

SIEMENS

Milltronics MMI, Milltronics BW500, SITRANS WS300

# A belt scale system worth its weight in gold



Rings, watches, necklaces – walk down the street and you'll see shiny gold jewelry of all shapes and sizes.

Yet this expensive material starts out like any other mineral: in the ground, dirty, and waiting to be discovered.

The Mayskoe site, part of Polymetal International, is a precious minerals processing plant in northeastern Russia's Chaun district.

With the help of Siemens belt weighing technology, this company accurately and reliably measures its gold ore during transport to the site's ball mill.

## From the ground to solid gold

One of the top five deposits in Russia in terms of gold resources, the site consists of an on-site flotation concentrator and a high-grade refractory gold deposit.

Primarily the refractory ore is processed by conventional flotation on site and the concentrate is shipped to another plant where gold bars will be produced using pressure oxidation and cyanidation technologies.

The deposit is accessible all year round via 187 kilometers of unpaved road from the town of Pevek, a major seaport operating from July to early November.

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Technicians at the minerals processing plant installed the Milltronics MMI belt scale and SITRANS WS300 speed sensor easily and quickly.

The conveyor has a 1300-millimeter (51-inch) belt width and runs at 0.64 meters (two feet) per second. The gold is transported in at a nominal flow rate of 110 tons per hour (121 short tons). A gravimetric tensioner is on the conveyor to ensure a constant belt tension along its 143-meter length, with idlers spaced on the conveyor every one meter (3.2 feet).

Although not a scale intended for use in trade or load out, the company required that it meet metrological approvals for the local governing agency. In Russia this is known as GOST Metrological. Siemens is one of the few companies in the world that has this approval for its belt scales.

The Mayskoe site already had a scale installed from a competitor: a full frame four-idler design. Unfortunately the scale was installed in an area that is not desirable for accurate weighing performance near the drive pulley. The reason was due to its size and the fact that the conveyor is curved, limiting the options for installation based on these constraints.

The four-idler model was reporting an accuracy above 1% and also experienced issues with temperature influences. At sub-zero temperatures, the four-idler model would produce a significant error. Upon investigation, the customer discovered that the large frame of the four-idler scale was deforming under the thermal expansion and contraction forces. This was creating erroneous signals on the load cells being measured as product weight.

### Better accuracy to the rescue

Siemens offered the Milltronics MMI belt scale, a combination of installing two or more MSI belt scales in tandem. The compact design of the single idler model allowed for quick and easy installation, as well as reduced the amount of total weighing space required. This allowed for a more suitable area in the conveyor to be selected. A SITRANS WS300 speed



The belt scale relays information to the Milltronics BW500 integrator, which provides operators with belt speed, material flow rates, and other crucial information.

sensor mounted on a self-cleaning bend pulley, a calibration test chain, and a Milltronics BW500 integrator completed the belt scale system solution from Siemens.

The integrator was connected to the plant network via the Profibus DP option, allowing for total integration of the scale into the plant automation system.

SITRANS WS300 also features special electrical circuitry, which eliminates false speed sensor signals from vibration. The bushed calibration test chain is a reliable option for calibration when material tests are not possible to help simulate material being transported on the belt. Siemens recommends the use of test chains on trade-approved applications for this reason.

After a fast and headache-free installation and commissioning, the belt scale system was put into service. After monitoring the scale the accuracy obtained was 0.15%, which more than satisfied this company's needs!

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