

# TR Engineering Services

Material Testing • Inspection • Sourcing • Contracting



## *TCR Engineering offer following services;*

- Corrosion Management
- Root cause failure analysis
- Material selection
- NDT
- Metallurgical study
- Condition/Life Assessment (Pr. Vessels)
- Risk based inspection (RBI)
- Damage assessment
- Remaining life assessment
- Fitness for service
- Inspection & Certification

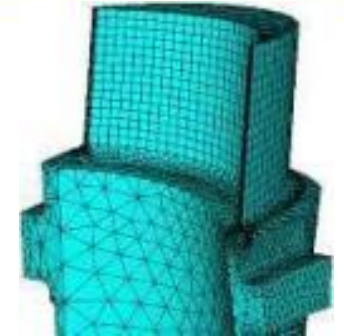
*TCR Advanced has unique experience  
of solving more than 6000 industrial problems,  
that brings value addition.*

**Capabilities:**

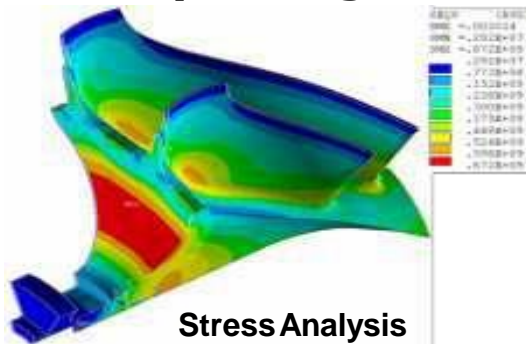
- **Research & Development / Reverse Engineering**
- **Specialized in Turbines / Compressors / Cooling Systems**
- **Design & Manufacturing of High speed Turbo-machinery**
- **1 US Patent awarded**
- **5 Patents pending in US & 8 Patents pending in India**



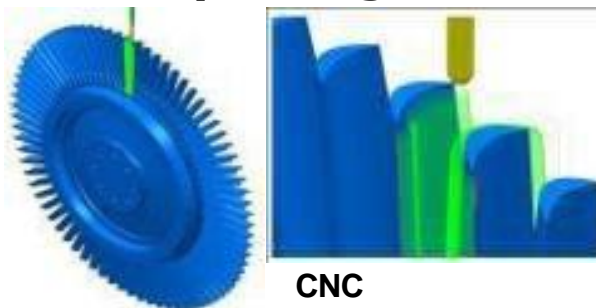
3-D Modelling



Finite Element Analysis



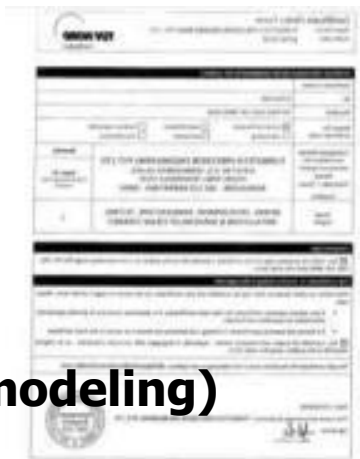
Stress Analysis



CNC Programming



AS9100D



ISO 9001:2015  
 ISO 14001:2015

- **Optimum Design using software like Inventor, AutoCAD and CFD (2D /3D modeling)**
- **Development / Reverse Engineering to suit specific requirements**
- **Fine blend of 60+ Engineers, aerospace experts, Quality assurance personnel, experienced business development personnel**



