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Draw-wire sensors
wireSENSOR

Displacement detection of hydraulic diving platforms

In the water sports center in Leipzig, athletes and future Olympic athletes train in water diving. In order to achieve optimal training results, height-adjustable diving platforms are used. These enable the athletes to jump from individual heights. The system also has advantages for synchronized divers because the towers can be moved to the same height.

Draw-wire sensors from Micro-Epsilon ensure that the towers are in the exact position, which is why the height is measured precisely. This is the only way to easily control this between 0.8 m and 3.5 m using a console on the edge of the pool. A wireSENSOR WDS-P115 draw-wire sensor is used on the diving platform, which detects the retraction and extension of the ladder. The current height of the diving tower is determined using these measured values. The part of the extendable ladder that is not required protrudes into a room below the swimming pool. The draw-wire sensor is attached to the ceiling of the room for this measurement task. The end of the wire is attached to a cross strut of the ladder construction. If the tower is moved, the ladder and the strut move with the rope.

The challenge lies in the high humidity, chlorine-containing environment and the high number of work cycles that the sensors must perform. The WDS-P115 industrial draw-wire sensor from Micro-Epsilon was therefore chosen. Due to their large measuring range, the robust aluminum profile housing and durable design with wear-free encoders, these modern industrial sensors deliver precise results even in demanding environments. They are also easy to install. In addition to the standard models, special versions with coated housings and rustproof stainless steel elements are available for extreme environmental conditions such as salt water.

Additional drain holes allow water to drain off quickly. Deflection pulleys and wire extensions allow flexible adaptation to the respective installation situation.

Requirements for the measurement system
- Required measuring range: 3.5 m
- Slow stroke movements
- High repeatability
- Long service life

Ambient conditions
- High humidity
- Chlorine atmosphere

System design
- Draw-wire sensor: wireSENSOR WDS-P115

Advantages
- Easy installation and integration
- Flexible installation possibilities due to deflection pulleys and wire extension
- Robust and long-life sensor design
- High repeatability