

Within rehabilitation of the Unit 3 of “Thermal Power Plant Nikola Tesla”, started on July 1st, one of the very important activities in the realization of this project, split in 9 LOTs, will certainly be the capital overhaul including corset replacement. All scheduled activities for the generator and electric power units will be performed within the LOT 3, of total value of more than 13 million euros.

The most significant event in this stage occurred on July 24th, when the new generator corset for the Unit 3 of the TPP NT “A”.

The corset production, pursuant to the Contract signed in mid-2011, between TPPNT (PD TENT) and the company Alstom, was initially commenced in their factory in Vroclav, Poland, but due to noticed faults in the design, it was transferred into Alstom Operational Unit in France. Only after it was taken from the production line of this Operational Units, additional factory tests (FAT-factory acceptance test), performed in mid-May this year, showed the product is of desired quality and that it has all necessary characteristics in accordance with the valid international standards.

The unloading of the corset has been performed by means of two telescopic cranes, of capacity 130 and 200 tons. The entire unloading operation was done in ten hours, but including previous several day analysis and preparation of the auxiliary equipment and the means required for the unloading.

- We did not have any experience in similar projects, but TPPNT’s team of engineers has prepared by using the experience acquired from others in the surrounding countries, such as Bosnia and Herzegovina and Slovenia, which had similar projects realized in previous years - said Mr. Glišo Klasnić, the manager of LOT 3.

The transport of the equipment and the unloading thereof, according to him, is just the first and minor step in the array of activities to be carried out in the following two to three months until the corset has been installed to the point of exploitation. The latest replacement of the complete generators (corset is only a part of the stator) in Obrenovac Power Plants, was performed in late 80s of the 20th century - after the damage incurred on turbo aggregate of the Unit A6, occurred in December 1985, - in one piece, not in parts as is the case now.

- Currently the first stage of the dismantling works is almost complete, and will be done by extracting the rotor and dismantling of the stator connectivity box. These works of dismantling and mounting the mechanical and electrical equipment, carried out by the employees of TPPNT, were completed in late July. Afterwards, the preparation for lifting the existing generator stator will ensue, as well as the splitting the three-part external housing later to remain in operation, taking out the old corset of the mechanical workshop, which will be the next big enterprise to commence on August 18th, - explained Mr. Glišo Klasnić. At that time, the new corset is supposed, according to Mr. Klasnić, to be pushed by means of special tools and hydraulic cylinders to the place of loading into the mechanical workshop,

next to the transformer 3AT, where, in the meantime, the steel structure will be made to provide lifting and putting the corset into the mechanical workshop to the level of nine meters.

- Prior to lifting the corset to this height, it is required to turn it by 90 degrees, and to place it under the structure and then lift it. After lifting to the level of nine meters of the mechanical workshop, the placing of components of the external housing will take place in order to tighten all up, and finally it is necessary to position it right and to lower it on the turbo table, where the generator stator is placed at the level of nine meters. Then, its completing follows, and the entire work, according to the plan, is to be finished by the end of October 2014 - said Mr. Klasnić.

The new corset, 8 million euros worth, does not represent just a replacement of an old corset with the new one; it is an improved and more quality version with definitely better performances than its predecessor.

The new device is a far better quality one, manufactured according to new technologies, design, and of an improved structure, with increased installed power of 389 MVA, with hollow conductors inside the stator winding, made of stainless steel, not copper, as was the old one, which facilitates efficient cooling, and thus greater installed power - pointed out Mr. Glišo Klasnić.

With the new design containing steel pipes, more freedom in exploitation is provided, i.e. there is no limiting factor from the viewpoint of water quality. These steel pipes result in increased stiffness of the rods, reflecting to its natural frequencies of the winding, and thus the very vibration state of the entire machine, giving the corset additional quality and providing quieter operation.

- The corset is equipped with an increased number of temperature sensors for surveillance, thus giving the display of all happening inside it; the temperature of copper is measured, temperature of iron, of output water of each stator rod, temperature of lateral covers for clamping the magnetic core, and it has an installed sensor for magnetic flux control of the rotor, by which the rotor proper operation is checked, and the previous one did not have this - said Mr. Klasnić and added that the new design of this device, however, required a significant adaptation of particular auxiliary generator systems.

#### Supervisors

In late July, a backup generator rotor was sent to the factory overhaul. In the company for maintenance of rotors, Turbocare, in Poland, the replacement of rotor bandage caps will be carried out, as well as of sliding rings, recheck of insulation system of windings, and finally the test of operation at 360 revolutions and dynamic balancing. The quality of dismantling-mounting works will be monitored by two supervisors engaged by Alstom, and the very service of lifting and lowering heavy loads is to be conducted by "ZPE", Overhaul Institute of Katowica, Poland.