

VLT® 2800 lift engines and axles into Nissan cars in South Africa



Danfoss as the supplier of frequency converters to control these units.

An AGV acts as a stand alone conveyor running on a predetermined track around the assembly plant, carrying parts to the various work stations. It can also be used as a work station in its own right, allowing trained personnel to work on vehicle components before moving off to the next position in the assembly chain.

Vertical and horizontal motion control

In the application at Nissan, the AGV's were required in the "stuffing" section of the plant, to carry the engine and the rear axle to a position where they could be hoisted up and "stuffed" into the suspended vehicle body from underneath. The AGV therefore had to be designed not only to travel along a track, but also with a vertical lift that could raise the engine and rear axle approximately 1.5 meters up to the overhead vehicle.



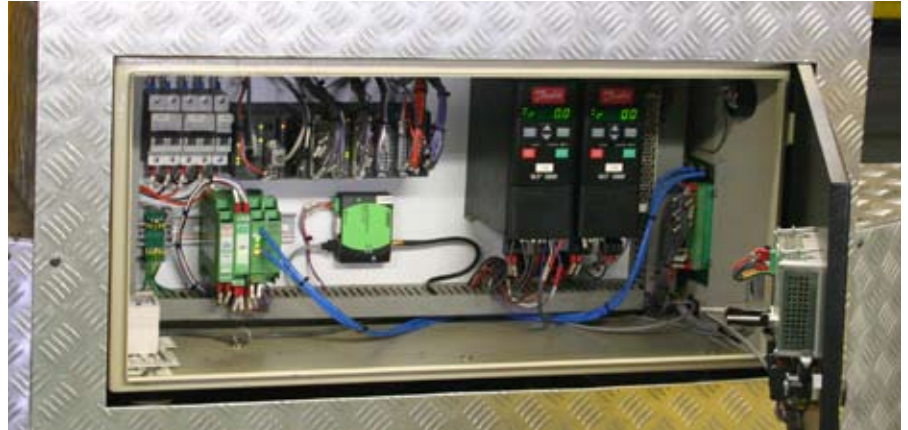
A visit to Nissan's Rosslyn vehicle assemble plant is a lesson in clean, efficient manufacturing processes. The emphasis is on work flow, space saving and efficiency, not to mention a pleasant and clean working environment.

Last year Nissan SA (PTY) LTD, in line with this philosophy, commissioned South African design and engineering company DirectTech to manufacture five automated guide vehicles (AGV's) to replace the 10-year-old mechanical system that was in operation. Nissan SA (PTY) LTD specified

The timing of the AGV's forward motion had to coincide with the speed of the overhead conveyor, stopping at the precise moment and position that would allow the "stuffing" to take place. The lift was designed with a cross-hatch, scissor type of support for the platform, which looks like a laundry clothes-horse when fully extended. The motors driving both those motions are controlled with the VLT® 2800.

Magnetically induced power

The electrical energy gets induced into the copper conducting cables embedded on either side of the track. The track lies flush to the factory floor, and with the induced energy creates a magnetic field around it. The magnetic field is picked up by the AGV with no direct contact to the floor, supplying the AGV with energy. Rectified, the voltage is around 300 V DC. This voltage supplies the 0.37 kW VLT® drives to control the motor driving the forward and reverse motion. The same supply feeds the 0.55 kW VLT® drives to control the motor driving the vertical motion. In case of a power failure, a battery pack can be quickly installed on the AGV.



Well suited

"The VLT® 2800 variable speed drives are well suited for this application where 300 V DC input is supplied to control 220 V three-phase motors," says Janie Wilemse, Project Manager at DirectTech.

"We were very pleased to see that the VLT® 2800 worked first time with the unusual power arrangement being supplied to it. The AGV's have been fully operational since we delivered them."

The five units were delivered and installed during the December 2006 shut-down. The Nissan "stuffing" section of the plant at Rosslyn has seen optimisation of the

work flow, improved efficiency, as well as minimal downtime and reduced maintenance with the AGV system now in place.