

CASE STUDY

Industry: Container port
Customer: Crane system

OFF-HIGHWAY
POWERTRAIN SERVICES

Service life expectancy

► Optimization motor braking

The rail cranes concerned have been in operation in the port of Hamburg since 2001. The vertically mounted trolley motors are equipped with electromagnetic holding brakes. Due to the increasing utilization of the railway cranes, the operator is looking for extended maintenance intervals for the brakes and orders Off-Highway Powertrain Services (OHP Services).

► Case description:

In the present case, wear due to idling friction and incorrect use of the static brake as a dynamic brake was determined. In cooperation with the customer, an updated load spectrum was created, whereupon various measures have been taken to optimize the service life.

The objective was to increase the tool life to approx. 200 %. Three main measures were implemented during the optimization.

1. use of higher quality friction linings
2. increasing the wear limits
3. amplification of the magnetic field.

The new design was then tested on the test bench under operating conditions. The tests showed that the objective was achieved. A pilot series of the modified brakes was tested in operation for one year. The test results were very positive, so that all brakes have now been optimised.

In the meantime, it turned out that the original target was even clearly exceeded and the service life was extended by 400 %. Together with a preventive maintenance concept, maintenance measures are now planned in advance at significantly extended intervals, so that costs and downtimes are minimized.

► Technology Background:

The dynamic use of the brakes overloaded the friction linings designed for static operation and, together with the vertical installation situation, led to wear. In order to retain the existing drives and thus save costs, the brakes were adapted to the given operating conditions. For this purpose, friction coefficients, magnetic & spring forces had to be recalculated and the existing design had to be adapted in order not to change the braking torques & times.



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► Challenge:

- Cause analysis
- Constructive adjustment of the existing components
- Maximize service life
- Cost restrictions
- Minimize repair lead times

► Solution:

- Changes of the friction linings
- New magnetic coil
- Reduction of the spring force
- Increase of the maximum wear
- Creation of a maintenance & service plan

► Customer benefit:

- Reduced downtime (Preventive maintenance)
- Increased service life of the wearing parts (reduction of the spring force)
- Increased service life (reinforced solenoid coil)
- Early and improved planning of maintenance measure (Preventive maintenance)

► What was special?

- OHP Services as a service provider for complete drive trains considered the entire drive train and the operating conditions around the individual components to optimize the process. Through the analysis of the given operation, causes could be reliably determined.

In accordance with the design changes, modified brakes were manufactured, which were then subjected to practical simulations on the test bench without impairing the customer's ongoing operations.

Thanks to its many years of experience and versatile skills, OHP Services can carry out the entire repair process, consisting of cause and damage investigation, action planning, design, repair, installation, commissioning and optimization, all from a single source.

With OHP Services, the plant operator has a reliable and competent contact for side that informs him and the repair process continuously supervised.

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.