

# Neles News



## Neles - proven reliability.

**Metso Automation specializes in automation and information management application networks and systems, field control solutions and life cycle services.**

To help you to optimize your process performance and reliability, Metso Automation approaches each process and application as a specific challenge. Neles control, on-off and ESD valves, accessories, intelligent devices and software products are engineered to meet such challenges. They offer innovative yet fundamentally simple construction, operation and maintenance features to optimize process performance at the lowest cost.

Neles valves have always been a symbol of quality and reliability. Over the years, we have worked with our customers to develop new technologies that better meet the ever-increasing demand for efficiency and quality, while providing reliability that has stood the test of time. As processes become more complex and technology more advanced, the little things that make

life easier become even more valuable. In the mid-'90s, process control reached a new level when Neles introduced its first digital valve controller, followed by the first asset management system.

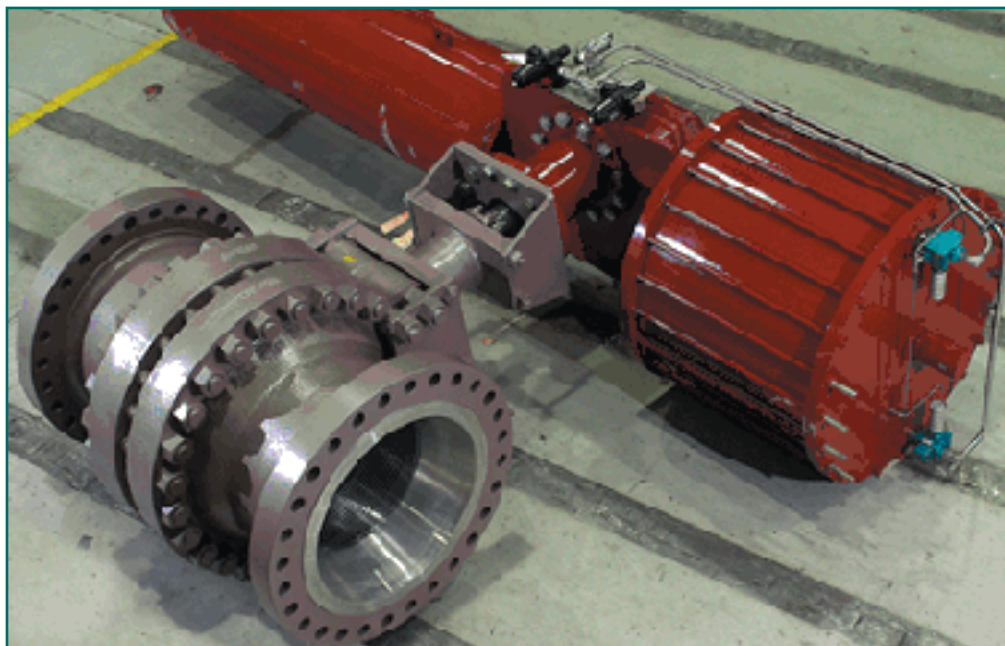
Metso Automation has delivered more than 1,000,000 Neles control, automated on-off and ESD valves since mid-'50s – convincing proof of our customer's continuing confidence in the Neles brand. Our Neles valve business has been growing strongly over the last 12 months and our expectations in China and the Asia Pacific are especially high.

Metso was ranked as the leading worldwide supplier of control valves for Pulp & Paper by ARC Advisory Group in their 2004 Control Valves Worldwide market study. Simultaneously, Metso Automation is making substantial deliveries to the world's largest petrochemical complex, the China-Shell Petrochemical Complex in Nanhai, China.

This is a news letter describing recent Neles business developments and products.

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By Janie Jeffries

## Nigeria's Bonny Island project

Nigeria LNG Limited was formed in May 1989 as a joint venture company<sup>\*)</sup> to harness Nigeria's natural gas reserves by purchasing and liquefying it for export. The liquid natural gas plant complex, is at Finima, Bonny Island in Rivers State; it has the capacity to accommodate at least 6 Trains and Trains 1, 2 and 3 are already in operation. Nigeria LNG currently provides 7 per cent of the world's LNG requirements. Development work on Trains 4 and 5 began in 1999, with start up planned for 2005, when Nigeria LNG's contribution to world demand will rise to 13 per cent.

