

# CASE STUDY

**Industry:** Food and Beverage  
**Customer:** Dairy in Germany

OFF-HIGHWAY   
**POWERTRAIN SERVICES**

## ▶ Vibration measurement in a dairy application with an unexpected finding

### ▶ Case description:

The customer observed numerous fault indicators whilst cleaning and maintaining his equipment. Electrical applications were checked but the errors emerged again. Off-Highway Powertrain Services (OHP Services) recommended a vibration measurement to understand the possible root cause and prevent consequential damages caused by the attrition of mechanical components.

Our experts ensured the customer was aware that increased vibrations and noise in high frequency areas are indicators of progressive attrition within the bearings of a pump. During the cleaning process different liquids with different viscosity cause variations in pressure which leads to a decreasing capacity. As a result the control system tries to compensate for this through increasing the operating speed of the pumps. In only a short-time capacity fluctuations occur, however the control system of the engine is not capable to compensate for these fluctuations and consequently an error message appears.

In addition, due to the higher speed of the pump the risk of attrition increases. A statement about the exact condition of the pump and the bearing life is not possible therefore, the recommendation was to replace the pump as soon as possible. In order to be able to detect such damages earlier and prevent excessive ordering of spare parts OHP

### ▶ Technology snapshot:

Different technologies such as vibration measurement and thermography checks were used to determine the root cause of the problem. A multi-channel vibration measurement system was utilised for the analysis of the vibrations and natural frequencies.



Bearing damage of a spiral pump

Services recommended that in future preventive maintenance by means of vibration analysis is undertaken.

Sensors installed at different positions recorded these vibrations. Detailed, fact based reports were generated to support maintenance decision making.

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▶ **Challenge:**

- ▶ Find out the root cause of the error messages

▶ **Solution:**

- ▶ Replace the pump immediately to prevent progressive wear and shrinkage of the bearing surfaces of the worn wheels
- ▶ Preventive maintenance by means of vibration analysis to detect damages earlier

▶ **Customer Value:**

- ▶ Early replacement of the pump prevents further attrition and a possible breakdown of the machine
- ▶ The vibration measurement helps to identify the root cause of the error message before the consequential damage occurs
- ▶ Cost savings through prevention of a future stoppages
- ▶ Timely ordering of spare parts

▶ **What's special?**

- ▶ OHP Services as a service company considers the complete powertrain system by using several analysis methods to understand the function and problems of each single component and to identify the root cause of an individual problem. It is essential to consider every factor of the process to analyse the true root cause. In this case the different liquids used during the cleaning process caused the vibrations as a result of compensating for the different pressures generated by the viscosity of the liquids.

With this deep understanding of the process OHP Services is able to prevent possible consequential damages due to attrition of the pumps and the bearings.

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**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.