

EMERGENCY SUPPLY FOR POWER PLANT



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The retrofit of the motor control systems (motor control centre, or MCC) from this Belgian nuclear power station was driven by the new stringent laws and regulations after the meltdown from one of the nuclear reactors in Fukushima. Requirements were tightened on all nuclear power plants across the world. What was made clear by the Fukushima disaster was that nuclear power plants were not designed to withstand the impact of a tsunami, because when the control system of the Japanese power station was flooded, the cooling system fell out with all its consequences.

All nuclear power plants across the world are under strict supervision of the International Atomic Energy Agency (IAEA) After Fukushima, all plants were immediately subjected to heavier stress tests and procedures. Following the results of those tests, the IAEA decreed among other things that all stations should be equipped with additional emergency power supplies, even if there was the smallest risk of a flooding by a tsunami.

Interesting challenge

Technicians confronted with these new regulations were facing an interesting challenge to upgrade their thirty to forty year old assets.

That's when Santon Circuit Breaker Services were asked to give their opinion on upgrading the existing (thirty years old) MCCs, they faced a considerable challenge. Gerard van Zeijl, general manager at Santon Circuit Breaker Services: "An MCC gives electric power from a power supply to a motor or other equipment. You can imagine that in a complex nuclear power plant there are several thousands of these units. An important part of such a MCC is the circuit breaker that couples the power supply to the respective pump or motor. The existing circuit breakers and MCC drawers are more than 25 years old and still do their job well. However, the new rules of the regulatory body requires that the most critical MCCs must be supplied in the event of an emergency from outside by a mobile supply."

Fifty of these MCCs drawers were labelled as such. It would be rather expensive to replace the assets in their entirety, in addition, they would then have to be taken out of operation thus shutting down the entire plant. We therefore opted for a retrofit of the MCC drawer which was cheaper but also more practical because the plant could simply continue running.

Replicate the existing MCC drawers

Simply stated, we had to replicate the existing MCC drawers but then provide them with an outlet where the plug can be put in to supply the installation in the event of an emergency. Making that replica was not so easy because many of the components were obsolete. In addition, we wanted, where possible, to use new components. The first step was to recreate the drawer. There were no drawings and it was not possible to use a 3D scanner for example. The only way left was to measure them in the old-fashioned way.

A matter of pressing a button

An engineer needed about a hundred and twenty hours to re-design the drawer, piece by piece in a 3D CAD package. The actual printing was then a matter of pressing a button. The modern material used met specific requirements for electrical installations and in particular the dielectric properties.

They do their work when it is needed

As regards technology, safety and ergonomics, the new drawers leaves their predecessor far behind. However, the probability that they will actually be used is not high. Upon Now they have been used only in the periodic safety drills. Nevertheless, we make sure that the drawers remain in top condition and regularly test the function so that they do their work when it is needed.

So if you ever are considering upgrading existing switchgear or have troubles finding spare parts for your electrical equipment, please consider Santon Circuit Breaker Services BV.