### Process control solutions from Metso

Metso Automation received a major order for automated Neles ball valves for Trains 4 and 5 of the Nigerian LNG *Plus* Project. This is the latest order in a series for Bonny Island and was almost certainly obtained, despite international bidding, as a result of competitive pricing and the satisfactory performance of similar Metso Automation valves already supplied for Trains 1, 2 and 3. Metso has been a supplier of

***One of the most significant developments in the energy market today is undoubtedly the growth and increased importance of natural gas and of LNG in particular because modern high-volume gas-liquefaction technology provides the means of making it a commercially attractive product. Recent estimates indicate that production of natural gas is likely to continue to expand at an average annual rate of almost 3 per cent over the next 20 years, which means that output would effectively double by 2025.***

process control solutions to many of Shell's prestigious joint venture projects throughout the world – Sakhalin Energy in Russia, OLANG in Oman and Pertamina in Indonesia, for example.

For Trains 4 and 5, Metso has already delivered the following equipment to Bonny Island: Approx. 100 full bore and reduced bore 'on-off' ball-valves comprising Neles Series D metal-seated, trunnion-mounted reduced bore and full bore ball valves, Series X metal-seated and Jamesbury soft-seated 5000 series ball valves. All are designed for natural gas processing applications and for emergency (ESD/ESV) duties. The metal-seated Series D and Series X valves have been supplied for use in cryogenic service and are designed to operate

at temperatures as low as -196 degrees C. Most of the valves are pneumatically actuated by Neles Series B spring-return cylinder actuators and only four are hydraulically actuated.

Valve diameters for use on Trains 4 and 5 range from 2" - 30" and the valves are intended for operation at ASME pressure classes 150, 300, and 600. The biggest valves, the massive 30" models, are very solidly constructed; each weighs 10.000 kg.

### Testing and installation

A selection of the valves for the Bonny Island project has been tested in Metso Automation's cryogenic valve testing laboratory in Helsinki. This is one of the largest and most advanced dedicated valve testing facilities

in Europe which is capable of handling up to 36" ball valves and up to 54" high-performance butterfly valves. Tests include temperature, pressure and seat leakage and involve cycle times from six to thirty hours.

All the Metso equipment for Bonny Island Trains 4 and 5 will be installed and commissioned during 2005. In September Metso received a release order for NLNGsix, Bonny Island Train 6. The order covers 31 duplicate valves, a repeat supply of ball valves identical to units delivered on the NLNG *Plus* Project Bonny Island Trains 4 & 5.

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\*) Nigeria LNG Ltd., constituted by Shell Gas BV, Cleag Ltd. (ELF) and Agip International B.V, authorized a joint venture comprising Technip, Snamprogetti SpA, The M.W. Kellogg Co. and JGC Corporation, collectively known as "TSKJ", to commence work on the liquefaction units for Trains 4 and 5 at Bonny Island. TSKJ subsequently established companies in the Madeira Islands to execute the project, and contracts are between the Madeira companies and Nigeria LNG LTD. The Madeira companies, which are owned equally by the TSKJ partners, have established the Bonny Project Management Company Ltd. (BPMCO), based out of M.W. Kellogg Ltd.'s office in Greenford (Middx, UK) to manage the work related to this project.

## Neles News

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By Leif Lindberg

# Neles digital positioners a top sell - over 100,000 units already on the market



**The ND9000, intelligent valve controller from Metso, has proved to be a top-selling product. The number of digital positioners delivered to customers - both the ND9000 model launched in 2003 and the ND800 model available since 1996 - now exceeds 100,000 globally. The development of process valve positioner technology first by Neles and subsequently by Metso is a unique success story of innovations that turned traditional valve positioners into intelligent valve controllers.**

In the 1960s, industrial processes were mostly based on pneumatic control - except for those in oil refineries and power plants that employed electronic control. But an interest in electronic control was awakening in other fields, too. One problem was that electronic valve actuators were more expensive, so Neles ended up with an electropneumatic positioner in order to be able to continue using pneumatic actuators.

