

Material Handling Applications

For ABB Adjustable Speed AC Drives

Adjustable Speed AC Drive increases a copper mine's production

ABB AC Drives

Objective

In a copper mine, ore is transported from the mineshaft to the concentration plant via a 17,500-foot-long underground conveyor belt.

Conveyor limits production capacity

Conveyor speed was controlled by the rotor resistors of the slip-ring motors. The control was neither smooth nor flexible. Conveyor belt joints were heavily stressed. The equipment often broke down which led to high maintenance and service costs.

The mine wanted to increase ore production, but this was not possible because the conveyor was already operating at maximum speed.

Adjustable speed AC drive solves the problems

The conveyor was equipped with an ABB Variable Speed AC Drive. The speed of the motors is now controlled by two ABB AC Drives operating in a master-slave arrangement using ABB's Lead/Follower software. Conveyor control is extremely simple using a PC communication program.

It took only 20 hours to replace the conveyor belt drive. The improvements achieved with this system were even greater than expected.

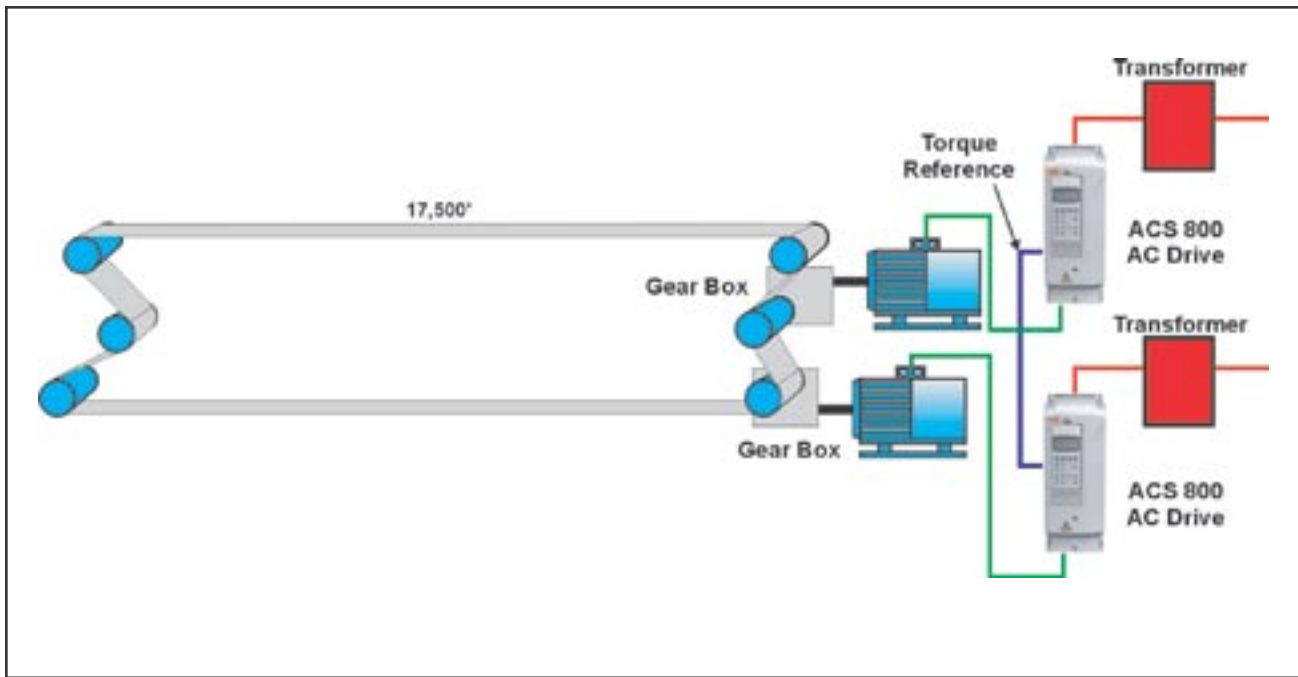
Automatic control system

The supply voltage is 4160V so the ABB Drives are fed by two independent step-down transformers.

The Drives control the speed of the conveyor belt's squirrel cage motors.

The load is divided evenly between the motors according to the capacity of the gearboxes. The Drives are connected to a PC via a serial communications port. The PC controls the conveyor's speed according to the volume of ore coming from the mine face. Hence, the conveyor always operates at maximum load.





Mine productivity increases

Mine productivity has been improved because the conveyor's capacity has been increased by about 30% by dividing the load between motors and reducing belt slip.

The Drives' soft start feature has considerably reduced the stress on the conveyor belt, which has cut service and maintenance costs.

Previously, the conveyor operated at full speed with no load and consumed 50% of the drive's rated power. However, the ABB Drives' enhanced control features means that the conveyor is always running at its optimum speed in relation to the ore production rate and at constant load. As a result, monthly energy savings of 100,000kWh have been achieved!



Total Customer Satisfaction

The quality of ABB drives is backed by a company-wide commitment to total customer satisfaction. ABB's 24-hour customer support line, plus an extensive sales and service network, provide a wealth of drives applications expertise and personalized assistance that will ensure your continued success.

ABB Inc.
 Drives and Power Electronics
 16250 West Glendale Drive
 New Berlin, WI 53151
 USA
 Telephone: (262) 785-3416
 (800) 752-0696
 Fax: (262) 785-0397

All trade names referenced are trademarks or registered trademarks of their respective companies

ABB reserves the right to change price, design, dimensions or technical specifications without notice.

© 2002 ABB Inc. All rights reserved.