

TECHNOLOGIC LINE FOR PUMPING AND TRANSPORT OF COAL SLURRIES FROM SUMP CROSSCUTS TO RAW COAL

Use and description:

This technologic line has been designed and constructed for preparing the sediments- slurries from sump crosscuts for piping transport and adding to extracted raw coal (in skip bunker). There are a few variants of this technology depending on the employer's possibilities from the technical equipment availability, crosscuts disposition etc. point of view. The advantage of this technology is the reducing of physically demanding work, increasing of work productivity and removal of other handling with slurries both underground and also on mine surface. In addition, using this technology, the earlier waste material is financially re-evaluated and environmentally friendly liquidation of coal slurries is achieved. Before using this technology, the project is worked out, slurry samples withdrawn and analysed and assessment of other information influencing its use is done.

Main components of the technologic line:

- a) **Hydraulic agitator ČH 1** – product of the KOEXPRO OSTRAVA, a.s. company, consisting of opposite direction rotating screws driven with two hydraulic motors and fastened to the frame of the screw pump in area neighbouring the pump suction.
- b) **Pump sets type KTX** – products of the KOEXPRO OSTRAVA, a.s. company, e.g. self- suction screw pumps with hydraulic drive (KTX 80 N) for piping transport of slurries on limited distance, and further piston pump sets (KTX 150) transporting the slurries on long distance and big elevation.
- c) **Manipulator**, functioned as mobile carrier of the ČH 1 and the screw pump used type KTX enabling to remove the slurries from the entire sump crosscut profile.

Possible solutions:

- d) **VARIANT I – Floor mounted rail handling equipment type MZK 3**, product of the KOEXPRO OSTRAVA, a.s. company – aggregated, hydraulically controlled equipment mounted on the rail undercarriage and equipped with necessary technology (hydraulic aggregate, hydraulic agitator ČH 1, pump KTX 80 N or KTX 125 N with accessories). This equipment represents complex solution of handling and pumping the slurries in sump crosscut workplace.
VARIANTA II – tailor made handling equipment of the employer (mine) ensuring the necessary handling, e.g. travel and horizontal and vertical movement of the agitator and pump (products of the KOEXPRO OSTRAVA, a.s. company).
- e) **Components of piping transport** – transport piping sufficiently sized and leakage free in coupling parts. All changes of piping direction must be gradual and the line must be equipped with accessories (measuring pieces, inserting pieces, pressure water or air connecting parts, closing fittings etc.).

Characteristics:

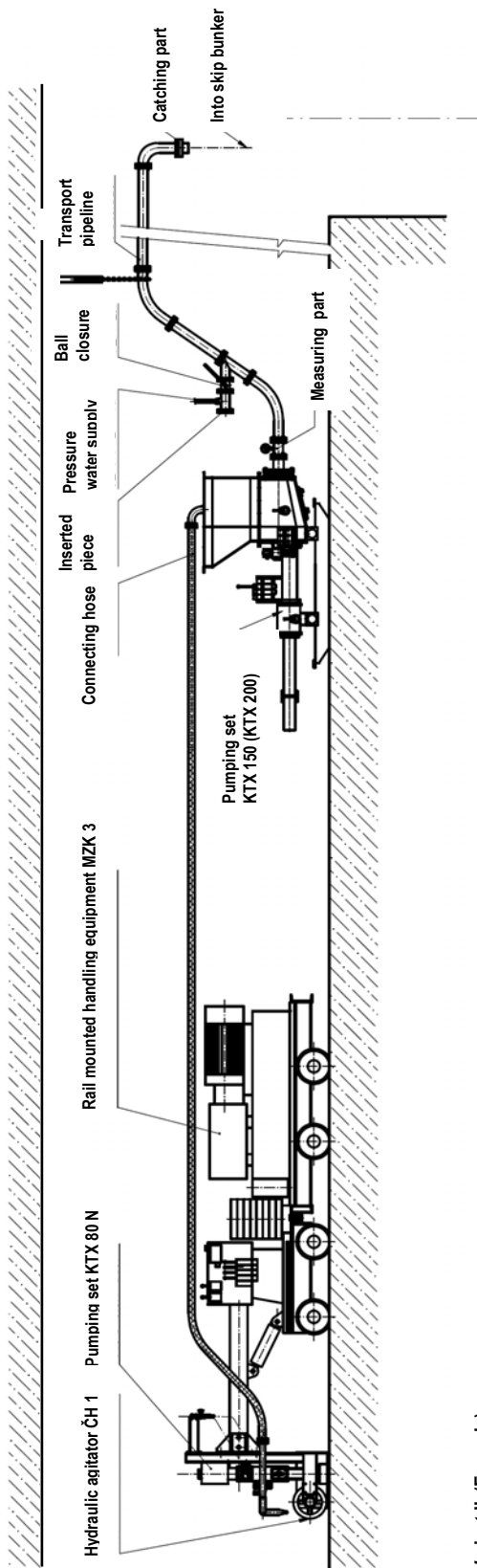
Max. volume of transported slurries (net time spent for pumping according to pumps used)	m ³ .h ⁻¹	10 – 27
Max. weight of transported slurries (net time spent for pumping according to pumps used)	t.h ⁻¹	14 – 37.8
Max. volume concentration of the slurry to be pumped	Cv	0.5
Necessary number of workers in crew per one shift		3
Transport distance (according to pump sets used)	m	200 ÷ 3 000
Max. elevation (e.g. for equipment KTX 150 used)	m	200
Input of the technologic equipment	kW	30 ÷ 70

The technologic line equipments have been designed and constructed as the equipment group I (mine), category M2 according to the Directive 94/9/EC of the European Parliament and the Council and meets the requirements for using in areas "dangerous atmospheric conditions 2" according to EN 1127-2+A1 on condition that all national regulations are fulfilled by the employer.

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NOTICE – IN CASE OF DISTANCE OF CA 400 M (SUMP CROSS CUTS – SKIP BUNKER FOR RAW COAL) IT IS POSSIBLE TO REPLACE THE PUMPING SET WITH LOW COSTLY VARIANT (E.G. KTX 80.3 Ne)

Variant I. (Example)



Variant II. (Example)