During the 1970's Neles introduced the NP4 pneumatic and NE4 electropneumatic positioners. Meanwhile, design work continued on integrated positioners. Digital technology was introduced to Neles at the beginning of

the 1990s. The information and experience of digital technology were obtained by connecting an auxiliary product with the NE7 positioner. ISMO (see photo and caption below) was a first step towards ND800, Metso's first digital positioner.

Eventually the product was finished and launched in 1996. "ND800 gained a reputation for high quality, just like Neles valves. We realized very quickly that we were number one in valve diagnostics, and in control performance," says Mika Nissinen, Director of the Neles Smart Products unit. And now ND9000 is a clear leader in both areas.

## New generation, new technology – the Metso ND9000 intelligent valve controller

ND800 achieved all objectives set for it, but the life cycle of an electronic product is shorter than that of a valve.

"In 2001 we started a project for the next-generation positioners. The development cycle of our positioners has actually been very impressive on the whole. This time we have managed to make a technological leap with the ND9000 intelligent valve controller," says Nissinen. "Now it's time for the markets to have their say."

The ND9000 intelligent valve controller has a number of new features. Three superb functional properties of the ND9000 intelligent valve controller are its top-quality control performance, reliability and usability – in other words, easy installation and commissioning and the ability to collect information," he emphasizes.

"One of the reasons why ND9000 intelligent valve controllers perform well is that the control technology is designed to adapt to changes. When the load on the valve changes, so does the dynamics of the controller," says Marko Ankerman, Product Manager of the Smart Products. ND9000 has a considerably higher processing and memory capacity than its predecessors. Diagnostically this is significant, because now the intelligent valve controller can store all information throughout its life cycle.

## 100,000 Metso digital positioners globally

Over 100,000 digital positioners of ND800 and ND9000 series are used

*The nelesCV Finetrol together with ND9000 intelligent valve controller is developed for optimum control performance and continuous online diagnostics and communication.*

in various customer applications at the present time. Half of the units are used in the refining and petrochemical industry and the other half in the pulp and paper industry. Mika Nissinen believes that the ND9000 intelligent valve controller will open up entirely new areas of application, especially in the petrochemical industry.

Combined with the FieldCare software, ND9000 provides new potential for predictive maintenance. Independent of communication protocol and running on software based on FDT/DTM technology, FieldCare is a commissioning, maintenance and servicing tool," points out Nissinen.

"Metso's customers will find it interesting that ND9000 can be installed on any valve system. ND9000 is part of the Metso valve package, but also an independent component. It's an easy choice for users."

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*This is an extract of an article published in 'Automation' 3/2004, Metso Automation customer magazine.*



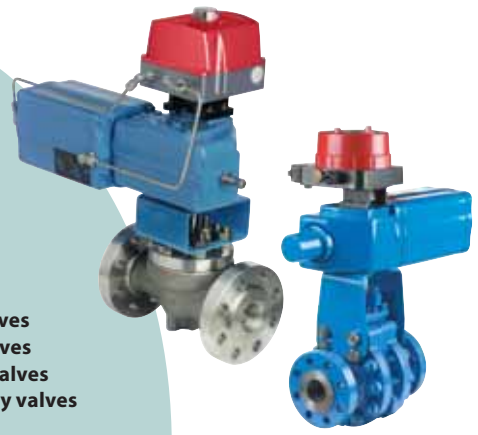
Intelligent Signal Modifier (ISMO) was the first step to evaluate digital control and valve package diagnostics.

