

# Neles ValvGuard “*exercises*” to keep fit

**Petrobras’ Paulinia refinery in Brazil is installing numerous Neles ValvGuard™ ESDs to meet process safety standards and implement cost-effective predictive maintenance.**

BY MARK WILLIAMSON

## ○ HYDROCARBON & CHEMICAL INDUSTRIES

**A**s an integral part of its program to upgrade its process safety systems to the latest IEC standards, Petrobras Brasileiro S.A. has just installed the first of many planned Neles ValvGuard units to its emergency shutdown valves at its Paulinia refinery in Sao Paulo State, Brazil. The refinery is the largest in Brazil.

Rogério Daisson Santos, Electrical and Instrumentation Maintenance Manager, describes why they decided on Neles ValvGuard technology: “We were looking for new technology that would permit us to comply with the IEC standards and our own Petrobras standard. In our evaluation of Emergency Shutdown Devices (ESD) we found that Neles ValvGuard is a better product, and one which is specifically designed for safety systems. It’s a true safety device monitoring the valve and actuator.” Santos says that, in addition to Neles ValvGuard’s proven reliability, the on-line testing of the valve mechanism was a key feature. Also, the valve’s certification by the German TÜV organization was a must. TÜV certifies Neles ValvGuard to SIL-3 (safety integrity level 3).

### **Safety valves need regular exercise**

An ESD valve, whose mechanism is not often moved, is susceptible to jamming. Santos cites one particularly problem called “cold flow” where the ball and soft seats in some valves seize. This is because the seat’s Teflon embeds itself in the metal ball microscopical surface grinding marks.

“We need to test the valves frequently but (with older technology)



Rogério Daisson Santos: “Neles ValvGuard is a true safety device.”

The Paulinia refinery is the largest in Brazil.



this is only possible when the process is stopped for major turnarounds, or process shutdowns,” he says. Today, the periods between shutdowns is becoming longer and longer. To ensure compliance with safety standards, maintenance engineers therefore face a dilemma. They need more valve testing but they have fewer opportunities to do it when the process is down. Also, frequent manual testing carries a high labor cost.

Neles ValvGuard overcomes this labor intensive work by automatically “exercising” the valve through a partial stroke at pre-pro-

grammed intervals. The maintenance technician configures the Neles ValvGuard using a notebook computer with Valve Manager software. This can be done remotely in the control room. Petrobras rated the software as very easy to use. After daily checks at first, the Neles ValvGuards are now checked weekly.

### **Predictive maintenance capability built in**

The intelligence built into the Neles ValvGuard also allows it to self-diagnose its performance and warn of any impending problems that

can be fixed before a failure occurs. The Neles ValvGuard generates operating and breakaway torque alarms to warn of mechanical problems. Temperature, valve leakage and supply pressure can also be monitored.

As of April 2003, two Neles ValvGuards have been installed for nine months with excellent performance. By 2004, up to 50 units will be installed. Petrobras intends to install a Neles FieldBrowser network to link all the smart valves into a central monitoring station and to follow the valve’s performance in real time. This will assist the maintenance people in scheduling a cost-effective predictive maintenance program.

### **ND800 positioners improve diesel blending**

The refinery has also installed Neles ND800 positioners on 5 valves in a diesel fuel blending operation. Three of the valve bodies are supplied by Metso Automation, two by another supplier. Metso Automation engineers assisted in analyzing the control performance of the previous valves and positioners using Nelscope analysis software. The valves were over-designed for the application. With the ND800 positioners engineers can change the valve characteristic curves, resulting in better control performance and lower product variations according to Santos. ■

**FOR MORE INFORMATION,  
PLEASE CONTACT:**

**Janne Laaksonen**  
Product Manager  
Helsinki, Finland  
[janne.laaksonen@metso.com](mailto:janne.laaksonen@metso.com)