

The Right Equipment for the Right Job with Simulation

LOGISTICS

The Company

Spoornet* is the only provider of train services in South Africa. The Combined Electrical Workshop (CEW)** of this long distance and metropolitan train service provider is one of three large workshops responsible for the maintenance of electric and diesel electric locomotive armatures. The CEW is the only one with a fully automated VPI tank, capable of accommodating four traction armatures. Traction armatures are the main components being serviced in the traction armature workshop. Certain workstations in the workshop are, however, being used to service auxiliary (smaller) armatures.

The Challenges

The CEW wanted to increase volumes of armatures, but the impact of such a growth in workload was unknown regarding throughput time, utilization of resources, possible bottlenecks, etc. To determine the effect of certain changes on throughput time, Spoornet management selected Arena® simulation software to model the workshop.

The Deliverables

The model was used mainly to investigate the effect of additional equipment in the workshop. (More equipment would be required to increase the number of armatures to be serviced.) The simulation model was also used to evaluate the effect of various resource mixes on the process and the effect of moving certain resources to a different location in the workshop.



The Results

After the Arena model's lessons were implemented, the real-world results proved to be exactly as forecasted by the model: Capacity of one oven needed to be increased and more crane gantries were needed. The model also illustrated that more resources, including labor, were needed to achieve the projected throughputs. Some of the alternatives proved to have a minor effect on the system, keeping Spoornet from spending capital incorrectly. For Spoornet, simulation was used to establish the needs caused by changes and ensure implementation of the right resources for the right jobs the first time.

**Spoornet's name has changed to Transnet since the completion of this project.*

*** Today the CEW is one of Transnet Engineering's Centres of Excellence (COE).*

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