# Neles Flow Control Solutions


- our product range in short



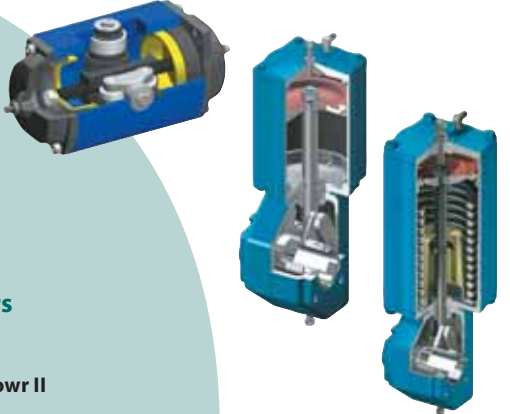
**Control valves**  
nelesCVSegment  
nelesCVFinetrol  
nelesCVNeldisc  
nelesCVGlobe  
Top 5 rotary valves  
E series ceramic valves



**ESD valves**  
X series ball valves  
D series ball valves  
Top entry ball valves  
Neldisc butterfly valves



**On-off valves**  
X series ball valves  
M series ball valves  
D series ball valves  
Neldisc butterfly valves



**Actuators**  
E series  
B series  
Quadra-Powr II



**Positioners and limit switches**  
Pneumatic positioners  
Electropneumatic positioners  
Neles Solar™  
Neles Eclipse™



**Smart products**  
ND9000™  
Neles ValvGuard™

For additional info on these product groups as well as on our application based products and other valve options, please refer to our commercial brochure **CB027, Neles Flow Control Solutions**. Contact our nearest sales

office for your own copy. The brochure is available in English, Brazilian Portuguese, Finnish, French, German, Italian and Russian.

# FDT/DTM - the most powerful way to release intelligence built in smart field devices

**Current smart field devices are continuously developed to help and benefit end-users in their daily operations.**

Things like wizard-based guided start-up, advanced devices or even process diagnostics, device optimization for special process conditions or advanced visualization are some examples of features which are seen today as part of very sophisticated smart field devices. As an example from Neles Smart Product Line, the intelligent valve controller ND9000 provides such control valve diagnostics which clearly help the end user to develop predictive maintenance activities. Visualization of these diagnostics requires a graphical user interface which meets customer expectations for openness and the capability to be integrated in any system. The technology supporting these very basic requirements is FDT (Field Device Tool). FDT is developed and marketed by the FDT Joint Interest Group (FDT JIG), which is a group of leading automation suppliers to both the process and factory automation industries.

### End-user benefits

Members of FDT JIG realized that the entire automation industry will only enjoy the benefits of field bus solutions and smart field devices if the selected software technology meets the following end-user requirements:

- A single device integration environment to manage, commission and configure any field device, from any device manufacturer connected to any fieldbus communications protocol;
- Flexibility and freedom to select any supplier's product and not be restricted to one vendor with consequent worries about compatibility and interoperability;
- Open technologies that preserve the current investment in installed field devices and do not require the removal of existing assets in order to take advantage of open technologies;
- Seamless data exchange with asset management applications, regardless of device type, vendor or communications protocol;
- Easy management, commissioning and configuration of complex field devices, such as intelligent valve controllers and radar level transmitters, in one environment regardless of system vendor.



The intelligent valve controller ND9000 provides control valve diagnostics to help the end users to develop predictive maintenance activities.

The FDT specification targets the aforementioned requirements and at the same time eliminates the need to develop vendor-specific proprietary solutions.

For example, FieldCare is a smart field device configuration and condition-monitoring tool which is based on FDT. Key components in FDT-based applications are DTMs (Device Type Managers). The DTM is simply a piece of software for a device like an intelligent valve controller. The device manufacturer provides a DTM, which is actually a graphical user interface. A DTM displays all the possible features and actions which may be found in the device e.g. real-time data, alarms, events, configuration information, screen displays, multilingual help screens, device-specific documentation, parameter validity check, generation of dependent variables, diagnostic functions, and the device calibration sequence. In a DTM, a manufacturer shows all the features built in a device in the way that he wants. The best thing is that DTM is an open i.e. not a proprietary solution, which pops up similarly in any FDT-based solution; it looks same whatever the communication protocol (HART, Foundation Fieldbus or PROFIBUS PA) may be used.

