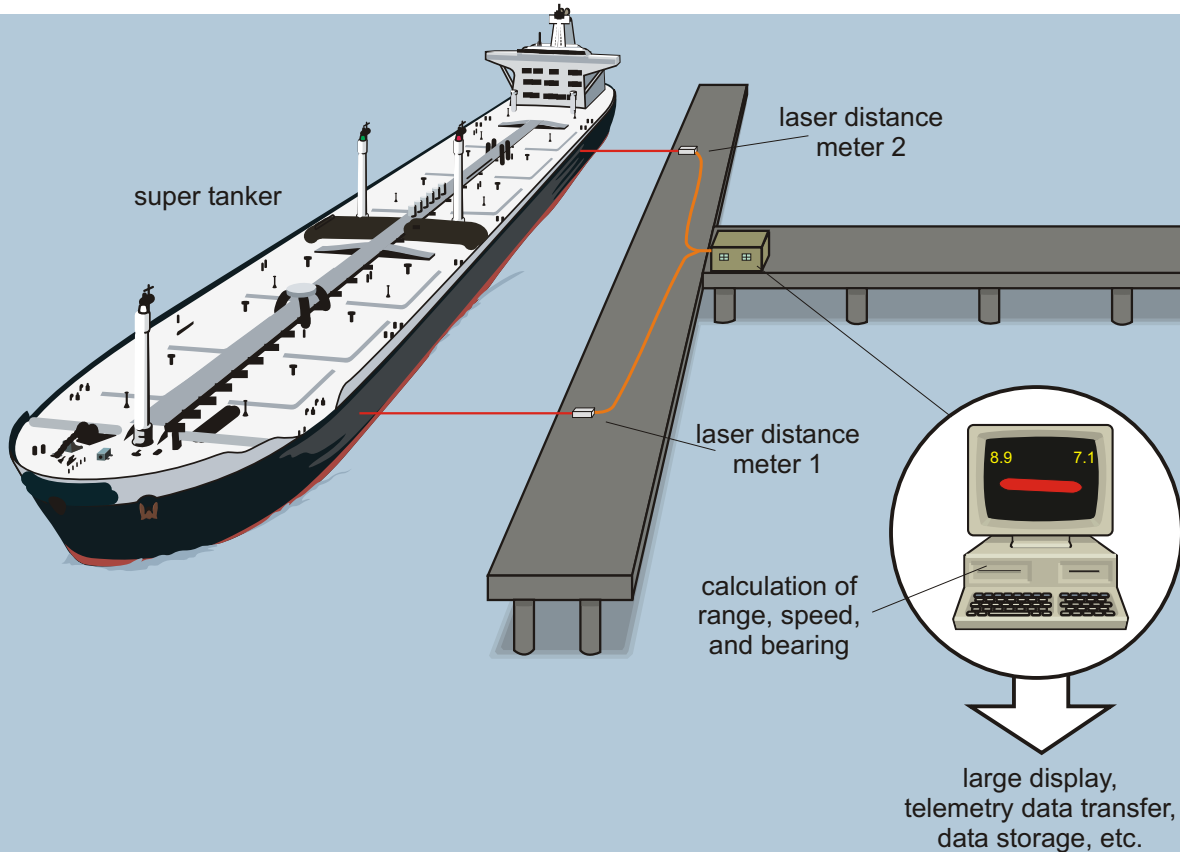


Applications of **RIEGL** Laser Instruments

Problem: Docking & Driftwarning for super tankers.

Solution: Two laser distance meters, mounted on a terminal, continuously measure the distance to the ship's hull. The data are transferred to a computer which evaluates and displays the distance, speed and bearing of the ship.



Key features:

- ✓ Highly precise
- ✓ Highly reliable
- ✓ Explosionproof
- ✓ Drift warning, environmental and mooring management control possible

Performance of Laser Distance Meter:

- ✗ Range up to 100 m for LD90-3200HiP-ATEX or LD90-3200HiP-ATEX "GAS ONLY" even with badly reflecting targets

Possible configurations:

