

Monitoring the Platform Position in Tank Car Wash Systems

PMI104-F90-IU-V1
Positioning System in Mechanical
and Plant Engineering

At a Glance

- Reliable position monitoring
- High resolution of up to 125 μm and minimum temperature drift of $\pm 0.5 \text{ mm}$
- Adjusted parameters can compensate for tolerances in the system
- Robust IP67 housing for harsh ambient conditions
- Noncontact, wear-free measuring system



The Application

Tank cars (also known as tanker wagons) used to transport items such as food, petroleum products, and chemical products must be cleaned regularly. During this cleaning process, a folding bridge is used as a fall protection system for personnel. In these washing systems, the folding bridge is pneumatically lowered so that it rests on the tank car. This provides safe access for personnel carrying out the cleaning process.

The Goal

The pistons of the pneumatic cylinders are retracted and extended. The aim is to reliably monitor the position of the platform. If not, leakage in the air system could cause the folding bridge to return to park position, potentially resulting in severe mechanical damage to the cleaning head for the system or even injuring personnel.

The Solution

The PMI104-F90-IU-V1 inductive positioning system offers the perfect solution to this problem. The sensor detects the position value after the folding bridge has been lowered, which is parameterized as a set point. As the folding bridge can only move within a tolerance window of a few centimeters, the entire system is shut down as soon as a set threshold value is exceeded. This continuous and reliable position monitoring prevents mechanical damage to the cleaning head. The sensor can be specifically parameterized to compensate for the system tolerances.

The Benefits

The PMI104-F90-IU-V1 offers a high resolution of up to 125 μm , which allows the position of the folding bridge to be determined precisely. A minimal temperature drift of $\pm 0.5 \text{ mm}$ ($-25 \text{ }^\circ\text{C}$... $70 \text{ }^\circ\text{C}$) ensures reliable positioning under almost all ambient conditions. Even high humidity and splashing water—as found in washing systems—do not affect the function of this IP67-protected sensor, thereby safeguarding the operation of the positioning system in the long term.

Technical Features

- Measuring length: 104 mm
- Type of output: 1 current output: 4 mA ... 20 mA, and 1 voltage output: 0 V ... 10 V
- IP67 rating
- Ambient temperature: $-25 \text{ }^\circ\text{C}$... $70 \text{ }^\circ\text{C}$
- Versions with IO-Link are available (PMI*F90*IO*)

