

A customised contactor for the Foundries of Poitou.

A FEW MONTHS AGO, LENOIR-ELEC COMMISSIONED A NEW CONTACTOR FOR THE MOTOR CRANKCASE PRODUCTION LINE OF THE FOUNDERIES OF POITOU. THANKS TO ITS EXPERTISE, LENOIR-ELEC BROUGHT AN INNOVATIVE AND CUSTOMISED SOLUTION BASED ON THE USE OF STANDARD COMPONENTS.

A production process heavily disturbed by one defective contactor

For many years, the cast iron production line has been reliant on the numerous hazards of the bar contactor supplying the 3 raw material smelters of the two electrical installations (12 Megawatts, 3200Volts , 4000Amps).



This double bar contactor comprising 32 poles (24 'voltage' poles and 8 'current' poles) was not suitable for such intensive duty cycles. Solicited every 12 minutes for energising the furnaces in an aggressive environment, it was at the origin of regular production stops, requesting a frequent and costly preventive maintenance. Every three weeks, it was compulsory to carry out a complete check up, to change all the defective contacts and then to process with a complete new adjustment of the contactor.

A solution that is hard to find

Jean-Noël Girault, Electric and Automation Maintenance Manager of the Fusion division at the Foundries of Poitou has been searching for a long time, the solution enabling the production not to be reliant on the failures of this contactor anymore. But particularities in the installation and power required (3000V – 4000A) made impossible any resort to a standard solution. On the other hand, large manufacturers were very little inclined to invest in the development

of such a special product.

Lenoir Elec takes up the challenge

In 1998, during ELEC exhibition, Jean-Noël Girault foresees a possible solution when discovering on Lenoir Elec stand a high power bar contactor weighing almost 1 ton. Problem is exposed and rapidly appointment is made for a first site discovery and study of the main parameters. From the very beginning of the project, Lenoir Elec used all its expertise for a customised design from existing standard components.

A strategic choice : a single bar contactor

After analysis of the whole data, Lenoir Elec proposes a new model of contactor on a single bar which enabled to reduce the number of contacts to 10 only. This contact limitation (6 'voltage' poles and 4 'current' poles) was to limit the sources of failure, ease the mechanical fixing of the contactor and above all to simplify notably the adjustments. Confident in its know-how and in the validity of its concept, Lenoir Elec accepts to manufacture a life-sized prototype and to test it under real conditions of use, that is to say 3000V, 4000A. During a whole day, the prototype undergoes successfully multiple tests to check the good behaviour of the contacts and to confirm the breaking capacity of the contactor.

Conclusive tests at 20000A instead of 4000A

In the perspective of an advanced partnership, Lenoir Elec accommodates with the Foundry new request to have the prototype tested again but that time at 5 times the normal nominal current that is to say 20000A instead of 4000A under 3200Volts. Those tests have been performed at EDF Les Renardières test platform close to Ecuelles (77), France in January 2000, a platform that is entirely dedicated to this type of tests. During one full day, the prototype has undergone again without any damages, a series of tests with currents ramping up to 25000A, evidencing the correct initial choices

in design (6 'voltage' poles/4 'current' poles). Only minor arrangements related to the contact insulation have been carried out to increase the dielectric rigidity.

A simplified installation

The whole tests being proven conclusive and the breaking currents checked and validated, Lenoir Elec delivers and commissions the final contactor in June 2000; installation and adjustments being facilitated by the single bar structure and the contact principle that had been chosen.

Accrued performances and cost reduction: a more than positive assessment

The Foundries of Poitou could only congratulate themselves for such a choice. More performing, Lenoir Elec contactor purchase price is cheaper and reduces considerably maintenance costs. This one has gone beyond the expectations of the Foundry.



Type: CBA 98 4500A 2.0
Operating voltage: 3500Vac, Ith : 4500A
Breaking current @ $\cos \varphi = 0, I : 25 \text{ kA}$

Whereas initial limit for contact replacement had been fixed to 6 months, the installation ran smoothly during 9 months! These 10 contacts have only been replaced in May 2001, as part of a preventive maintenance programme mandatory for the whole production line, starting a new cycle. Strengthened by this success, two other achievements have followed in December 2000 and October 2001.