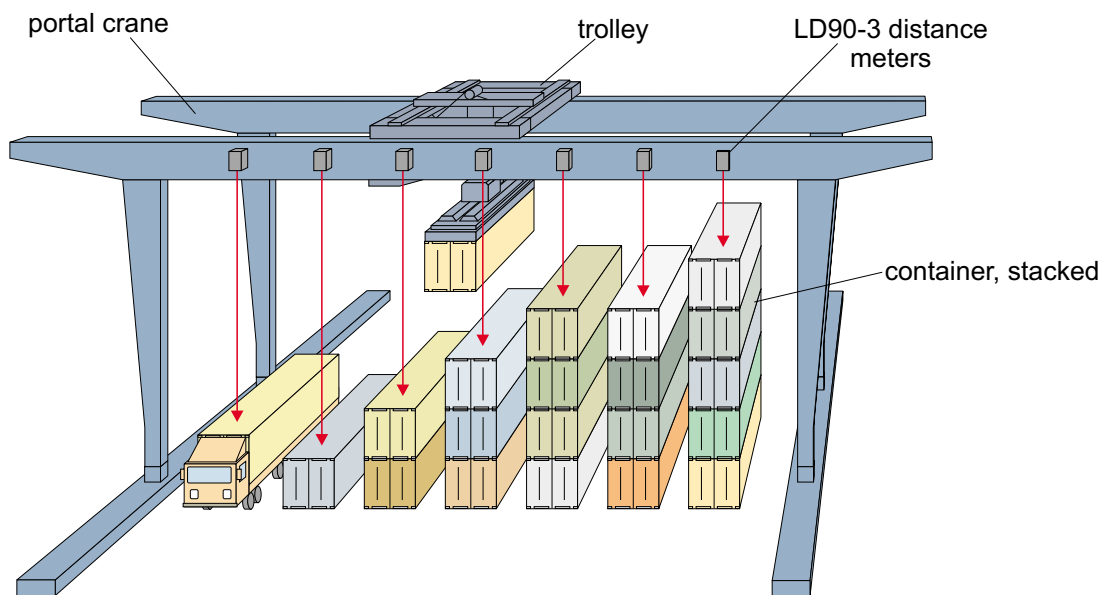
- ☞ LD90-3200HiP-ATEX specified
 - II 2G EEx de IIC T6 and
 - II 2D IP65 T85°C
 for zones 1 and 2 as well as for zones 21 and 22
- ☞ LD90-3200HiP-ATEX "GAS ONLY" equipped with red laser pointer specified
 - II 2 G EEx de IIC T6
 for zones 1 and 2 only

(Continued on the next page)

Applications of **RIEGL** Laser Instruments

Problem: Stacking profile sensor for portal crane

Solution: Mounting of several LD90-3 distance sensors looking downwards from the portal crane, providing an exact profile of the stacked containers.



Key features:

- ✓ Quicker and cheaper handling of the containers
- ✓ Automatic positioning of containers
- ✓ Collision avoidance
- ✓ Automatic inventory registration
- ✓ Unsophisticated, reliable measuring system

Performance: for LD90-3100HS

- ✗ Range up to 100 m
- ✗ Accuracy typically 2 cm
- ✗ Measurement speed up to 100 Hz

Related applications:

- Automatic crane positioning (AN-IA041)

(Continued on the next page)

Applications of **RIEGL** Laser Instruments

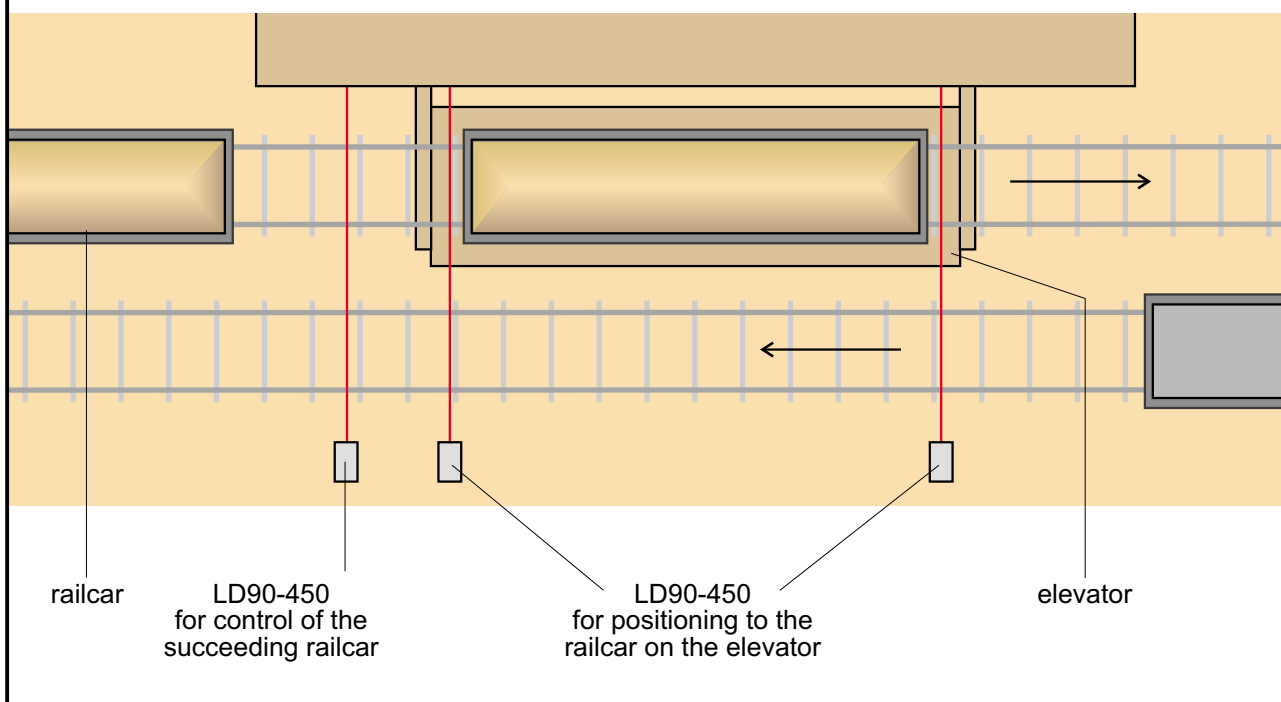
8 x LD90-3 distance sensors mounted in protecting case looking downwards from the portal crane



