AUTOMATION

Compact rail handles high loads in aluminum gate application

One specialty of Youngblood Automation, a Michigan-based provider of industrial automation components, is building Maytec aluminum extrusion machine guarding and sliding guard fences. Although the specific application requirements vary (from small 10-pound sliding doors to larger 150-pound security gates) the cantilevered setup requires robust linear bearings that can handle very high moment loads.

Here's why Youngblood chose Rollon linear bearings to take on that challenge.

GUARD DESIGN REQUIREMENTS.

When constructing its sliding guards, Youngblood engineers first fix the rollers onto the structural frame and then mount the rails on the backside of the moving gate or guard panel. The guard panel is cantilevered out over the opening, allowing the guard to roll back while keeping the opening clear of any obstructions. Due to the cantilevered setup, the guards can generate moment loads up to 136 N-m spread over four rollers within the bearing, often with four rollers per bearing assembly. The bearings need to be robust enough to

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handle such high loads, and they also need to maintain rigidity, all while allowing the gate to move smoothly. Space is also a concern, as it is important to keep the guard panel as close as possible to the fence to prevent someone from reaching through the opening.

Because the frame is an aluminum extrusion and not a machined system, the top rail is bolted into place while the bottom rail is "floated" into place, meaning the panel is moved to one end, and the rail bolts are tightened. The panel is then moved to the other end, and that end is tightened. Finally, the panel is centered, and the center is tightened. This float creates a very simple setup and eliminates any binding.

With a simple adjustment of the eccentric rollers, engineers can set their desired clearance or preload on the rail and slider to change how easily the guarding moves.

ROLLON COMPACT RAIL.

To meet the various design requirements of its larger guard applications, Youngblood Automation uses Rollon's Compact Rail. For one, this bearing can handle high loads up to 15,000 N (3,370lb). With a simple adjustment of the eccentric rollers, engineers can also set their desired clearance or preload on the rail and slider to change how easily the guarding moves.

Other advantageous technical features include:

- Compact dimensions, including internal raceways
- Cold-rolled, hardened steel rails for high rigidity and long life
- Rails are ground after hardening for smooth operation
- Operating speed of up to 9 m/s
- Rail lengths of 160 to 3,600 mm
- Rail widths of 18, 28, 35, 43 and 63 mm
- Respective radial and axial load capacities of up to 15,000 and 10,000 N.

For smaller guard units, Youngblood engineers use Rollon's X-Rail, which can handle loads of up to 1,600 N. Like the Compact Rail, the X-Rail has an adjustable slider preload and compensates for deviations in mounting structure parallelism. Other technical features include corrosion resistance, compliance with FDA/USDA standards and a wide temperature range (-20 to +100 °C).

In addition to reaping the many technical benefits, Youngblood engineers appreciated how quickly and easily both the Compact and X-Rails can be assembled– and how it ultimately outperformed other telescopic rails they had used in previous applications.

For more information
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