

SAFE SENSOR TECHNOLOGY FOR THE SLIDE

SOCIAL COMMITMENT IN THE LEISURE POOL

A trainee of a leading automotive supplier helped a local sponsoring association of a leisure pool to realize a signal system for a water slide. ipf electronic provided essential technical support. But from the very beginning.

Martinrea Bergneustadt GmbH is part of the worldwide group of companies Martinrea International, which specializes in the design, development and production of lightweight structures and drive systems for the automotive industry. The company, located in Bergneustadt (North Rhine-Westphalia), employs around 920 people and manufactures chassis and body modules for well-known customers such as BMW and Mercedes.

MUCH COMMITMENT TO SOCIAL PROJECTS

Martinrea Bergneustadt is one of the companies in the region that is also active in social projects. Dominik Krieger, who works in electrical maintenance at Martinrea, explains: "We regularly organize so-called Social Days. The aim of this initiative is to inspire our trainees to get involved in social activities at the company site. For example, our training workshop made park benches and resting benches that were set up in the city. Another time, our trainees helped with construction work at a horse farm for children, to name just two examples."

SIGNAL SYSTEM TO SECURE WATER SLIDE

"The work doesn't necessarily have to be job-specific. Rather, people pitch in wherever help is needed," adds Henning Batt. The Martinrea Bergneustadt facility management employee is a member of the Bergneustadt leisure pool sponsors' association, which has been in existence for around 10 years. "As is the case with many similar sponsors, staff is scarce at our leisure pool. A large part of the activities are therefore performed by honorary employees," explains Henning Batt.

One example is the supervision of an approximately 82-meter-long slide in the outdoor area of the leisure pool, for which a person always had to be specially assigned in the past. "Since we are already short-staffed, we have considered regulating the use of the slide with a traffic light system so that the person responsible for this is freed up to supervise the pool," reports Henning Batt.

DEMONSTRATE EXPERTISE IN A DIFFERENT WAY

And since Martinrea has its Social Days, Henning Batt suggested that the company support the sponsoring association of the leisure pool in realizing the project. Julian Hooge, who was in his second year of training as an electronics technician for industrial engineering, heard about the project, was immediately enthusiastic and decided to take on the cause together with Dominik Krieger: "I had just completed my intermediate examination and found it interesting to do something different. Although it also involved electronics and I was able to put my expertise to the test, it was a completely different environment from the automotive industry," says Julian Hooge.

SENSOR SPECIALIST SUPPLIES TECHNICAL SOLUTIONS

However, solutions were still needed for the technical implementation of the project. Since Dominik Krieger from Martinrea was already in professional contact with ipf electronic, the sensor specialist from the Sauerland region heard about the project and agreed to provide support. According to Dominik Krieger, there were already concrete ideas: "At the stairway to the slide, a kind of traffic light with changing red-green signals, coupled with a sensor, was to be installed. For the slide itself, an ultrasonic sensor was planned, which, when it detects a person, ensures that the traffic light switches from red to green and thus releases the slide again. And finally, we had planned a Siemens Logo as the control system for the entire system."

TWO SENSORS PLUS MULTICOLOR LED LIGHT

ipf electronic recommended an **EM450520** RGB LED light with multi-color LEDs that change their light color by controlling the digital inputs. The luminaire, which is designed for continuous operation and has a shatterproof borosilicate glass cover, impresses among other things with its low current consumption of 250mA. A diffuse-reflection sensors **OT150470** should take over the monitoring of the staircase. The very compact solution integrates transmitter and receiver in one device and has a maximum switching distance of 1,200mm, a response time of 0.5ms and IP67 protection. The **OT150470** works with invisible infrared light, which Dominik Krieger sees as an advantage for the special application at the entrance to the slide: „This way, the sensor doesn't even arouse the interest of the bathers in the first place, which means we can largely rule out possible manipulation.“

As a solution for the chute monitoring, the parties involved also deliberately chose an **UT18002C** ultrasonic diffuse-reflection sensors with analog output (4...20mA) and a high range spectrum of 200 to 2,000mm. The sensor was to be mounted at a height of about 1.70m above the chute and was therefore difficult to reach afterwards. After installation, the analog signal could instead be evaluated directly in the controller and thus the sensor's operating range could be set very conveniently via the Klein PLC.

MUCH FREE HAND AND ALSO RESPONSIBILITY

"Setting the correct working range with the help of the control system is important, because during operation there is water in the chute that must not be detected by the sensor. In addition, the person passing the detection area of the sensor can be an adult or, for example, a child. Therefore, the device does not have a fixed switching point," explains Julian Hooge, who drew up an electrical plan in advance to determine which components were needed from the control side. Then, together with Dominik Krieger, he installed the sensors and connected them to the control system. "The entire programming of the control system was also part of my job and was a lot of fun. And in case the ultrasonic diffuse-reflection sensors should ever fail to react to a person in its detection range, I also integrated a timer function into the program so that the traffic light switches to green three minutes after the optical sensor is activated, thus releasing the slide again," explains Julian Hooge.

SUCCESSFUL PROJECT COMPLETION

The apprentice is proud of the successful completion of the project: "I had a lot of free rein and had to pay attention to everything myself so that the system would run in the end. Everything went smoothly and worked great." Henning Batt also draws a positive conclusion: "The traffic light system has been in operation since May 18. Of course, we still had to make a few fine adjustments, but after that the solution worked flawlessly. As a booster club, we are grateful for the support, because otherwise we would not be able to operate the pool economically. In addition, we welcome Martinrea's social commitment and I am all the more pleased that Julian Hooge has supported us so actively in implementing the project."



ipf electronic provided the **EM450520** RGB LED light as the „traffic light“ for the slide. The light color of the multi-color LEDs can be flexibly changed by controlling the digital inputs. In this specific case, only red and green were required. (Image: ipf electronic gmbh)

The compact **OT150470** optical diffuse-reflection sensors (above), which operate with non-visible infrared light, are used to monitor the staircase. The transmitter and receiver are integrated in a single device and have a maximum switching distance of 1,200mm. The **UT18002C** ultrasonic diffuse-reflection sensors, on the other hand, with a range of up to 2,000mm, is mounted on the slide. (Image: ipf electronic gmbh)



The trainee of Martinrea Bergneustadt, Julian Hooge (here programming the control system for the traffic lights), essentially took over the planning as well as the implementation of the project and thus helped the sponsoring association of the leisure pool. (Photo: Martinrea Bergneustadt GmbH)



Signal evaluation and further processing of the two sensors is handled by a Siemens Logo connected to the RGB LED signal lamp, with Julian Hooge also handling the complete wiring here. (Photo: Martinrea Bergneustadt GmbH)



The ultrasonic sensor was mounted above the chute and was then difficult to reach. However, since the analog signal (4...20mA) could be evaluated directly in the control system, the sensor's operating range could be set very conveniently without having to constantly enter the chute for this purpose. (Photo: Martinrea Bergneustadt GmbH)



Are very satisfied with the results of the project: Henning Batt, Dominik Krieger and Julian Hooge (from left). (Photo: Martinrea Bergneustadt GmbH)