

ABOUT THE COMPANY

Zeppelin CZ s.r.o. is the exclusive seller of construction, ground, agricultural, and mining machines of the Cat® brand in the Czech Republic, furthermore of Cat® engines and energy equipment.

Besides sales and servicing, Zeppelin CZ deals with renting construction machines and small mechanisation – the authorised Cat Rental Store has branches in 11 locations in the Czech Republic. In cooperation with Caterpillar Financial Services CR, s.r.o., Zeppelin CZ ensures a complete financial service for customers, related to the purchase of machines and services.

Zeppelin CZ s.r.o. is a part of the ZEPPELIN GmbH group of companies, which operates 190 branches in 30 countries worldwide. The group's activities are very wide on the global scale and are divided into five SBUs – Strategic Business Units. In the territory of the Czech Republic, Zeppelin CZ is active within the scope of these three groups: Construction Equipment EU, Power Systems, and Rental (The Cat Rental Store).

REFERENCES

Zeppelin CZ, as the successor to the former belt conveyor manufacturers (Caterpillar, Bucyrus, OKD, BASTRO), has produced since the time of supply commencement in 2000 a total of 127 complete belt conveyors for the needs of mining and surface operations of OKD. The conveyors have transported about 30 million tonnes of bulk material in the operation time. More than a third of the projects were turnkey, i.e. including assembly and commissioning.

The largest supplies have been implemented since 2010, namely for the Karvina Mine, the CSM Mine, the Darkov Mine, and the Paskov Mine. In this period, a total of 74 complete belt conveyors in widths of 1,200 and 1,400 mm have been supplied within complex deliveries for the aforementioned mines, including complete designs, transport technology designs, and calculations.

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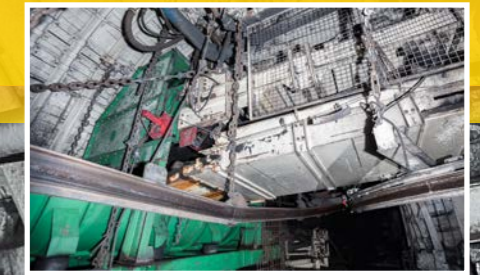
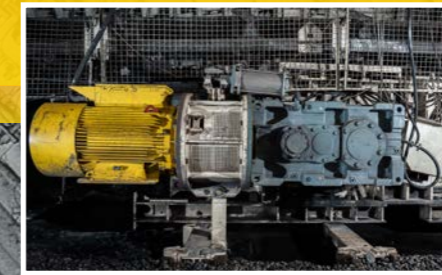
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ZEPPELIN 

BELT CONVEYORS

AN INDIVIDUAL SOLUTION FOR EVERY CUSTOMER

Zeppelin CZ, Underground Division, offers the supply of complete belt conveyor lines for transport of bulk materials in both underground mines and surface operations. The belt conveyors are engineered as a set of partial nodes, from which a suitable operating unit for transport of raw materials and material is assembled according to the project documentation.



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BELT CONVEYORS – APPLICATIONS

After assessing all technical, economic, and safety requirements set by the future operation, the technical solution is designed so that it meets the individual needs of the user, including cases where future expansion of mining or relocation of the conveyors to other locations is envisaged. All types of belt conveyors can be supplied with a fully automated operation mode, which is required by the customer.

Zeppelin CZ, Underground Division, also provides the installation of belt conveyors, including service and complete supplies of spare parts. A part of the belt conveyor supplies is the User Manual supply, a list of spare parts, including the ordering numbers, and the weight and dimensions data.

