure
- \(dT = T2 - T1\)
- \(dP = P2 - P1\)
- Electrical power to motor measured
- Speed measured for variable speed drives
Trying to assess how ADB and World Bank projects can help us with sales (1)

• We have supplied equipment and services to the following countries, mostly for Water Utility applications:

Australia, New Zealand, Malaysia, Philippines, Singapore, India, Hong Kong, South Korea, Spain, France, Netherlands, Germany, Greece, Romania, Portugal, UK, USA, Canada, Mexico, South Africa, Chile

• Looking at website links provided by Austrade, the ADB and/or World Bank have previously supported water utility projects for the countries in red ....

but there were no projects that specifically related to our expertise
Trying to assess how ADB and World Bank projects can help us with sales (2)

We have previously received enquiries from these other countries, listed for ADB and World Bank water projects:

- South and Central America, Caribbean: Argentina, Columbia, Ecuador, Peru, Jamaica
- Europe: Poland
- Africa: Egypt, Zambia, Zimbabwe*, Mauritius*
- Middle East: Jordan
- Asia: Myanmar, Pakistan, Sri Lanka

Smart Traveller advice

Exercise high degree of caution
Reconsider need to travel

* supported by other aid agencies
Geographical Distribution of Pumps

- Time zone 1: <2%
- Time zone 2: 3%
- Time zone 3: 5%

United States: 32%

Russia: 24%

Asia: 31%

South America: 3%
Thinking particularly of some islands

- Islands have very high electricity costs, so payback periods will be shorter

- Generally safe for travel, with good internet links

- Indian Ocean islands: Mauritius, Reunion

- Pacific Ocean islands: Hawaii, Fiji, New Caledonia, Samoa, Tahiti
What we need to find out

• Would the ADB and World Bank support projects employing our technology?

• How can we let these organisations know about our expertise? – there do not seem to have been any similar projects

• Are the financial rewards worth the health and safety risk?

And if any projects go forward:

• What local expertise is available for first-line after-sales support?