SOME ASPECTS REGARDING THE TECHNICAL EXPERTISE OF THE ROTATION PLATFORM OF THE COAL EXTRACTION MACHINE

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Abstract: *In this paper presents the technical state in which the rotating platform of the coal-mining machine is located, after performing the technical expertise. The rehabilitation to which the rotating platform will be subjected will be accomplished by performing the intervention works that will return to its normal operating parameters. The paper presents the defects found on the rotating platform as well as the proposed solutions for its repair.*

Keywords: equipment, coal, modernization, interventions.

1. INTRODUCTORY NOTES REGARDING THE ROTATION PLATFORM

The rotating platform is the subassembly that supports and forms part of the superstructure of the coal-extraction machine [1], [2], [3] and [4], being of the type welded caisson on which the ladder, the inclined arm and the equilibrium system will be mounted. This system consists of a pillar, a thrusts, a list box and a platform for the lift mechanism for ladder, which together with the lifting cable and the safety lever provide balance.
The rotating platform (fig. 1), as a welded subassembly, is mounted above the rotating bearing, for thats the following assemblies are to be mounted:

a. the strength of metallic construction: the ladder with the three subassemblies, the main and secondary spillways, the mast (the pillar); the balance arm (counter-arm) on which the upper lifting platform (the balancing weights electric box and the booth bracket) has mounted. To these will check stairs and access passages.

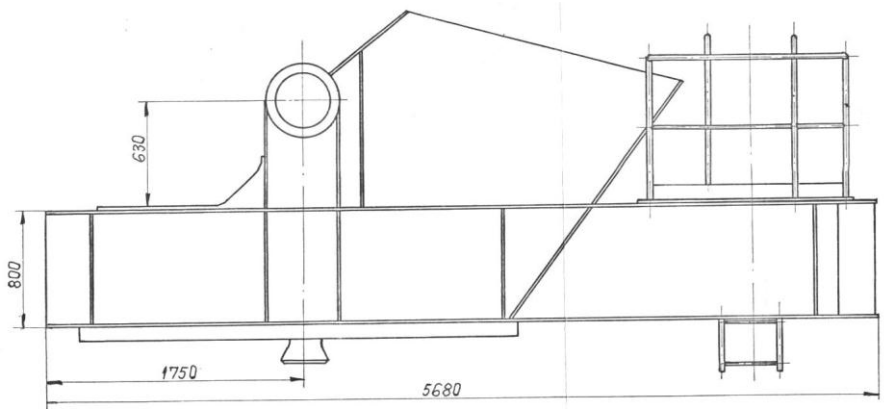

Fig. 1. The drawing for lateral view of the rotating platform.

b. from mechanisms: the rotation mechanism; the slewing reducer; the attack sprocket; rotating bearing which makes the connection with supportive tripod with the toothed crown; the lifting mechanism with all its components. As welded subassemblies, rotating platform is considered the center of the coal extraction machine, being one of the most in demand at the upper part which rotates.

2. FOUND DEFECTS AT THE ROTATING PLATFORM

Following the technical expertise of the rotary platform of the coal-mining machine, a number of technical irregularities and malfunctions [5],[6]. Thus, the positioning of lifting brackets by means of presses, when changing the bearing is wrongly performed on the coal extraction machine, fig.2,a.

a **b**

Fig.2. Placement of supports: a-incorrect; b-correct.

Their correct position was executed on a machine in another device, with a design that complied who respect the closure of the efforts in the building nodes on the part side, rear, fig. 2, b.

a b

Fig.3. Execution of lifting bracket welding.

It has also been found that the execution of the welding of the lifting brackets is wrong being made in front, from two points (correct is in the face at one point). Execution must be done at a point, on its face, providing 3-point support, with the correct support control. The welds between the sloping soles and the upper and lower plates of the platform on the outside, fig.4, right-left have defects (on US control) on both the upper and the lower ones - they will restore to repair on both sides of the main beams.

