

MINING

Drives system solution for open-pit mining

Application for ABB Industrial Drive ACS880



Drive application based on the Industrial Drive ACS880 multidrive specifically for the extreme environmental conditions in the discontinuous open-pit mining technology, with high mechanically robust design and high availability.

System solution for toughest conditions in open-pit mining

Our mining specialists developed and tested this system solution based on a model as well as wide-ranging simulations. It corresponds with the applicable standards and the exact specifications of the manufacturers of open-pit mining products with regard to shock and vibration load.

Advantages for you

- Suitable for tough operating conditions in open-pit mining
- Mechanically robust design, for example, by integrating support plates, reinforced bottom plates and bracing profiles
- Designed for a maximum of:
1 g vibration load and 5 g shock load
- Modified ABB system solution based on ACS880 multidrive modules
- Easy installation: The system is preinstalled and is welded to the ground
- IGBT power semiconductor with improved thermic interface and sealing against dust

- System is tested based on applicable standards in operation
- Customer-specific set-up versions
- Reference systems in numerous mines world-wide
- Comprehensive application service:
 - Drives system analysis, dimensioning of drives
 - Development of application-specific software
 - Power network surveys and harmonic analysis
 - Commissioning and service

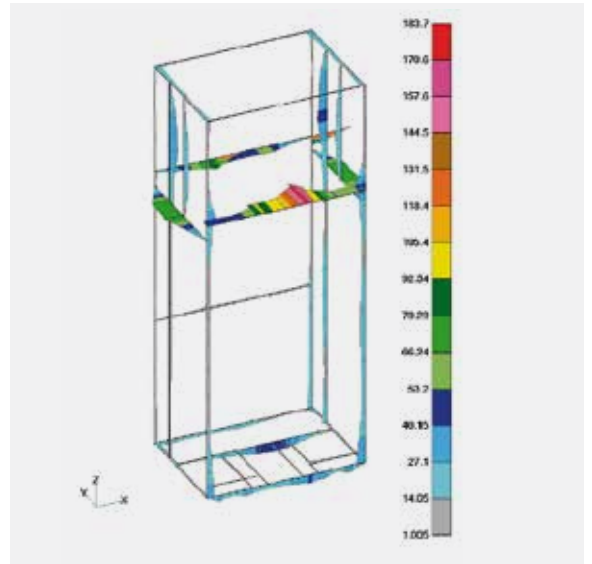


01 Test on shaking table

02 Load calculation for the cubicle design



01



02

Technical Data

Modifications to the drives system

- Mounted on a stable basic frame
- Integrated support plates for mounting on the basic frame
- Additional profiles for module fixation
- Reinforced bottom plates
- Use of different bracing profiles
- Secured screw connections
- Stronger bolts for module mounting
- Additional door hinges
- Modified hoisting equipment
- Back-to-back installation
- DC busbar connection

Testing, specification and standards

- Vibrations: 5 m/s² (0.5 g), 4...11 Hz
7 m/s² (0.7 g), 13.4...50 Hz
10 m/s² (1 g), 51...100 Hz
- Shock: 50 m/s² (5 g), 16 ms

The facility was tested and modified in compliance with the following standards:

- IEC 68-2-6 – environmental tests (vibrations, sinus form)
- IEC 68-2-27 – environmental test (shocks)
- German Lloyd
- US Military Standard 167-1 – vibration test Marine

Test on shaking table and simulation

Test subject: ACS800 multidrive, ISU 2xR8i /LCL

Shaking table: 300 kN (IABG)

Simulation: ACS880 multidrive

Model-based development

The range of requirements for the vibration and shock tests was determined based on analysis of the applicable standards and specifications of the manufacturers of open-pit mining products. As a result, the following procedures were carried out:

- Creation of a model system for the simulation of a test subject
- Calculation of forces and ways in all three geometric axes
- Reinforcement and modification of the cubicle system in 35 individual measures
- Renewed model calculations for examining the increase in strength
- Specification of the modifications for the production of the test subject
- Execution of the application according to the test results