BELT TRANSPORT FOR SURFACE OPERATIONS

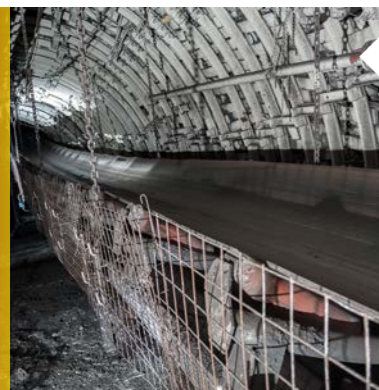
Zeppelin CZ provides engineering solutions for many applications of bulk material transport in power plants, at dumps, in ports, including the needed modification using crushers, separators, etc. Belt conveyors consist of routes, drive units with gearboxes, and electric motors, take-up devices, electrical accessories, etc. Transport lines contain completely covered transfer points, and the safety and control system. For material flow control, transfer points, trouser hoppers, silos, dumping grounds, bins, etc. are used. Conveyors are supplied up to transport capacity of 5,000 t/hr, speeds up to 5 m/s, and usual lengths up to 2,000 metres. Control systems are mostly designed using SIEMENS electronics and VOITH hydraulics. All technical parameters are selected with regard to the environment conditions, the expected maintenance frequency, and the required reliability.



Scope of usual technical parameters of surface conveyors

Belt width	mm	800–2,200
Transport capacity	t/hr	300–15,000
Drive pulley diameters	mm	800–2,000
Usual installed power	kW	50–4,000

According to the customer's requirement, we are able to supply further transport line units, i.e. steel structures, conveyor bridges, trestles, bins, and towers, including the structures according to the valid EN, Eurocode, ISO or DIN 18800 standards.



BELT CONVEYORS FOR UNDERGROUND MINES

Belt conveyors are manufactured in the belt widths of 800, 1,000, 1,200, 1,400, and 1,600 mm. They are designed for work in environments with methane and dust explosion hazard. The conveyor design recommended to the customers takes into account the mining conditions and the limited space available. According to the slope and configuration of the route, the optimum assembly, power, transport route, transfer points, drive unit and take-up unit location is designed, possibly in combination with other transport means, such as a monorail. The advantages of mining conveyors are small cross-section dimensions of the equipment and the route with concealed rollers, which is suitable especially for small profiles of the underground corridors. The transport line design meets the requirements of valid ISO, EN or GOST standards.

Technical parameters of belt conveyors for underground mines

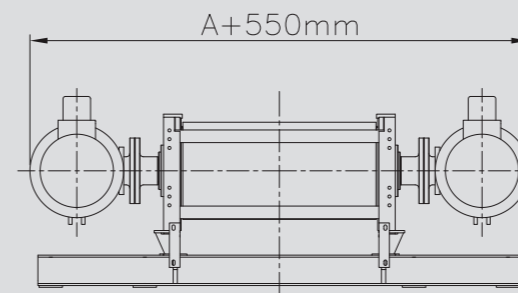
Belt width	mm	800	1,000	1,200	1,400	1 600
Transport capacity	t/h	300–1,000	500–1,500	1,000–3,000	1,500–4,000	2,000–5,500
Drive pulley diameters	mm	630–1,030		830–1,500		
Usual installed power	kW	50–1,000				
Special design	kW	Up to 2,000				

BELT CONVEYORS FOR UNDERGROUND MINES – COMPONENTS

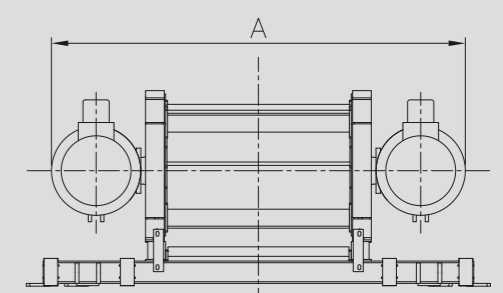
MINING BELT CONVEYOR DRIVE UNITS

The drive units with pulleys of diameters from 630 to 1,500 mm have either external or internal bearings and the power for air-cooled motors from 1 x 75 up to 4 x 250 kW. For water-cooled motors it is possible to supply drive units with the power of over a thousand kW, according to the calculation for a particular conveyor. The brake control is electric or electric-pneumatic. Pulleys are supplied rubberized or with a ceramic lining. The take-up unit can also form the belt loop and is supplied with hydraulic, electrical or pneumatic tensioning equipment. The stroke and the tensioning force are adjustable according to the dilatibility and strength of the belt and according to the longitudinal profile of the conveyor route. The gearbox types are selected according to the operator's requirement. The drive unit is controlled by softstart or frequency converters.

