Ayagoz, Kazakhstan

Prefabrication of switchboards for the largest open-pit copper ore mine in Kazakhstan, where we regularly deliver equipment. The project involved the construction of three sets of switchboards to power the stator and rotor of the mill.

The design, production and prefabrication were carried out in-house at the Radiolex facility in Gdańsk. The structure is made in two different paint colors: inside it is RAL9005, outside it is RAL2010. The standard feature in this type of switchboards is the use of explosion relief flaps. The housings are equipped with pressure safety flaps in the roof, whose task will be to direct the flow of hot gases in a direction that is safe for the operator in the event of an arc fault.
A busbar bridge was connected to the OJON disconnector manufactured by ABB outside the housing, which will allow the busbars to be connected to the windings of the engine driving the mill in the mine. The housing is equipped with internal lighting, voltage indication and numerous interlocks that prevent the disconnector from opening under load, which reduces the likelihood of an arc fault. The infrared windows used enable inspection of the main current path with a thermal imaging camera during normal operation of the device.

IMPLEMENTATION DATE: DECEMBER 2019

Table 1. Electrical parameters of switchboards

		MV Switchgear	LV switchgear
		STATOR POWER	ROTOR POWER SUPPLY
Un	[V]	12000	1000
In	[A]	5000	1000

f	[Hz]	0-6.63	DC
IP	[-]	IP56	IP56
IK	[-]	IK10	IK10

where:
Un – rated voltage,
In – rated current,
f – frequency,
IP – the degree of protection provided by the housing against the ingress of liquids and solids
IK – mechanical strength classification.

A twin project to the Tarapaca, Chile project presented in June 2019. The difference is the use of a disconnector with a higher rated current in the medium voltage switchgear, which required it to be subjected to a separate type test. The tests carried out in the laboratory of the Electrotechnical Institute in Warsaw included, among others: checking the short-time withstand and peak withstand currents, insulation tests, checking the IP and IK protection levels, and the rated current was determined on the basis of temperature rise tests.

GALERIA PRODUKTU WRAZ Z PRZYKŁADOWYMI REALIZACJAMI