### FDT/DTM is not a replacement for DDL

In recent articles and press releases, a couple of major automation companies took a strong stand against FDT/DTM technology claiming that enhanced DDL offers a better solution than FDT/DTM. The FDT/DTM specification is not a threat to DDL; it was in fact written to pick up where the DDL specification leaves off. Applications such as advanced visualization and complex field device configuration,

commissioning and management are requirements that FDT/DTM technology fulfills. The FDT/DTM technology's starting point is to embrace and extend the capabilities of DDL technology. By definition, both DDL and FDT/DTM technologies are necessary to satisfy the end-users' needs.

The re-use of existing technologies is and has always been the quickest and most cost-effective means of meeting industry requirements. DDL enhancements would be best served by re-using the FDT/DTM technology to fill the gaps that the DDL enhancements are attempting to address. No quality-minded or cost-conscious corporation wants to re-specify and re-cast the DDL specification to fulfill requirements already addressed by the FDT/DTM specifications.

FDT/DTM specification offers re-usable technology to the leading global standards foundations today! No enhancement program is necessary. FDT/DTM technology can be deployed today. Functions that the DDL enhancement program is trying to define could be available now!

### What is the bottom line?

The FDT JIG wants to make it very clear that its members would not back or support the FDT/DTM technology if it were a replacement for or if it cannibalized their existing DDL technology investments. Many FDT JIG members have made substantial investments in DDL technology and they see FDT/DTM technology as a means of preserving that investment, while fulfilling the more challenging user requirements.

The FDT JIG members view FDT/DTM as the technology that can embrace and extend their DDL engineering, while giving them the flexibility to apply their own knowledge and core competencies to exploit the full potential of their field devices and control systems.

The appeal and acceptance of the FDT/DTM technology is growing, not only among device and control system manufacturers, but most importantly among end-users.

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For further information about FDT, visit  
[www.fdt-jig.org](http://www.fdt-jig.org)

By Marc Williamson

# FieldCare helps Kruger to Fast and Flawless Startup

The November 1, 2003 startup of Kruger Wayagamack's new PM 4 online LWC machine, was described by Paper Age Magazine as, "fast and flawless". Within days of the startup, PM 4 began producing saleable LWC and ultra-LWC paper. And, as of February, 2004, the machine's production "start up curve" is well ahead of schedule. The mill is located in Trois Rivières, Québec, northeast of Montréal.

The new Metso Paper production line includes the 8 meter wire width, 1,500-m/min OptiConcept base paper machine with an on-line OptiSizer film coater and an on-line OptiLoad multi-nip calender. In addition to the integrated control in metsoDNA, the Metso Automation scope of supply also included diagnostic and predictive maintenance tools: e.g. a FieldCare asset management system for remote configuration and diagnostics of Neles smart valves.

### No crossed wires with FieldCare

Before the pre-startup "water runs" the operation of process measurements and valves must be perfect; crossed wires must be eliminated beforehand. The flawless startup was aided by the FieldCare remote device configuration and diagnostic tool. FieldCare communicates to 817 devices, transmitters and Neles valves, through the HART communication



protocol. Almost 98% of the machine's field devices are linked to FieldCare.

Jean Guy Lagacé, Instrumentation Supervisor, says that FieldCare has been a real benefit in ensuring a flawless startup and saving time and money for field device calibration and checking the connections. "With FieldCare we saved a lot of time and labor in commissioning, verifying cable connections, and calibration," he says.

The tool remotely identifies any loose connections or improper installation without taking off the instrument or valve cover. This avoids tedious checking of wiring by two people at either end of the cable,

communicating by radio. All tag names for each device are factory assigned. Once installed, the factory tags and configuration settings are verified by FieldCare. Replacing a device is easy because the factory settings can be downloaded directly.