With external bearings of drive pulleys



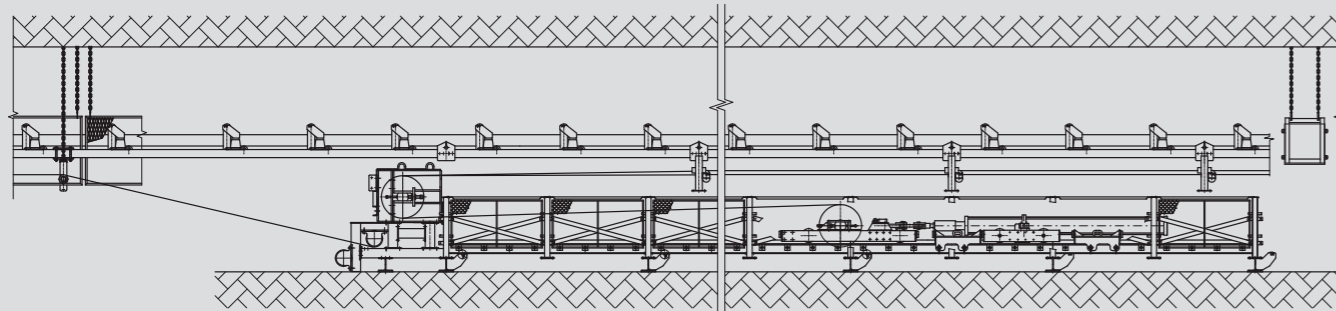
With internal bearings of drive pulleys





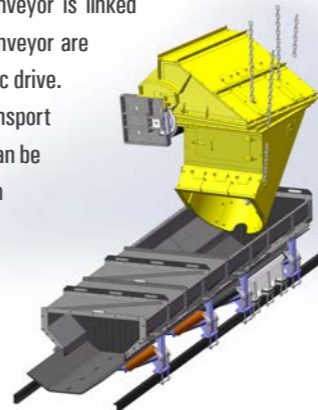
TAKE-UP UNIT AND BELT LOOP OF MINING BELT CONVEYORS

Tensioning mechanism: pneumatic, electrical or hydraulic
 Adjustable module belt loop
 Modular design of the take-up unit, module section length 3 m
 Pulley diameters according to the tensioning force within the range of 500 – 1,030 mm



MINING BELT CONVEYOR TRANSFER POINT

For sets of belt conveyors, uncovered, covered, tube-sectioned, trouser transfer points are supplied according to the angle and slope, under which the mining corridor of the discharge conveyor is linked to the supply conveyor corridor. Parts of the conveyor are also the drip conveyors with electric or pneumatic drive. Supplies of chute equipment are matched to transport lines according to the projects. Transfer points can be supplied either with garland or sliding bed design as per the customer's requirement.

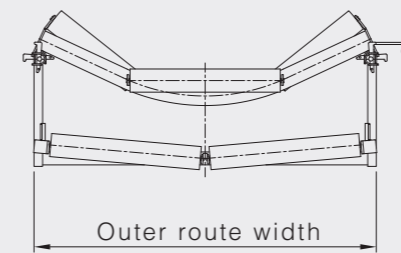
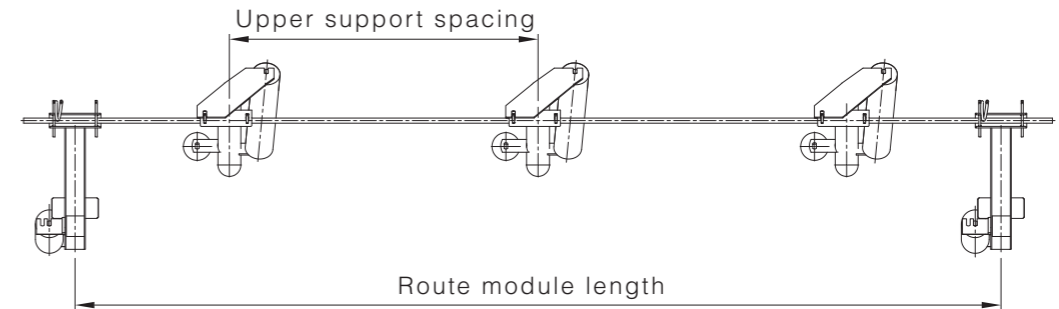


ROPE ROUTES OF MINING BELT CONVEYORS WITH FIXED ROLLER SUPPORTS

The route is fixed on two parallel ropes anchored into the floor. On the ropes, the upper and lower roller supports are anchored using a clamping fixture. The ropes are suspended on the roof supports using chain suspensions.

