

# Sort the yellow-brown from the gray

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Can you remember the story of Cinderella in which the heroine patiently sorted the millet from the poppy seed? She would have to face an equally difficult task in a Magnesite mine – sorting the yellow-brown Magnesite from the gray pieces of serpentinite, as Magnezyty Grochów SA struggles with every day. However, unlike Cinderella, they can count on an innovative optical sorting system.

800 M LONG AND APPROX. 200 M WIDE

The area of the excavation is extensive, 800 m long, approx. 200 m wide and 115 m deep. 10 to 12% of the material intended for sale, the magnesite, is recovered from the content of the ore. Part of the excavation is re-cultivated, the excavated area is filled with in with unused waste rock and then it is afforested. At the present exploitation rate, the deposit should last for approx. 30-40 years



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### A MINE ON RESIDUAL PILLARS

Magnezyty Grochów SA is located in the village of Grochowa, in the district of Ząbkowice. Magnesite deposits were discovered at the present area of the mine in the mid-19th century. In 1862, H. BRUCK started industrial operations. In the 80s of the nineteenth century, magnesite firing in shaft furnaces was started, at a temperature of approx. 800°C. When it was discovered in 1904 that magnesite was a refractory material, large-scale extraction was started. In the years 1904-1959, the mine was an underground one and currently the opencast method is used there. - Some say that the mine is located on old, post-mining residual pillars. There are visible remains of underground excavations on the walls of the excavation - Wojciech Majchrzak, manager of the mining plant, clarifies.



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### INNOVATIVE SORTING

Optical sorting is based on the correct software configuration, which, after color analysis, sorts magnesite from serpentine. The machine gets the washed part of the ore from which we need to sort magnesium. It is yellow-brown (with different shades), while serpentinites are gray. Magnesite, falling from a high altitude, is seen by cameras assessing its color. After the optical analysis, the air nozzles mounted in the device hit the pieces of magnesite with extraordinary precision and knock them off the free fall track onto the provided conveyor belt. There is a selection - serpentine waste rock goes onto one conveyor, and magnesite onto the other. Until the 1980s, the technology was based on the manual sorting of magnesite, today the work is performed by a machine, only complemented by employees.

### MAGNESIUM – A MULTI-PURPOSE MATERIAL

The magnesite from Grochów is a  $MgCO_3$  carbonate in the form of deposits occurring in serpentine. Pure magnesite is used in the chemical industry in the manufacture of multi-component fertilizers, as a component of refractory mass in the steel industry, and in the pharmaceutical industry, for dialysis. In addition, it is used for the disposal of all types of heavy metals and in the process of producing water for its de-manganisation and de-ironing. "Magnesium in this form perfectly combines with iron oxide and, displacing it, settles on filters," Lech Ziemkowski clarifies. This mineral also works as a sludge neutralizer, and was once used to produce mineral water.

### INVESTMENTS – A CHANCE OF SUCCESS

- We invested last year and, apart from the jaw crusher that we own, we purchased a new, parallel one - Wojciech Majchrzak emphasizes. The technological line for the recovery and selection of magnesite consists of the aforementioned crushers, bar screens, flat vibrating screens, vibrating screens with washers with closed water circulation where the extracted material is washed so that the sorting machine could sort and distinguish magnesite from serpentine.

The company, as the first in the opencast mining, has installed an optical sorting system based on the principle of distinguishing the color of magnesite and serpentine. - This is our technical concept, developed by Mogensen. We have 2 devices of this type - Lech Ziemkowski adds.



### WE WORK FOR OTHERS

Despite the stagnation in the aggregate market, the plant operates without a problem all year round. There is intensive work conducted on launching new deposits and further expanding the range of products. - The sale is satisfactory, we are a company with a long tradition, we have been cooperating with such reputable companies as, for example: Chemical Plants Police and Chemical Plants Zlotniki from Wroclaw - Lech Ziemkowski mentions. - The mine owes its success to our flexibility. The CEO does not avoid novelties and feels that technological progress - albeit expensive in the first period - is returned with time. In addition, we focus on the stability of employment and employee experience, trying to be a solid and reliable partner in the business - Lech Ziemkowski adds. Recently the plant has invested in modern loaders and a new technological line.

