

CASE STUDY

Industry: Pulp & Paper
Customer: Paper Mill in Austria

OFF-HIGHWAY
POWERTRAIN SERVICES

▶ Work with Off-Highway Powertrain Services Experts before it is too late!

▶ Case Description

This is a cautionary example of a paper mill where expert help on powertrain maintenance could have avoided catastrophic consequences. A broken drive shaft joint in the pressing section of the paper mill damaged nearby hydraulic hoses. Oil escaped from the damaged hoses and then ignited, resulting in a paper mill the size of a football field catching fire. Experts estimate the damage to have cost several million euros!

Off-Highway Powertrain Services (OHP Services) had visited the paper mill six months before the accident to present and offer our Offline Condition Monitoring Services. The customer routinely inspected the cardan shafts using traditional methods of visual inspection. Unfortunately, the customer did not want to change their inspection strategy, not recognizing the benefits of the Offline Condition Monitoring Services method which would have detected this potential failure.

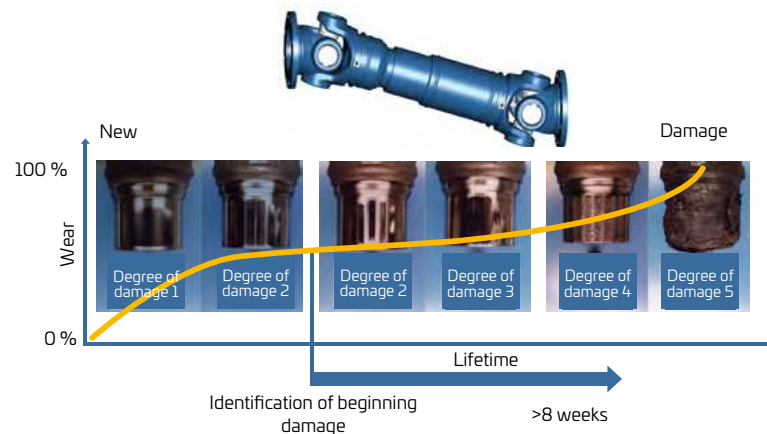
Life Cycle Monitoring of Cardan Shafts

OHP Services has online as well as offline monitoring solutions (detailed in technology snapshot) which can detect wear 8 weeks before failure.

After the accident the customer realised the value that OHP Services could add to his operations and asked us to support his maintenance. We have already performed services such as High-Tech Analysis using vibration and thermal measurements; inspection and replacement of cardan shaft, motor alignment and other specialized services.

A small abrasion on the cardan cannot be detected through visual inspection. Often the abrasion starts very small in size and progresses very rapidly. Visual inspections are time intensive and cannot be completed during one maintenance shutdown, leading to an increased breakdown risk.

The customer also used an online-monitoring system to detect the wear state of the roller bearings. The cardan shaft was installed close to a sensor and had a high wear state, but the vibration remained undetected due to the shaft operating at a different frequency band. The monitoring system sensor and its software were not designed to detect wear in the cardan.



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▶ Technology Snapshot

Condition Monitoring

OHP Services developed an online condition monitoring system to detect bearing, gear and also cardan wear states using one sensor placed on the powertrain.

Regular offline measurements can also be used to detect the abrasion of the cardan.

Both methods reduce the maintenance time and can be completed during machine operation. The cardan replacement can be prepared before the next planned maintenance shutdown. Using these methods, the wear could have been detected 8 weeks before the failure.

▶ Challenge:

- ▶ Detect the potential failure before it's too late
- ▶ Protect components from secondary damage

▶ Solution:

- ▶ Offline Condition Monitoring to periodically monitor the wear state of the complete powertrain
- ▶ A detailed report with recommended actions

▶ Customer Value:

- ▶ Avoid high risk accidents with damaging consequences for people, production, property and environment
- ▶ Save insurance costs through risk minimisation
- ▶ Better maintenance strategy leading to longer service life of components
- ▶ Better stock planning resulting in cost savings

▶ What's special?

- ▶ OHP Services have developed a system which detects bearing, gear and also cardan wear states by using just one sensor located on the powertrain.

OFF-HIGHWAY
POWERTRAIN SERVICES

WORLDWIDE

Off-Highway Powertrain Services collaborates with manufacturers and logistics partners worldwide: benefit from our extensive network. By means of our Service Parts Availability Module, you can define which part are to be available, and how quickly they can be delivered to your location – regardless of manufacturers. We also offer customized spare parts to our clients on stock.

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This case study is exemplary only. Any and all information, data, values, products, procedures etc. which are mentioned in this case study vary from case to case and can be different. For calculation pertaining to your business, please refer to a Off-Highway Powertrain Services employee.