Belt width (mm)	Route module length (m)	Roller diameter (mm)	Upper roller length (mm)	Lower roller length (mm)	Outer route width (mm)	Upper support spacing (mm)
800	3 or 3.75	108 or 133	315	465	1,100	1,000, 1,250 or 1,500
1,000	3 or 3.75	108 or 133	380	600	1,370	1,000, 1,250 or 1,500
1,200	3 or 3.75	108 or 133	465	700	1,590	1,000, 1,250 or 1,500
1,400	3 or 3.75	133 or 159	530	750	1,690	1,000, 1,250 or 1,500

The trough of the upper rollers is 35° or 38°; the trough of the lower rollers is 5°; the arrow of the upper and lower rollers is 0° or 2.2°.

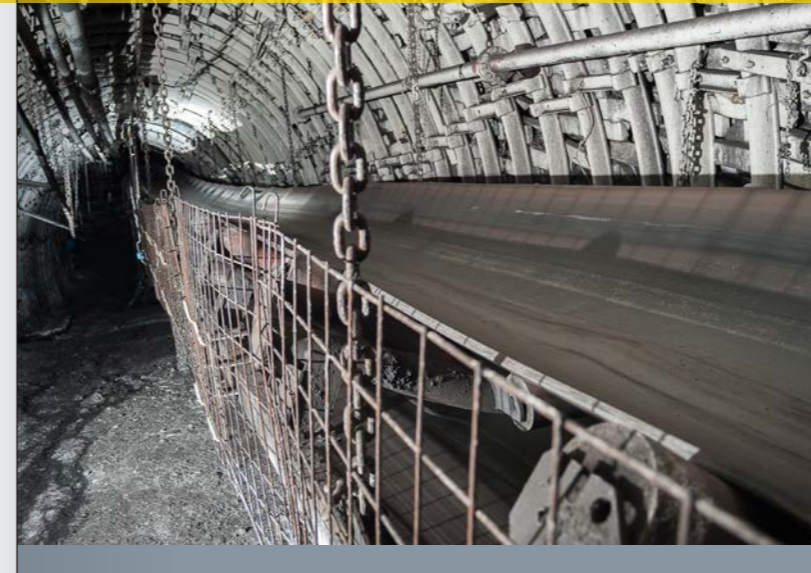
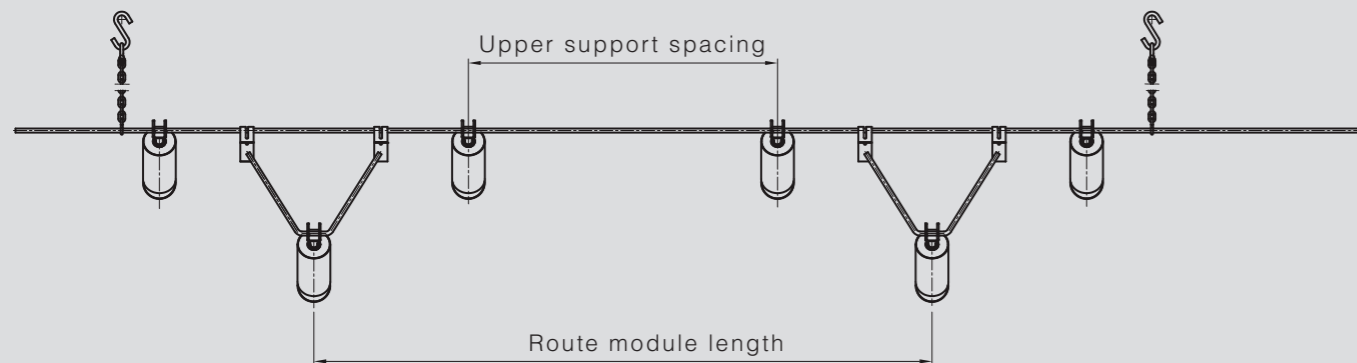
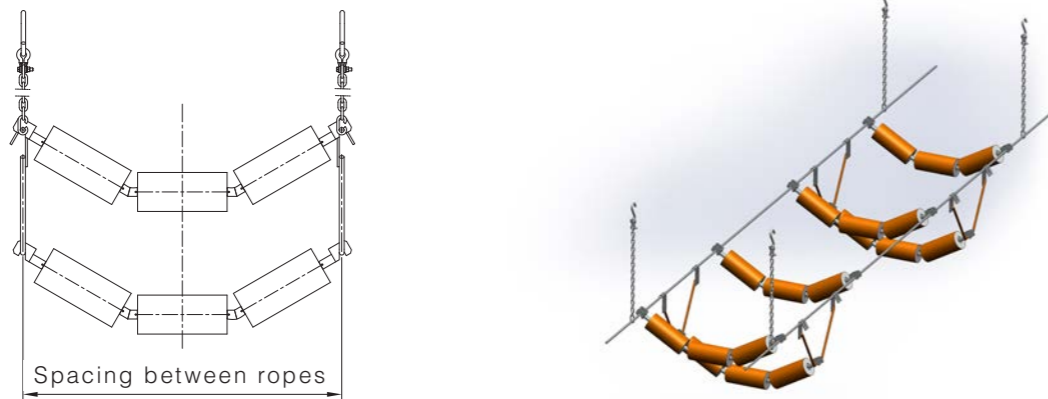


