

ASPECTS REGARDING TECHNICAL EXPERTISE BALACING ARM (COUNTERBLADE) OF COAL MINING MACHINE

Lecturer PhD Eng. Alin STĂNCIOIU, University „ Constantin Brancusi” from Targu-Jiu, ROMANIA, stancioiualin09@gmail.com

Professor PhD Eng. Marius Liviu CÎRȚÎNĂ, University „ Constantin Brancusi” from Targu-Jiu, ROMANIA, cirtinaliviu@gmail.com

Lecturer PhD Eng. Constanța RĂDULESCU, University „ Constantin Brancusi” from Targu-Jiu, ROMANIA, rpc10gj@gmail.com

Abstract: : In this paper presents the technical condition wherein the balancing arm the (counterblade) is from the coal mining machine after we made the technical expertise. The rehabilitation to which the balancing arm will be subjected will be done by performing the intervention works that will restore both the structural part and the functional part in the normal operating parameters. The paper presents the defects found in the balancing arm as well as the proposed solutions for its repair.

Keywords: equipment, coal, modernization, interventions.

1. INTRODUCTORY NOTIONS REGARDING BALACING ARM

It has the role of linking the CM between the rotating platform and the platform of the lifting mechanism that contains the luggage box, which connects the support rails to the cabs. As a metal construction it is a space beam formed by two "I" profiles in welded steel constructions, which are separated by two fields of positioning and spatial stiffening.

The main inclined beams are placed at the bottom on the rotating platform and support at the top top platform for the elinde mechanism. Fig. 1-3 shows the subassembly.

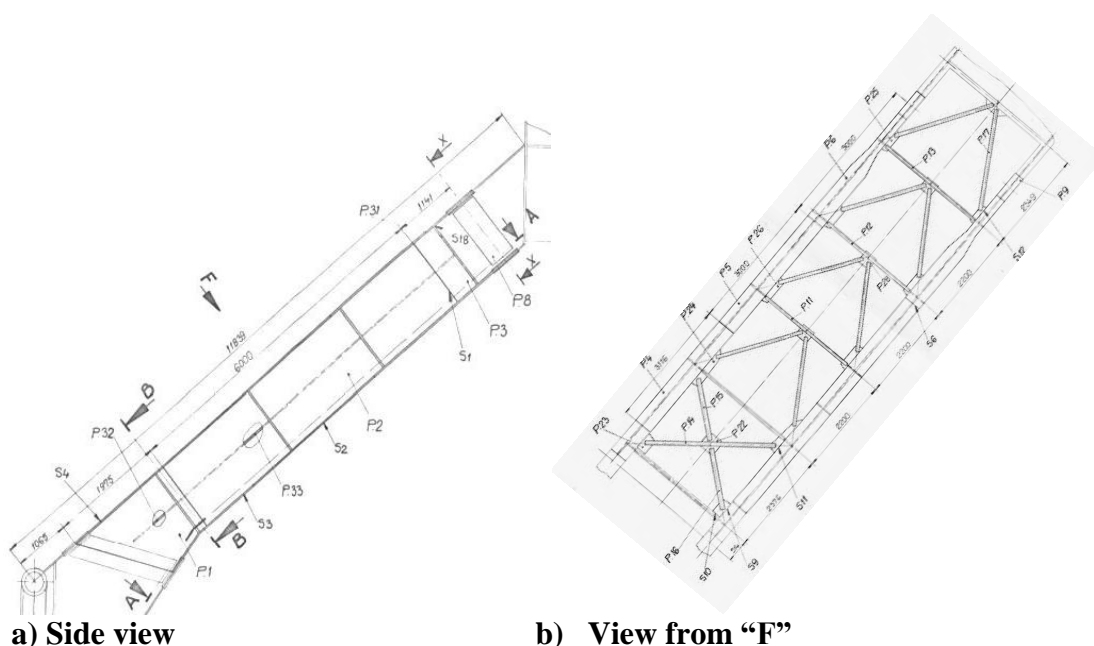
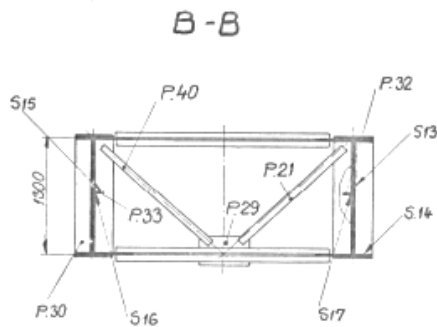


Fig.1



Sect. "B-B"
Fig.2

2. CONFIGURATION OF THE BALANCING ARM

The protection between the main beams with a stiffening structure consisting of diagonals and horizontal supports, and at the bottom they have a perpendicular contour on the axis of the arm in the area of the rotation mechanism to strengthen the beam in the area where the lateral forces occur when changing the direction of rotation due to the balancing lever but and the weight of the welded assemblies located at the top.



