

## **Crane automation at ArcelorMittal-Gent**

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**(Arcelor Mittal Gent)** October 16, 2009

We present the crane automation project (ACE) in the cold rolling mill at ArcelorMittal-Gent. The purpose of the project is to achieve automatic coil handling by unmanned overhead cranes in the stock yards of the cold rolling mill. The cranes are equipped with sensors and actuators that enable autonomous execution of elementary commands such as move, pickup and place. This talk focuses on the logistic model decisions that have to be taken in order to achieve the automatic steering of all coil manipulations. These include : finding the appropriate storage location for coils, scheduling the necessary coil manipulations in time and assigning them to the available cranes. As the overhead cranes share a common railway, special attention has to be paid to collision avoidance and crane coordination. In order for the automatic system to meet the required performance specifications, we use optimization models (constraint programming and optimization) as the core for our decision algorithms.