ROPE ROUTE OF MINING BELT CONVEYORS – GARLAND

The route is fixed on two parallel ropes anchored into the floor. The ropes are suspended on the roof support using chain suspensions. The upper and lower roller garland sets consist of three garland rollers. The garland sets are suspended using clamps.

Belt width (mm)	Route module length (mm)	Roller diameter (mm)	Upper roller length (mm)	Lower roller length (mm)	Side roller incline angle (mm)	Spacing between ropes (mm)	Upper support spacing (mm)
800	3 or 3.75	108, 127 or 133	315	315	30° or 35°	1,150 or 1,100	1,000, 1,250 or 1,500
1,000	3 or 3.75	108, 127 or 133	380	380	30° or 35°	1,300 or 1,250	1,000, 1,250 or 1,500
1,200	3 or 3.75	108, 127 or 133	465	465	30° or 35°	1,550 or 1,500	1,000, 1,250 or 1,500
1,400	3 or 3.75	108, 127 or 133	530	530	30° or 35°	1,750 or 1,680	1,000, 1,250 or 1,500

The trough of the upper rollers is 30° or 35°; the trough of the lower rollers is identical with the upper rollers.



SOLID ROUTE OF MINING BELT CONVEYORS

The solid route of mining belt conveyors can be installed either on chains, or on the floor.

One route module consists of two stringers, the lower roller support, and three upper roller supports. It is suspended using chain suspensions on the roof support or it is erected on the floor. Individual modules are screwed together into the route according to the needed length.

Belt width (mm)	Route module length (m)	Roller diameter (mm)	Upper roller length (mm)	Lower roller length (mm)	Outer route width (mm)	Upper support spacing (mm)	Upper support spacing (mm)
800	3 or 3.75	108 or 133	315	465	1,100	1,000, 1,250 or 1,500	1,000, 1,250 or 1,500
1,000	3 or 3.75	108 or 133	380	600	1,370	1,000, 1,250 or 1,500	1,000, 1,250 or 1,500
1,200	3 or 3.75	108 or 133	465	700	1,590	1,000, 1,250 or 1,500	1,000, 1,250 or 1,500
1,400	3 or 3.75	133 or 159	530	750	1,726	1,000, 1,250 or 1,500	1,000, 1,250 or 1,500
1,600	3 or 3.75	159	600	800	1,970	1,000, 1,250 or 1,500	1,000, 1,250 or 1,500

The trough of the upper rollers is 35° or 38°; the trough of the lower rollers is 5°; the arrow of the upper and lower rollers is 0° or 2.2°.

