



ERB Technologies

# Making Level Crossings Safe

In South Africa, level crossings are a major, and increasing, area of risk. A Railway Safety Regulator (RSR) 'State of Safety Report' for 2016/2017 found a 25% increase in level crossing-related occurrences for the reporting period; unsurprisingly, this has led directly to a corresponding increase in fatalities and injuries. Investigations indicate that these occurrences can be mainly attributed to the poor behavior of motor vehicle drivers and **inadequate level crossing signage**.

Stemming from this, ERB Technologies, a supplier and installer of technologically advanced railway signaling, trackside and communication products and systems to both South Africa and the rest of Sub-Saharan Africa, has responded. ERB has developed a new, advanced electronic level crossing system in collaboration with leading foreign companies. This system ensures safety, is cost effective, and complies with the new regulations. In particular, it meets the requirements of SANS 3000-2-2-1, the new railway standard for level crossings that was introduced in 2012 and which makes reference to European IEC standards and CENELEC.

## ERB Technologies Chooses HIMA

Unlike most of the existing level crossing systems which are relay based, ERB Technologies' design uses electronics technology to provide superior visibility and control. Their solution is based on HIMA's HIMatrix Safety System, which they found to be the market's best-suited product, meeting all requirements. It is South Africa's first COTS level crossing system to meet CENELEC SIL 4.

### Industry

Rail

### Description

Supplier and installer of technologically advanced railway signaling, trackside and communication products and systems to both South Africa and Sub-Saharan Africa

### Headquarters

Midrand, South Africa

The ERB/HIMA system offers many advantages to rail operators. While being cost-effective and readily available due to its COTS status, the HIMA hardware's SIL 4 (CENELEC) certification meets the EN 50126, 50128, and 50129 standards. This certification is backed by a proven track record in rail and other industries.

## SUCCESS STORY

Operators also enjoy great flexibility and freedom, as the HIMA system complies with open standards for easy interface with other vendors' equipment, while avoiding vendor lock-in. The system is modular and configurable, and with an MTBF (Mean Time Between Failure) of over 100 years, it is highly reliable, helping to reduce costs throughout the operating life. Further savings are achieved as the system is easier and faster to troubleshoot, while being easy to maintain – unlike relay systems, which required extensive physical work. During operation, Sequence of Events can also be automatically recorded.

Reliability is further enhanced through ERB Technologies' extremely sturdy, vandal-resistant, steel cabinet design, which features a double skin and forced air cooling.

### Training for HIMA Products and Functional Safety Engineer (TÜV Rheinland)

ERB Technologies' staff received HIMA product training at HIMA's representative PC & I's training facilities in Johannesburg, South Africa. Following this, two ERB engineers went on to pass the Functional Safety Engineer (TÜV Rheinland) training offered by HIMA in Dubai. They are the first engineers from South Africa's rail industry to achieve this qualification.



**2** ERB employees become the South African rail industry's first certified Functional Safety Engineers (TÜV Rheinland)

### Successful Pilot Project: BMW Rosslyn Plant, South Africa

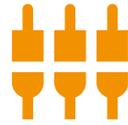
A successful pilot project has been completed, based on the first level crossing system installed at BMW's plant in Rosslyn, South Africa.

The ERB evoCROSS solution comprises:

- HIMatrix: F35 034 controller
- Three additional remote I/O modules (F2 DO 16 014, F3 AIO 8/4 014 and F3 DIO 20/8 024), connected via SafeEthernet
- SILworX software with function blocks; function blocks are locked.

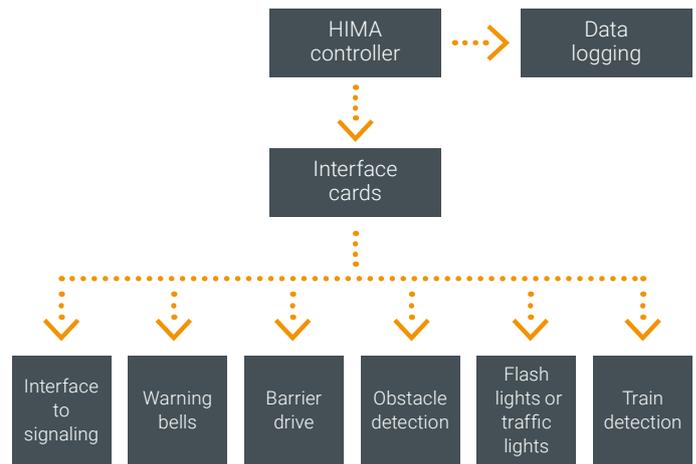
All of the HIMatrix modules have been specifically developed for the application with PCBs that have compliant coating and are suitable for operation at temperatures from -25°C to +70°C. They are also shock tested according to IEC 61373 Class 1B.

The solution provides the possibility of visualization of the system status via a SCADA system, which also enables Sequence of Events recording with Control Maestro software or via dry contact outputs. These outputs can be wired into the signaling system and sent to Central Traffic Control or can be used to drive a small indication panel on site. The BMW installation



**91** I/O channels managed by a modular COTS SIL 4 solution

includes three alarm indications within its control center, showing whether the system is normal, or has a disturbance alarm or a critical failure alarm.



#### Challenges

- Reduce incidence of rail level crossing accidents
- Achieve this with a cost-effective, reliable solution that complies with rail industry standards

#### Why HIMA?

- HIMA safety controllers free you from vendor lock-in
- Modular controllers give complete configuration control to integrators and end users
- All SIL 4 safety requirements are met in accordance with CENELEC

#### Benefits

- Vastly improved situation awareness and control through visualization of level crossing and process status
- Costs reduced by modular, robust, reliable, open standard safety solutions

#### HIMA Products and Services

- F35 034 controller
- F2 DO 16 014, F3 AIO 8/4 014 and F3 DIO 20/8 024 remote I/O modules
- SafeEthernet
- SILworX software with function blocks
- HIMA Product Training
- Functional Safety Engineer (TÜV Rheinland) training