Fig.3 Space view (from side to bottom)

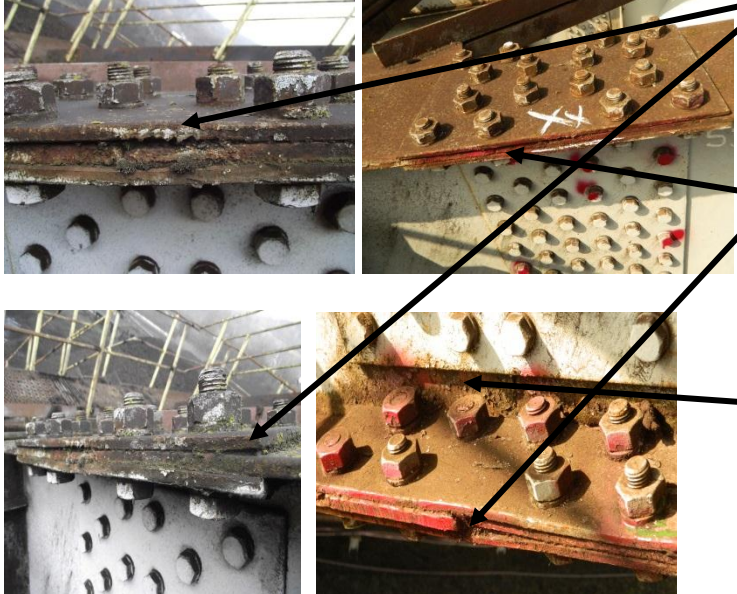
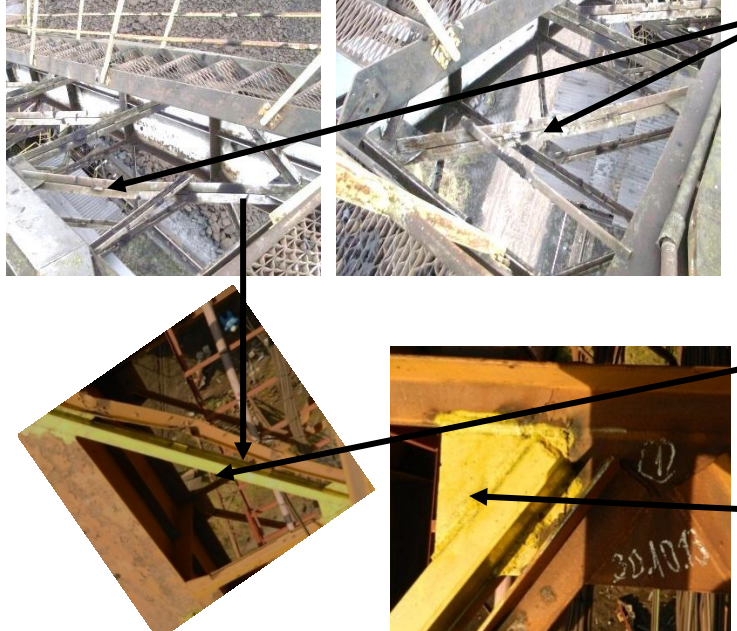
The upper side of the balance arm rises axially by means of the upper platform for the lifting mechanism.



Fig.4 Gripping the rotating platform side and back

The gripping of the rotating platform was presented with the observations and the conclusions from the previous chapter, the arm and the upper platform are presented.

3. PROPOSALS AND REMEDIATIONS

Pictures with defects- Observations	Proposals And Remediations
	<p>The rust that attacked the IP screws assembly both at the center and the edge of the deformed flap.</p> <p>Places marked with red paint to make clear the nonconformities of the joint.</p> <p>Areas in the core of the main beam attacked by rust and which will be mechanically cleaned (for example with a rotary brush), metallic gloss and will protect against corrosion.</p>
Pictures with defects- Observations	Proposals And Remediations
	<p>Diagonal in the penultimate field at the top to the upper platform (leash box) deformed due to the moments when passing over zero when changing the direction of rotation of the superstructure.</p> <p>The verified technical solution (CS Galati-20.10.2013) is the diagonals doubling in the immediate vicinity of the central gusset enlargement.</p>

4. CONCLUSIONS

- 1) It is also proposed to stiffen in a perpendicular plane on the "X" arm axis with gussets attached to the main beams of the laminated cornice beams: "L 100 x 100 x 10" and the stiffening plate at the intersection on the construction axis..
- 2) Doubling the deformed, lateral diagonals and keeping the deformed in the position, a technically applied and verified solution in 2013 at "Arcelor Mittal Galati.
- 3) Replace all screws from defective joints with screws specified in the documentation.