Fig.4. Welds between inclined soles and the top and bottom plates of the platform**.**

Instead, in controlling the weld on the upper base plate, it was found that it has no

defects. The welding rehabilitation will be done by cutting, then it will be cleaned by polishing and and it will be done the control with penetrating liquids (LP) of the area, and finally a new welding.

The hardnesses, for the welded of type head-to-head joint on the upper plate of the rotating platform, are the normal ones, with the welding properly executed having the basic materials listed in the basic documentation. The control with Lp and US did not reveal defects that to did not meet the quality class [7], and [8].

Table 1. Determination of weld hardness between inclined soles and plates.

Sudura Cap la cap Duritati [HB]		MB1	ZIT 1	MA	ZIT 2	MB 2
	1	141	121	128	133	141
	2	150	115	141	119	145
	3	134	111	150	129	129
	4	136	127	153	137	130

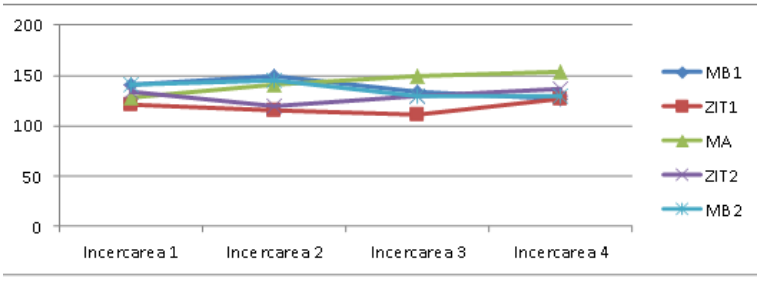

Fig.5. Determining the hardness values graph.

When assembling the balancing arm on the rotating platform with bolts, it was found that the clamping system of the soles and the core of the "I" welded beam profile between the two subassemblies, has been realized with IP (IR) group 10.9 screws. Also, there was found a very advanced oxidation of the heart on the inner side, at catching on the upper base plate, but also between the strap and the sole. Here it is necessary the plating on the inside, after cleaning and measuring, followed by anticorrosive protection.

Fig.5. Bookmarks with the red paint of the screws that vibrates.

They have been checking the screws by the impulse method and where the screws vibrated, it was necessary to check them with the torque wrench set at 1.2 * Mtn, fig.5. The screws that vibrated were marked with red paint. Verification of the bolts by this method was repeated on both joists in the joint construction on both the left and the right side of the metal construction.

For reinforcement plating, the newly designed solution and consumptions will be introduced, including the replacement screws and straps on the joint of the soles.

Inside the platform, in the clamping area, although the side plates do not have permanent contact with water, rusting the material has occurred since they have not been dyed. On the grip plate of the bearing, the screws are strongly corroded, in this area humidity

and coal dust had a visible destructive role. The same phenomenon is also visible when the bearing is held on the support tripod.

3. CONCLUSIONS

A series of conclusions can be drawn from the above, namely:

The wrong execution of the two-point lifting supports does not support the support tripod, deforming or even even leading to operating accidents. For this reason, the execution must be done at a point, on its face, providing 3-point support, with the correct support control.

It is necessary to rehabilitation the welds and the cleaning, painting and sealing operation by installing the missing covers for both subassemblies (it will be necessary to change the electrical cables route with their passage through the presetting and laying on a structure that will definitely avoid the opening holes).

The remediation assembling will be done with the car supported by successive replacements in the following order: on the lower sole, the upper sole and the on the heart's profile of in the beam the welded, first on the left and then on the right.

Reabilitarea ansamblului va fi efectuată pe ambele grinzi de formă "I" și vor fi efectuate reparații pentru celelalte mecanisme montate pe platforma de rotație, iar balustradele de pe platforma de rotație vor fi reparate.

Inside the platform, the soles extension on the main beams of the balance arm (counter-arm) does not show any visible defects, to the repair caps are made that will not allow any accumulation of coal dust in the inside of the rotating platform.

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