

Vibration Energy Harvesters

EH 2013



Roy Freeland, President

Perpetuum Overview

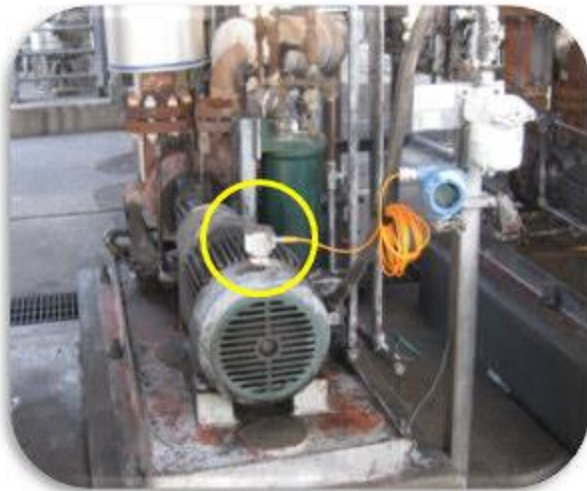
- Perpetuum's products reduce the cost of ownership of complex plant and infrastructure assets for our customers
 - Fast payback
- ❖ Technology based on the understanding of Vibration
- ❖ Perpetuum uses this expertise to design and manufacture:
 - Sensor Systems
 - Energy Harvesters – World leader
- ❖ Target markets are Rail & Industrial



- **Equipment Health Monitoring**



- **Process Monitoring**
Honeywell



Vibration Energy Harvesters

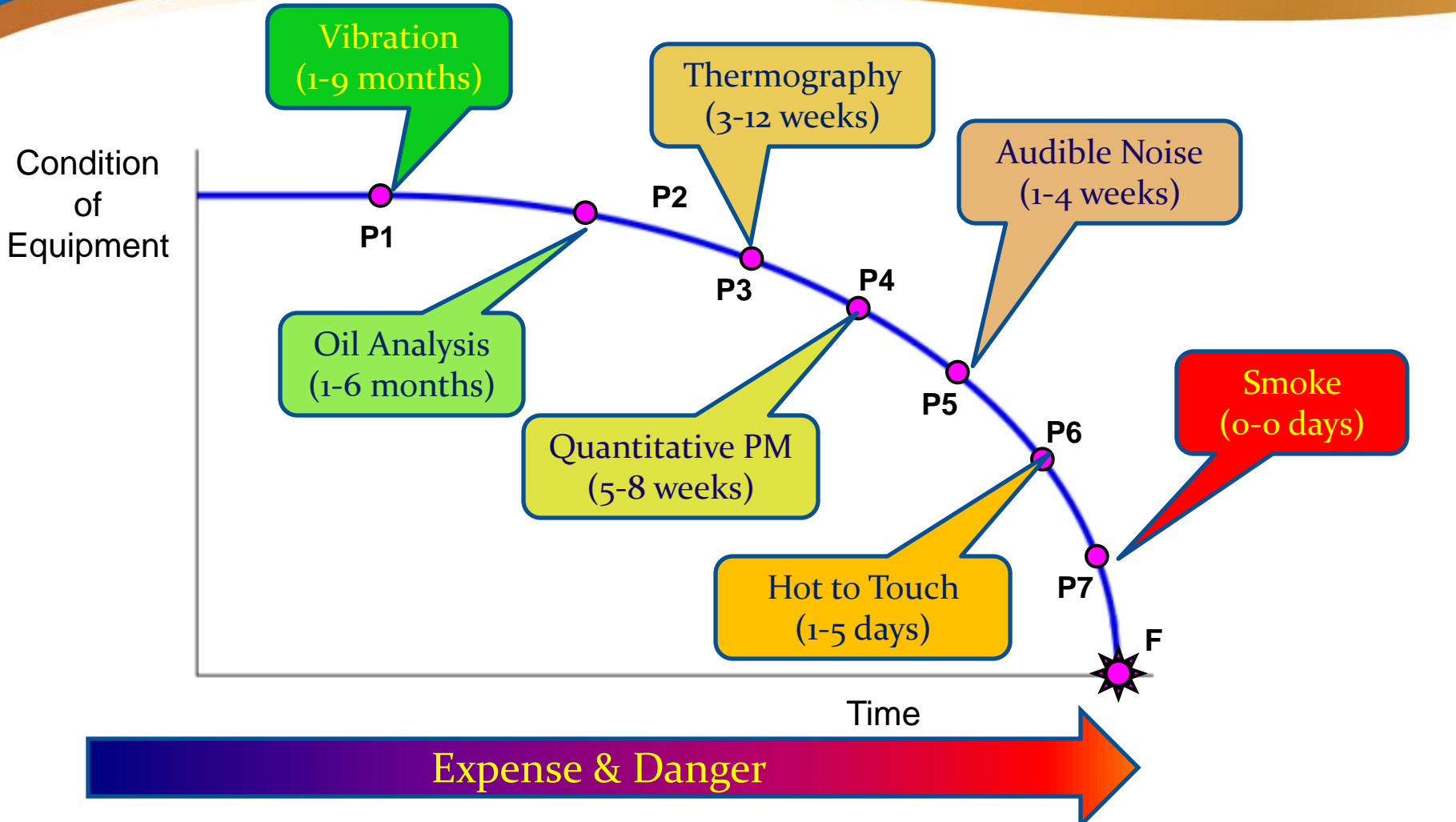
- ❖ Perpetuum Harvesters provide a “Fit & Forget” power source:
 - Cost effective, convenient & robust power
 - Avoids reliability /change issues with batteries
 - Very good power harvesting capability
 - Certified safe in hazardous environments
 - Stable over a wide temperature range
- Key Enabling Technology for Wireless Sensing



- Perpetuum's Sensor Systems enable customers to predict failure of rotating components (e.g. wheel bearings, gearboxes etc) to:
 - Improve reliability & safety
 - Dramatically reduce operational and maintenance costs
 - Improve Asset Utilisation – condition is monitored while assets still in service and earning revenue
 - Reduce Service Disruption
- Products are robust & reliable
 - Operate over wide temperature range (-40 > +85 Deg C)
 - Suitable for use in high vibration environments 🎯



Equipment Health Monitoring



Vibration Analysis allows early prediction of equipment failure

What Bearing Failure Problem? perpetuum