5. REFERENCES

1. Cîrîţnă Liviu Marius, Stăncioiu A., Rădulescu C - Aspects regarding expertise of the orizontalization device of command cabine of the coal mining machine - Confereng 2018, Analele Universitatii „Constantin Brancusi,, din Targu-Jiu, Nr.1/2018, pg.111-114, ISSN 1842 – 4856 - http://www.utgjiu.ro/rev_ing/pdf/2018-2/18_LMC~1.pdf
2. Cîrîţnă Liviu Marius, Rădulescu C., Stăncioiu - Aspects regarding expertise the mechanism of riding of elinde from the coal extraction machine A- Confereng 2018, Analele Universitatii „Constantin Brancusi,, din Targu-Jiu, Nr.1/2018, pg.115-118, ISSN 1842 – 4856 - http://www.utgjiu.ro/rev_ing/pdf/2018-2/19_LMC~1.pdf
3. Rădulescu C., Cîrîţnă L.M., Stăncioiu – Aspects regarding the expertise of lifting-descent mechanism platform of a coal extraction machine – Part I - Confereng 2018, Analele Universitatii „Constantin Brancusi,, din Targu-Jiu, Nr.1/2018, pg.149-152, ISSN 1842 – 4856 - http://www.utgjiu.ro/rev_ing/pdf/2018-2/26_CRA~1.pdf
4. Rădulescu C., Cîrîţnă L.M., Stăncioiu – Aspects regarding the expertise of lifting-descent mechanism platform of a coal extraction machine – Part II - Confereng 2018, Analele Universitatii „Constantin Brancusi,, din Targu-Jiu, Nr.1/2018, pg.153-156, ISSN 1842 – 4856 - http://www.utgjiu.ro/rev_ing/pdf/2018-2/27_CRA~1.pdf
5. Stăncioiu A., Cîrîţnă L.M., Rădulescu C. ASPECTS RELATING TO EXPERTISE OF THE MAST COAL MINING MACHINES – THE FIRST PART -- Confereng 2018, Analele Universitatii „Constantin Brancusi,, din Targu-Jiu, Nr.1/2018, pg.167-170, ISSN 1842 – 4856 - http://www.utgjiu.ro/rev_ing/pdf/2018-2/30_AST~1.pdf
6. Stăncioiu A., Cîrîţnă L.M., Rădulescu C. ASPECTS RELATING TO EXPERTISE OF THE MAST COAL MINING MACHINES – THE FIRST PART -- Confereng 2018, Analele Universitatii „Constantin Brancusi,, din Targu-Jiu, Nr.1/2018, pg.171-174, ISSN 1842 – 4856 - http://www.utgjiu.ro/rev_ing/pdf/2018-2/30_AST~1.pdf
7. Stăncioiu,A., Nioata A., Rehabilitation of M4A coal extraction machine - Analele Universităţii „Constantin Brâncuşi,, Tg-Jiu, pg.56-59, Nr.3, nov. 2017, Editura Academica Brancusi, ISSN1842-4856.
8. Kuzneţov, V. S., Ponomarev, V. A. – Universalnovo-sbornie prisposoblenia. Moskva, Maşino-stroenie, 1984.
9. Lange, K., – Lehrbuch der Umformtechnik. Berlin, Springer-Verlag, 1985.
10. Stăncioiu,A., Şontea, S., -Studies/investigations cocerning the durability of the nitrided cutting tools within the tehnological process of the punching/stamping, 02-04 september 2002, Vrnjacka Banja, Yugoslavia.
11. Stăncioiu,A., Şontea, S.,- Studies/investigations concerning wearing effect of the tools on the forces within the punching/stamping process , 02-04 september 2002, Vrnjacka Banja, Yugoslavia.
12. Cîrîţnă, L.M., Militaru, C., Rădulescu, C. - Study of compensation errors due totemperatures, as elements that are component of the chains of dimensions formed at assembly, 7th Youth Symposium on Experimental Solid Mechanics, Wojcieszyce, Poland 14-17mai, 2008.