

Application solution of EDS2000 to coal double-motor

Equipment introduction

A belt conveyor is a continuous conveying machine and a general-purpose machine, has been widely applied to metallurgy, electricity, chemical and other industries, especially to coal industry. Comparing to the original pull-type lift, the production efficiency and safety has been greatly improved by using belt conveyor. Only one worker to keep watch or no need at all, which reduces production cost and realizes automatic production.

Process requirements:

A belt conveyor is made up of motor, reduction box, belt, rack, drive rollers, bend rollers, bearing support roller, return support roller, tension device, loading & unloading, and cleaning devices and so on. Generally a belt conveyor has several motors driver one belt. The conveyor belt winds though drive roller and tail then reversing to roller to form a no polar endless belt.

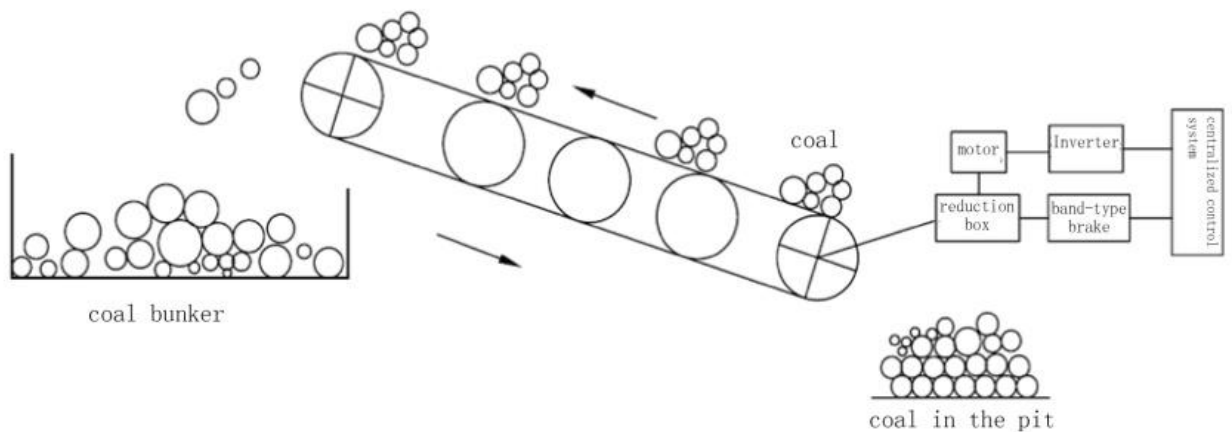


Fig.1 General Belt Conveyor Schematic Diagram

煤仓: coal bunker 井下煤炭: coal in the pit

煤炭: coal 集控系统: centralized control system

电机: motor 减速机: reduction box 抱闸: band-type brake

There are two modes which use double-roller to drive belt conveyor. One with double-roller jointly drive, and the other respectively drive. The essence of double rollers drive is same to that of single roller drive. Two rollers are connected by a 1:1 gear. The theory of double-roller respectively drive is similar to that of two single rollers, two rollers are driven by two motors. The schematic diagram of double-roller respectively drives belt conveyor as follows.