**Nozzle Blades under Machining**



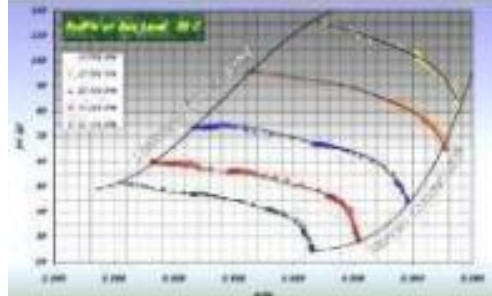
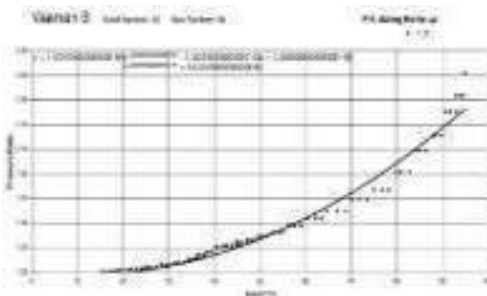
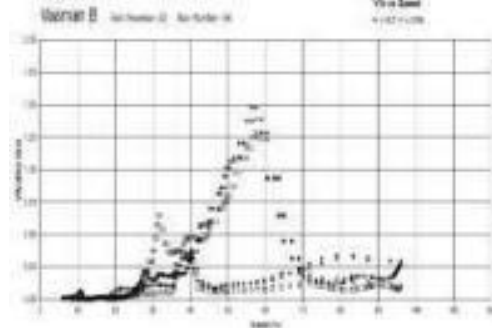
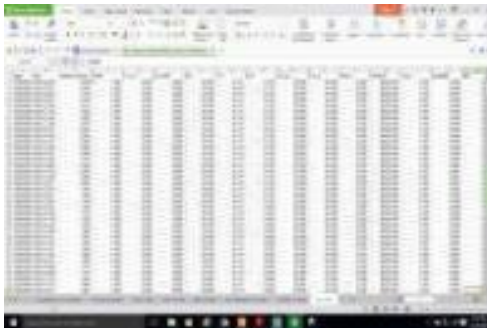
**4- axis CNC Milling machine shop**



**1.8 MW Condensing Turbine under Assembly**

- ❖ State of Art Facility
- ❖ Fully Instrumented Test Cell
- ❖ SCADA data acquisition system
- ❖ Hazard proof data acquisition & control room
- ❖ Remote monitoring & controlling

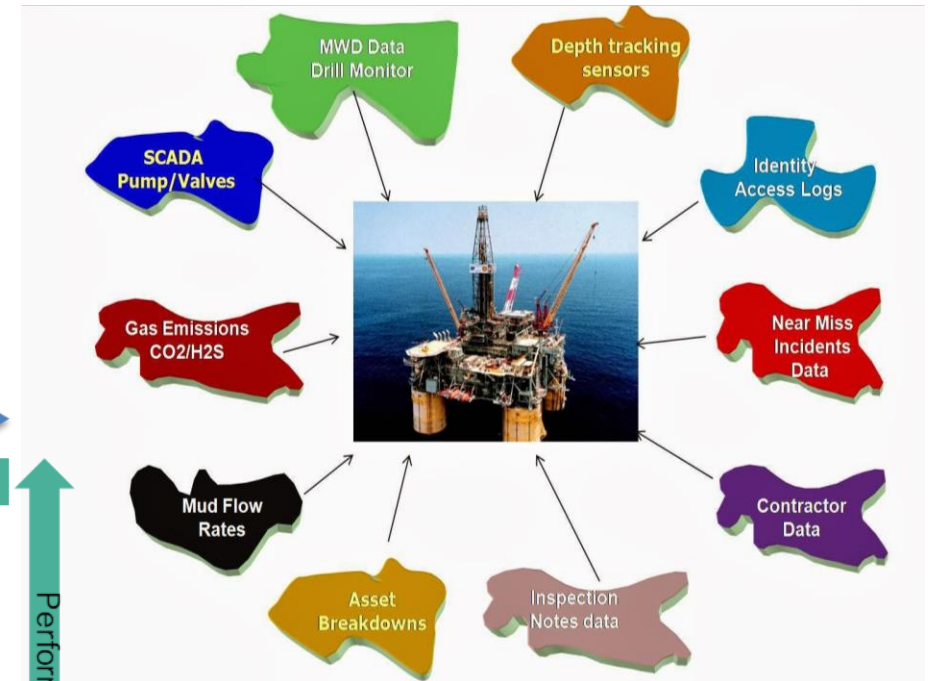
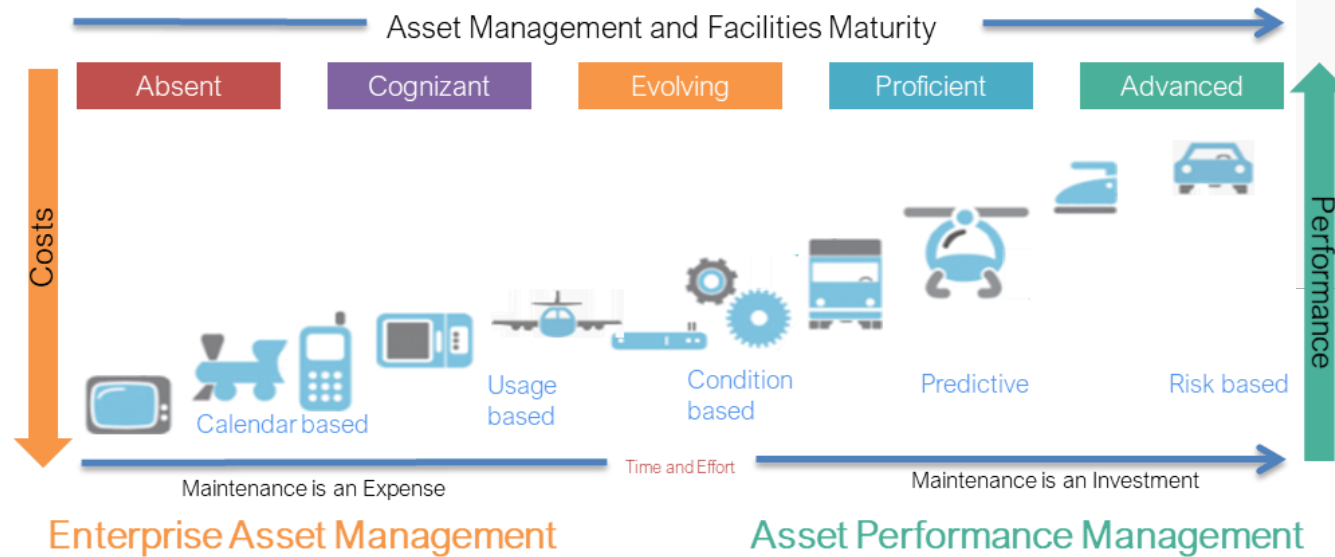
**Quality Control**



