SCAFFOLD FOR SCRAPER - 51[m]

The Project:
Design a complex scaffolds with support and maintenance functions for scrapers with a maximum length of 51 [m]. Scrapers transfers material recovered from the filter system back flow of cement production. Scaffolds are based both on their own posts and the existing structure by means of rollers.

Required resources:
This project required the addition of a structural engineer, a licensed structural supervisor and a surveyor besides the industrial design office resources. CAD Resources: Pro / E Wildfire 2 Flex Eng module. FEA Resources: Pro / Mechanica.

Features:
Due to the uniqueness scraper conveyor length of 51[m] the equipment supplier didn’t estimated correctly the dynamic load generated by the equipment in operation. After the scaffold movement amplitude was measured, a FEA was generated and the real scraper dynamic load was determined. This way the scaffold structure could be straighten in the requested.

Achievements:
The redesigned scaffold meets the total load requirements.

The action
At the commissioning of the scraper, a scaffold structure oscillating movement was revealed. A FEA based on the measured amplitude was generated to determine the dynamic load that was lacking in the scraper provider documentation. By knowing all the loads acting on the structure and the application points it was possible to generate changes in the structure and in the scraper traction head to improve it’s behavior meanwhile keeping all it’s original functions.

Peculiarities:
- Measuring the movement amplitude of the scaffold.
- Understanding the source of oscillations in the structure.
- Estimation through FEA of the real dynamic load.
- Generate technical solutions as a result of changes in project input.