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ArcelorMittal

LLenX

A year of innovative collaboration with ArcelorMittal Méditerranée

From idea to innovation

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Back to basics

Almost a year ago, we embarked on an exciting adventure with ArcelorMittal Méditerranée. For me, this collaboration has a very special meaning.
As a former employee of ArcelorMittal, where I worked as a PDC shift electrician, then as a PDC electrician foreman, this opportunity is a return to my roots.

PDC "Charge Preparation" is the first link in the steel production chain at the Fos sur mer site.
This department unloads, stores and processes the raw materials (ores and coals) that feed the blast furnaces.
Here we find, among other things, park machines, stackers and reclaimers, dozens of kilometers of conveyor belts, storage silos and the sintering workshop that transforms iron ore by sintering.

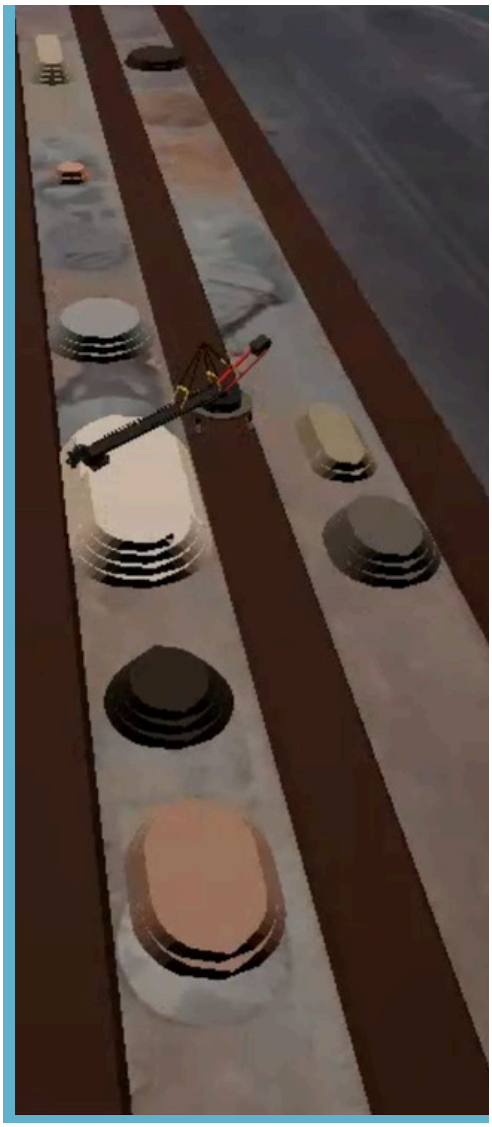
Innovative proof of concept

Together, we decided to push back the frontiers of technology by developing a revolutionary proof of concept, combining digital twin, LIDAR and RTK.
The aim of this ambitious project is to accurately measure machine movements using LIDAR and GNSS RTK technology. At the same time, we have created a digital twin capable of reproducing the environment of these machines in real time. This breakthrough not only makes it possible to visualize movement, but also to understand and anticipate interactions with the environment in a totally new way.

LiDAR (Light Detection and Ranging) :
Remote sensing technology using lasers to measure distances and create accurate 3D models of the environment.

GNSS RTK (Global Navigation Satellite System Real-Time Kinematic) :
Enhanced satellite navigation system providing centimeter-accurate geographic positions in real time

Digital Twin :
Virtual replica of a physical object or system to monitor and simulate its behavior in real time.



Proof of concept in the operating environment

A crucial aspect of this collaboration was the opportunity to test our solution in ArcelorMittal's real-life environmental conditions. Working in the real-life operating context was essential to fine-tune our approach and guarantee optimum accuracy and reliability. It was this need for real-life testing that prompted us to join forces, and ArcelorMittal generously opened its doors to enable this crucial development.

A fruitful partnership

Over the past year, we have overcome many technical challenges thanks to this close collaboration. My former employer, ArcelorMittal Méditerranée, not only welcomed me back, but also supported my new company in its efforts to develop innovative technologies. This collaboration, marked by enriching exchanges, a shared vision of innovation and unwavering support, is a testament to mutual trust and respect.

Feedback

Cyril Carrara, Load preparation automation technician.

« My collaboration with Xavier on this POC was a great first in terms of load preparation.
The idea was to use our installation as a "realistic" laboratory, to exchange ideas on our problems and to push the thinking on solutions.
This enabled us to make progress with a local start-up and open the door to new technologies on our side.
The result is more than promising: the possibilities offered by the LLenX solution are infinite, with physically little hardware.

Thanks

I would like to express my particular gratitude to the load preparation team and to Cyril Carrara, Load Preparation Automation Technician, for their invaluable support.

A promising future

We're proud of the progress we've made, and look forward to continuing this adventure, as we continue to explore the infinite possibilities offered by the digital twin.
Let's stay tuned to discover together the next steps in this technological revolution.

Citation

Jef Queeckers, Head of the Load Preparation Department.

«Our reclaimers are all too often damaged by collisions with piles of raw materials.
It is essential to better protect our machines to prevent these breakages.
This project is a clear example of our commitment to this goal.»

"Innovation isn't just about coming up with new ideas, it's about putting them to work in real-life conditions to test their true value."

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