

APPLICATION SOLUTION: High Speed Train Wheel Steering



Product Family: IMA Series

Product Used: Modified IMA44 Integrated Linear Servo Actuator

Product Type: Modified Standard

Application Requirements

Stroke (varies): 2.23in, 60 mm

Speed: 7.87in/s, 200 mm/s

Thrust: 2.248 lbf, 10 kN

Application Description

An actuator to steer the wheels of a high-speed train car, to reduce the wear caused by curves in the track.

Challenge

Train wheels become worn over time due to friction against the track as the train moves around curves. A high-speed train car manufacturer provides a long-term maintenance contract that includes: periodic grinding of wheels into profile or wheel replacement if required. The manufacturer was looking for a cost-effective way to reduce the wear rate on the wheels and hence lengthens the time between maintenance and replacement. No actuator existed on the market that could meet the stringent standards required by the railway industry for fire, smoke and vibration.

Tolomatic Solution

Tolomatic's IMA44 integrated linear servo actuator served as a base design. It was customized to pass railway qualification tests to provided a compact, heavy-duty package. The actuator steers the wheels of the train cars as they passed around curves. The resulting independent turn of each wheel greatly decreased the wear rate. The length of time between grinding or replacing the wheels was greatly increased, keeping the train cars in service longer between wheel maintenance sessions. The customized IMA44 integrated linear servo actuator met the UNE-EN 61373:201 level 3 Shock & Random Vibration Standard as well as Fire & Smoke Standard EN 45545 level HL3.

Customer Benefit

- Increased up-time for train cars between maintenance intervals
- Sharp reduction in wheel maintenance and replacement costs
- Certified solution for railway operations