



# Continuous Health Monitoring of Engine saved ~\$54,000 and enabled a revenue of ~\$750,000 over one month by enabling on-time deputation of rig

<b>INDUSTRY SEGMENT:</b>	Oil & Gas
<b>CUSTOMER:</b>	Jack Up rig operator in India
<b>EQUIPMENT:</b>	Caterpillar make diesel engines
<b>ARM SOLUTION:</b>	Engine Health Diagnostics through torsional vibration solution

## CHALLENGE

- During the 2nd Top End Overhaul on a CAT 35 Series engine, **damage marks were observed on crankshaft**
- The rig owner wanted to deploy the rig for a new contract in 10 days time but a **spare crankshaft wasn't available** & it was not possible to send out the crankshaft for inspection, repair & get it back on time

## SOLUTION

- Neptunus has been a **preferred partner** to this customer for engine maintenance across their multiple rigs
- In consultation with the rig owner & operations team, Neptunus did the **in situ repair on the damaged part**.
- After the engine was assembled, we installed our **torsional vibration monitoring solution permanently** on the rig **to continuously monitor the health of the engine**. This gave the customer greater confidence that no risk was being taken. The **key parameters of engine health were found to be within allowable limits**.
- This technology enables **very early warning** of an emerging fault so that the rig maintenance team is able to plan the corrective action well in time and **not let the engine reach breakdown stage**.
- The system served on this rig for the contract period of 8 months & **there was no breakdown on the engine**.

Cylinder Specific Indicators					
	Compression	Injection Timing	Injection Condition	Bearing	Misfiring
Overall Information	27% <span style="color: orange;">●</span>	0% <span style="color: red;">●</span>	0% <span style="color: red;">●</span>	83% <span style="color: green;">●</span>	100% <span style="color: green;">●</span>
Cylinder 1	<span style="color: green;">▬</span>	<span style="color: orange;">▬</span>	<span style="color: yellow;">▬</span>	<span style="color: red;">▬</span>	<span style="color: green;">▬</span>
Cylinder 3	<span style="color: green;">▬</span>	<span style="color: red;">▬</span>	<span style="color: green;">▬</span>	<span style="color: orange;">▬</span>	<span style="color: green;">▬</span>
Cylinder 6	<span style="color: yellow;">▬</span>	<span style="color: orange;">▬</span>	<span style="color: green;">▬</span>	<span style="color: red;">▬</span>	<span style="color: green;">▬</span>
⋮	⋮			⋮	
Cylinder X	<span style="color: red;">▬</span>	<span style="color: orange;">▬</span>	<span style="color: green;">▬</span>	<span style="color: green;">▬</span>	<span style="color: green;">▬</span>

## BENEFITS

- **Direct savings of \$54,000** by avoiding the replacement of the crankshaft.
- Customer was able to depute the rig on time, instead of a potential 1 month delay. **This enabled revenue of 30 days \* \$25,000 = \$750,000 and better cash flow management.**
- Additional benefits by **reducing the downtime of repairs by 90%** and **increasing the availability of the rig**.
- Customer was able to avoid penalty charges due to delayed deputation
- Automated continuous monitoring allowed the rig and technical teams to **focus on the core drilling operations rather than worry about the uncertainty of engine reliability**.