# Asset Lifetime Enhancement

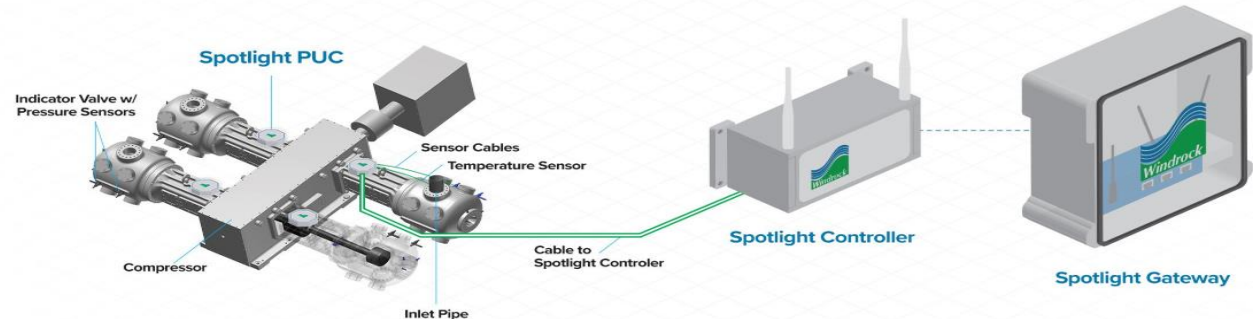
## Typical Scenario

- High Cost Monitoring – Less Scalable
- Dedicated Systems – Reduced Interoperability
- Need newer O&M strategies



## Condition Monitoring & Predictive Insights

- Low Cost Monitoring of Rotational Equipment – **Economics of Scale, More Visibility**
- Open Architecture, Secure Cloud based - **24 x 7, Anywhere & Integrable to any platform**
- Automated Diagnostics, Anomaly detection – **Early Warning**
- Predictive advisories, Actionable insights – **Lower risks @ Lower costs**
- Existing Asset AI models – **Stepping towards AI/ML & Industry 4.0**



### **Asset Lifetime Extension**

- Shop repairs of VFDs
- Refurbish Power Cells
- Reform / Replace Capacitors
- 24 Hr On-Site Service
- Preventive Maintenance / Expert Support
- Online Monitoring - PCube
- Turnkey Retrofits for Control Automation
- Trainings

**"Reliability Reassured"**

