

Successfully realized, comprehensive project of a young mechanical engineer, Mr. Božidar Ikonić enabled replacement of the original gearbox from the bucket wheel drive by a similar one, as the new gearbox has been running perfectly so far.

Owing to the project that the young Božidar Ikonić developed with the support of his superiors Mimir Radišić, the Chief Mechanical Engineer and Dejan Radojević, Head of Mechanical and Technical Preparation Service of Baroševac, the reconstruction of the bucket wheel gearbox on the BWE “Glodar 10” operating in the OPM Field “D”, was performed during the April overhaul. The imposing structure of nearly 30 tons was replaced by a respective gearbox from the excavator SRs 1200 of the same power and the same manufacturer, and it has been working since without any problems. Although it may need an entire season without downtimes to be quite certain, after several months of operation all indications suggest that this seemingly risky venture was not only justified but also very successful.

Namely, for many years since the installment, original gearbox used to give a headache to employees of the Field “D”, having caused numerous downtimes that recently amounted to over 20 hours per month. According to the experts, the excavator produced in 1982 was generally in good condition when it in 2007 started to operate at the OPM of Kolubara, although technical solutions of its certain elements were outdated. This was especially true for the gearbox, the shortcomings of which were detected at the very installation. The ensuing requests for its replacement were never honored, however, due to lack of funds. Mr. Vladan Janković, Assistant Manager of Mechanical Maintenance at Field “D”, explains that the problems in operation that appeared soon were reflected through rapid deterioration of bearings on the input shaft, which later spread to the other gearbox stages. Looking for a solution, the Faculty of Mechanical Engineering was consulted, that responded with an altered design that made a slight improvement in practice, but the main problem remained unsolved.

- Finally, on the basis of similarity of the bucket wheel shafts, we came up with the idea to replace the existing gearbox with its counterpart from the reserves for a similar machine, and assigned the task of reconstruction to the Department for Mechanical and Technical Preparation of Baroševac - explained Mr. Jankovic.

It was then when Mr. Ikonić, who was hired last year by the Mining Basin “Kolubara” under the EPS project for hiring “Hundred young professionals”, performed a thorough analysis of the existing documentation and developed Detailed design that included creation of a 3D model for bucket wheel boom and both old and new gearbox. He also analyzed potential structural problems in connection with the replacement, and elaborated their solutions.

- The reconstruction involved a significant processing of the hollow shaft and the gearbox structure, as well as manufacture of new parts by the company Metal, which managed to complete the task in just ten days. In the case of mechanical structures, however, it is often

that the designed and built states of the mining equipment differ. Given that and the fact that I worked at the scarcity of original documentation, no matter how carefully designer part of the job is done, there is always a great risk that the designed and accordingly manufactured do not match the situation on the site. In this case, however, the reconstructed gearbox fitted in millimeter the place of the original, which is a great success when you wrestle with thus clumsy mining machinery. I devoted several months of work to the whole project development, but successful and fast implementation with no downtimes recorded so far, are the greatest satisfaction – said Mr. Ikonić.

The success of this project that enabled smooth operation of the one of the largest mining machines is also reflected in a significant financial savings, since its development has cost €50,000 compared to almost one million euros what would be paid otherwise for a new gearbox.

Source; RBK