The diagnostic programs verify the valves are working properly or if any problems, like sticking, are just starting to develop. With this predictive maintenance tool Lagacé says, "It's easy to identify a problem with a valve before we have a problem with the process."

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## ND9000 in phase test at Copesul

Metso Automation's ND9000 intelligent valve controller has brought significant improvement in the operational performance of a valve that controls the level of steam condensate in one of the boiler tanks at Copesul Polo Petroquímico do Sul in Brazil. In addition, there has not been any need for tuning adjustments of the controller in the control loop. ND9000 has been undergoing phase tests at Copesul since January 12, 2004.

The existing FieldCare software was used for on-line monitoring of the operational condition of the control valve used in the process.

Copesul's Instrumentation and Control Engineer Claudio B. Sperb (see photo) says: "Compared to ND800, the advantages of ND9000 include better alarm diagnostics, a new external display and improved modularity. For Copesul,



however, the main advantage is its low electrical impedance, which enables its use in applications where ND800 could not be used." The company has also commented on the user-friendliness

of the new controller. It is easy to operate when installed on a valve, and there are no special IT needs.

ND9000's new interactive display on the front cover provides precise, instant readouts of operational data, such as the position, input current, temperature and pressure of the control valve.

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By Kristen Linna

# M-real's Savon Sellu has always relied on Neles valves

**For nearly 40 years M-real's Savon Sellu Mill in Kuopio, Finland, has been relying on Neles valves to keep its process operating smoothly. The long and successful cooperation between Savon Sellu and Metso Automation began when the mill was built in 1968. Since then, both the valves and the relationship have proven valuable.**

## Dozens of original valves still in use

Hundreds of Neles valves were installed when the mill was built. Rauno Nöjd, who joined Savon Sellu even before the mill was finished and currently works as the foreman in the instrument department, tells: "Today, we have dozens of the original valves still in use in the powerhouse and cardboard factory. Although their environment has changed dramatically – now they are controlled digitally – the valves are still working well. All the valves at the pulp mill and debarking plant have been replaced with new valves in the last four years."

"I appreciate Neles valves for their high quality and reliability. I sometimes refer to them as 'install and forget' valves. Neles valves are not the cheapest but the savings

are seen over time, as they do not need much maintenance," he continues.

## Cooperation led to friendship

The relationship between Metso Automation and Savon Sellu has been as valuable as the valves themselves. "The relationship is based on knowledge and mutual trust. It is not just about the products, it is about people," says Kari Mod, Area Sales Manager, Metso Automation.

According to Rauno Nöjd the cooperation with Metso has always worked well: "The cooperation has been this way for a long time. If we need something in a hurry, Metso has always been able to deliver quickly. Now that we know each other well, it's easy to work together."



M-real Savon Sellu Mill

## No time to rest

Even though the relationship is strong, Neles valves still must outperform the competitors. "Good relationships make it easier to work together, but business is still business. Neles valves have to surpass the competitors," Kari Mod explains.

As a leading European supplier of paper, paperboard and packaging solutions, M-real is an important customer for Metso Automation. M-real's Savon Sellu Mill is a good example of this cooperation. The

mill has steadily enhanced all its equipment and systems over the years. "Metso Automation has been very involved in the changes. For example, we changed to Metso's field equipment and Damatic automation system in the pulp mill and debarking plant," Rauno Nöjd emphasizes. The mill's current production capacity is 245,000 tons of fluting per year – nearly double the original capacity.

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## Shell 77/312 fugitive emission type approval

Metso Automation is the first valve manufacturer to have obtained fugitive emission type approval for its control valves in accordance with Shell's MES-C SPE 77/312 specification, revision 26-11-2002. Meeting these MES-C SPE 77/312 fugitive emission tests is only a part of the continuing total fugitive emissions / environmental strategy pursued by Metso. Other key elements of the strategy are ISO 15848 and the new TA-Luft type approvals.

