

Karelsky Okatysh curbs carbon and sulfur emissions with the use of machine learning

PAO Severstal, one of the world's leading vertically integrated steel and steel-related mining companies, has successfully tested a machine learning model on kiln No. 1 at Karelsky Okatysh. The model helps to conserve mazut consumption and curb emissions of carbon oxides and sulfur during pellet firing, while maintaining the high quality of the finished product.

This is an in-house solution developed by Severstal Digital and an expert team from Karelsky Okatysh. To teach the model, they used large amounts of data Severstal's industry-leading Data Lake and the plant's archives.

The system analyzes the parameters of raw pellets and predicts what the cold crushing strength will be after firing. The information is displayed on the operator's screen. If the planned pellet quality is predicted, the model controls the firing machine independently, ensuring the optimal operation of the burners. At the same time, it takes into account the current parameters of the other machine parts. In case an abnormal situation or deviation in the predicted quality of the finished product happens, the operator turns off the digital assistant and manages the processes manually.

The model was launched by specialists at kiln No. 1 for the production of non-fluxed pellets. The pilot project ran between December 2020 and March 2021. According to the results of the experiment, the specific consumption of mazut during the operation of the model decreased by 6.4%, which means a reduction in emissions of carbon oxides and sulfur.

Boris Voskresenskii, the Chief Digital Officer of Severstal commented:

“The digital solutions implemented at Severstal have already proven their efficiency in boosting the productivity of the units, reducing costs and improving the quality of our products. The solution at kiln No. 1 is our first to manage such a large aggregate in real-time at our mining assets. We are particularly pleased that the solution makes a significant contribution to reducing emissions at the Karelsky Okatysh plant. I am confident that further scaling of the model, combined with new solutions at our mining assets will have an even greater positive impact on both the Company's economics and the environmental impact of our production”.

The digital solution is currently being scaled up. A model that controls the firing of fluxed pellets has already been finished and will soon be tested at kiln No. 1. A model that controls the firing of non-fluxed pellets at kiln No. 1 is also under development.

Maxim Vorobyov, Chief Executive Officer of Karelsky Okatysh and Olkon, commented:

“Karelsky Okatysh is actively implementing digital technologies, and we plan to allocate 215 million rubles for this purpose in 2021. This is no longer the future, but the present of modern production. It is very important that new technologies not only improve the quality of products, increase the reliability of equipment, but also have a positive impact on the environment. Sustainable development with a responsible attitude to the use of energy resources and

Адрес оригинала:

<http://www.severstal.com/eng/media/news/document61393.phtml>

Дата публикации 21/04/2021 00:00