Applications of **RIEGL** Laser Instruments

Problem: Accurately position railcars on an elevator lift under dusty or heavy rainfall conditions.

Solution: Employ two Laser Distance Meters LD90-450 to determine the correct position of the railcar on the elevator and a third LD90-450 for monitoring the position of the succeeding railcar. With no railcar present each LD90-450 measures distance to a passive target. As a railcar moves in front of the LD90-450 its presence is detected as a change in distance measurement. A railcar in the line of sight to two LD90-450's is properly positioned on the elevator.



Key features:

- ✓ "High Penetration" feature offers reliable operation in dusty or rainy environments
- ✓ Narrow measurement beam (3 cm) offers very accurate performance in "break the beam" type applications
- ✓ Transmitter / receiver are co-located so misalignment is never a problem. Reference target is passive
- ✓ False detections are extremely unlikely as the sensor offers actual "distance" information and not simply discrete PRESENT / NOT PRESENT output.
- ✓ Fast real-time output available.

Performance: LD90-450 LD90-3200HiP

	LD90-450	LD90-3200HiP
Measuring range	up to 150 m	up to 150 m
Distance measurement accuracy	±25 mm	±50 mm
Lateral Positioning Accuracy (funktion of beamwidth)	2 cm	3 cm

Accessories:

- ☞ Industrial enclosure featuring pan/tilt mount for easy aiming, lens protection tube with fittings for air purge, 12 guage steel construction and NEMA 12 classification
- ☞ 110 VAC, 220 VAC, 24 VDC optional power supplies
- ☞ Visible beampointer to facilitate alignment

(Continued on the next page)



Application Note
AN-TA053

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Applications of **RIEGL** Laser Instruments



LD90-450
in industrial enclosure
with lens protection tube



LD90-450
in industrial enclosure (open)
with lens protection tube

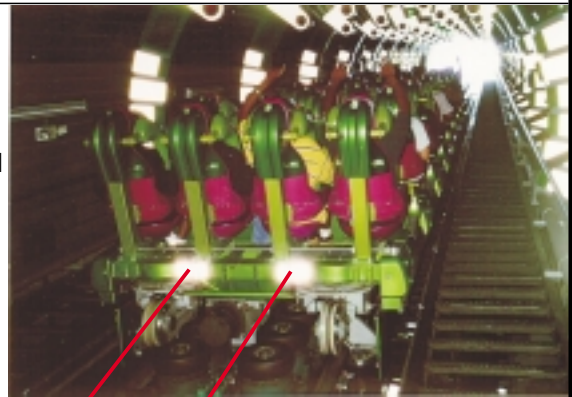
Applications of **RIEGL** Laser Instruments

Problem: Monitor position & velocity during launch of high performance roller coaster.

Solution:



cars with
reflecting foil



Laser distance & speed meter
LD90-3100VHS-FLP



Description:

The "Hulk" roller coaster is one of the newest and perhaps the only roller coaster launched "UP" the hill. In order to continuously monitor the launch velocity profile, *RIEGL* developed the unique Velocity Measurement System (VMS). Comprised of a rack mount PC and *RIEGL* LD90-3100VHS-FLP rangefinder, the VMS provides accurate position and velocity measurement throughout the launch. Two VMS systems were mounted side by side for redundancy.

Performance:

- ✗ accuracy of velocity: ± 0.1 ft/sec. (one sigma, steady state velocity)
- ✗ accuracy of position: ± 0.05 ft (one sigma)
- ✗ update time: 400 Hz
- ✗ I/O: 4-20 mA analog output, 8 discrete inputs, 8 discrete relay outputs