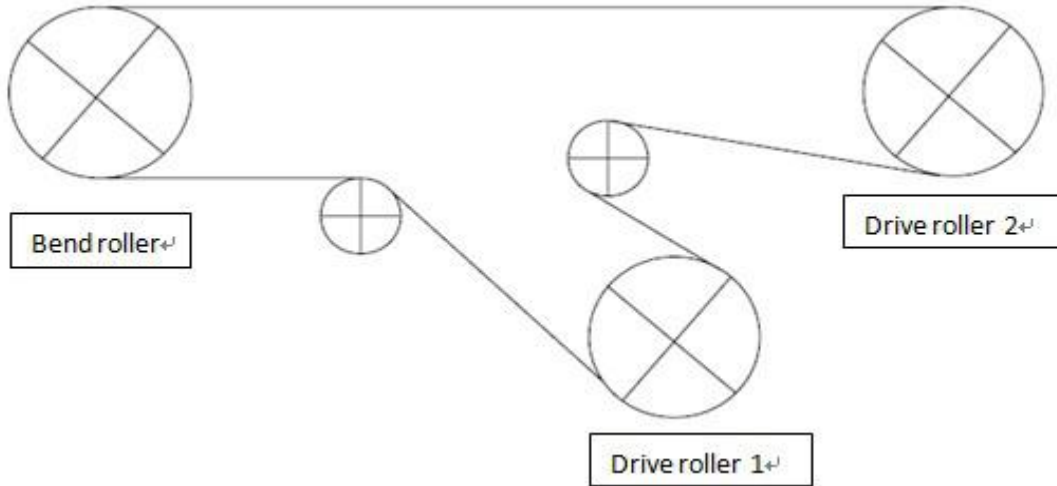


Fig.2 Double-roller respectively drive belt conveyor diagram

2. Application solution of ENC inverter to double-motor respectively drive belt conveyor

1. Electric characteristics

1. It requires the shaft power of two motors keeps basically the same at work. However, the work power of the upper motor is always greater than that of the lower in real process. Namely the upper motor load is heavier than the lower's. Therefore, we need to make sure current of two motors are basically equivalent. What's more, the load torque is high when starting with goods, thus it requires the output start torque of motor drive equipment is also large enough to ensure the belt conveyor start smoothly.

2. Adopt ENC EDS2000 series inverter

A. Electric wiring diagram

Potentiometer

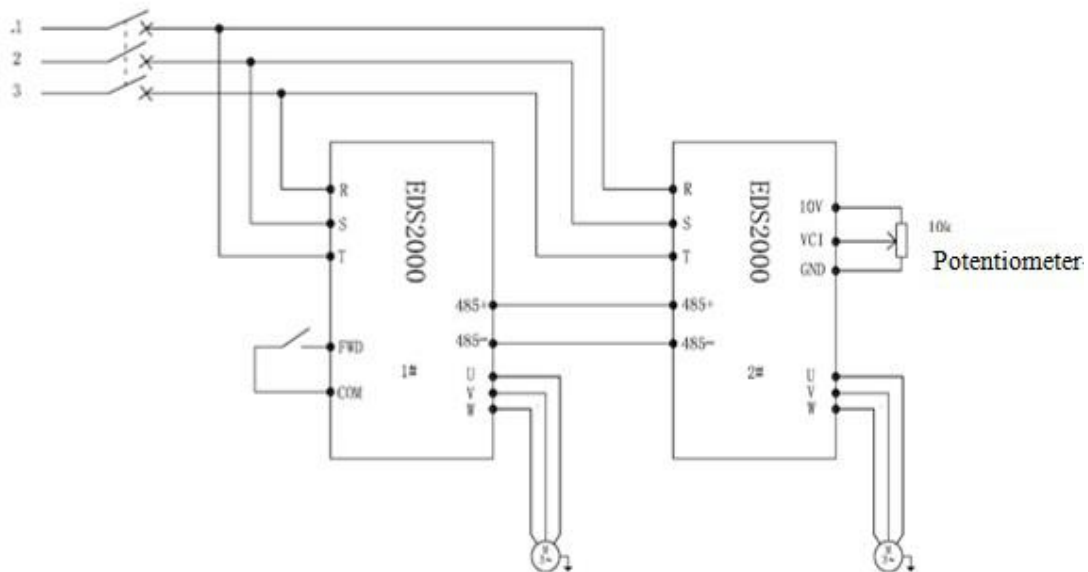


Fig.3 Inverter wiring diagram

B. parameters setting

Suppose 1# is set as the master inverter to drive upper motor (heavier load motor) and 2# as slave inverter to drive the lower motor (lighter load motor).

Parameters setting as below:

1#: F0.02=1 F0.14=60 F0.15=80 F0.20=3 F2.18=0 F9.04=120 F9.09=180

2#: F0.00=8 F0.02=2 F0.14=60.2 F0.15=80 F0.16=51 F0.20=3 F2.09=17 F2.18=1 F8.03=1
F9.04=120 F9.09=180

By manually adjusting the potentiometer, make the frequency of slave inverter (2#) is slightly bigger than that of master inverter (1#), then to make sure their currents keeps the same.

3. Application occasion condition

A Chongqing coal mining company's production efficiency has been greatly improved by using two sets of EDS2000-4T0900G/P inverters.