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Petuum: AI for everyone

Cemex, one of the largest cement companies in the world, has chosen the technology of a young start-up to accelerate the transformation of its cement plants and bring them into the era of industry 4.0.

Cemex's transformation plan aims to improve operational efficiency, lower the energy costs of its production sites and make the use of alternative energy resources possible and better.

To achieve this, the Mexican-born cement manufacturer chose the solution from Petuum, a young company that develops analytical tools based on artificial intelligence for the industrial and medical sector. The solution won an award of excellence and promotion of best practices at the Cement Industry Awards at CemTech in Berlin from September 30th to October 2nd.

The project has been promoted as the project of the year in terms of sustainability and technology trends. The Petuum solution has also been recognized by the Technology Council of the City of Pittsburgh, Pennsylvania (USA) for its innovative edge.

Supervised AI

Petuum's artificial intelligence platform in the cloud ingests historical and real-time data from the cement plant's network. These data are then analyzed by machine and deep learning algorithms to provide precise predictions on the various operational variables of the cement plant for a period of fifteen minutes. This limitation is due to the amount of data to be ingested from thousands of sensors in the cement plant. These predictions are obtained from dynamic analysis and non-linear relations between the different variables and prescribe a set of optimal points to allow the cement plant to reach its operational goals. These recommendations are then validated by an operator or injected automatically into the control system of the cement plant to conduct fully autonomous operations. This process is ongoing, allowing the model to continually improve.

The solution is currently in production at one site in the US and two other factories in Mexico. Three other sites, including one in Europe, will be deployed by the end of the year.

Conclusive feedback

The feedback on the solution is very satisfactory with a stabilization of the standard deviation around the main criteria, a lower consumption of heat and energy while accelerating the rise of alternative energy resources ...

The decrease in energy costs goes from 2 to 5%. The energy savings they peak at 7% which represents annually millions of dollars.

The solution has reduced the emission of various gases and heavy metals into the atmosphere by efficient heat recovery from the furnace, cooler and precalciner. Petuum has further reduced the use of petroleum coke by optimizing the pyroprocessing process (leading to very high temperatures a material in order to make it known a physical or chemical change).

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