The type approval tests were carried out at Metso Automation's research laboratory in Helsinki during the spring of 2004. The following Metso control valves passed the MES-C SPE 77/312 type approval test criteria:

1. RE-series segment rotary control valves
  - Tested valve RE 06" (qualifies size range 04" to 10")
  - Live loaded graphite stem packing
  - Tightness class B

2. FINETROL eccentric rotary plug control valves
  - Tested valve FC 03" (qualifies size range 02" to 06")
  - Live loaded graphite stem packing
  - Tightness class B
3. L6-series triple eccentric rotary control butterfly valves.
  - Tested valve L6D 08" (qualifies size range 06" to 12")
  - Live loaded graphite stem packing
  - Tightness class B

Shell-GSI has stated that all valves delivered to hydrocarbon processes in Shell plants worldwide must now have type approval in accordance with their MES-C SPE 77/312 specification. For instance, MES-C SPE 77/312 approval is mandatory at the Shell CS-PC Nanhai project where Metso Automation has delivered hundreds of valves. A growing number of valve manufacturers have already acquired MES-C SPE 77/312 type approval

for their ON/OFF valves, but none had received this approval for control valves until June 2004 when Metso's control valves passed the tests. The Shell 77/312 fugitive emission specification for control valves is much more demanding than that for on/off valves where only 100 mechanical cycles are required. The Shell MES-C SPE 77/312 control valve test procedure for Neles control valves was a combination of a very demanding helium leakage test with a simultaneous valve endurance test. Valves were stroked through 5000 mechanical cycles at different temperatures (max. 250 degC) and valves had to work faultlessly throughout the test whilst maintaining a helium leakage level lower than that required in MES-C SPE 77/312 class B.

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## RECENT NOTABLE ORDERS FOR NELES VALVES

### ... to Middle-Eastern fertiliser plant

German engineering company Uhde has placed several control valve orders for Metso Automation. These high performance Neles Neldisc and ball valves will be delivered for fertiliser plants to be constructed in Egypt and Saudi Arabia. The total value of the orders is 3,9 million euros. The deliveries are scheduled for 2005.

Uhde has been awarded to construct three ammonia/urea complexes for Egyptian Fertilizer Company (EFC), Alexandria Fertilizer Company (AlexFert) and the Cairo-based company Helwan Fertilizer Company (HFC). Each plant will have a capacity of 1,200 tonnes of ammonia and 1,925 tonnes of urea per day.

The fertilizer complex contract to Saudi Arabia was awarded by Saudi Arabian Fertilizer Company (SAFICO), an affiliate of Saudi Arabian Basic Industries Corporation (SABIC), one of the world's largest petrochemical groups. The overall complex will consist of a single-train ammonia plant with a capacity of 3,300 tonnes per day (the largest ever worldwide) and a 3,250 tonnes per day urea plant.

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### ... for fresh water project

Metso Automation has received a 2.7 million Euro order to supply Neles control valves for a gigantic fresh water project in Libya, Africa. The goal of this GMMR (Great Man Made River) project is to transfer water through underground pipeline network from huge aquifers in the deserts of southern Libya to the cities of the country as well enhance domestic agriculture.

GMMR project is the second largest ongoing water project in the world. The project is carried out by the Great Man-Made River Authority and funded by the Libyan Government.

Metso Automation's total delivery for the phase III of the GMMR project comprises eight 36 inch control valves. From these, 5 Neles Q-ball valves (class 150) will be delivered for Al Gardabiya pumping station and 3 Neles Q-ball valves (class 300) for Assdada pumping station. The deliveries are scheduled for January 2005. Project phase III will improve a water supply to the cities of Tripoli, Benghazi, Tobruk and Gadames.

Huge water resources were found from underground basins in early 1950s concurrently with an oil prospecting. The Kufra basin, lying in the south east, near the Egyptian border, covers an area of 350,000 km, forming an aquifer layer over 2,000 m deep, with an estimated capacity of 20,000 km<sup>3</sup> in the Libyan sector. The 600 m-deep aquifer in the Sirt basin is estimated to hold over 10,000km<sup>3</sup> of water, while the 450,000 km<sup>2</sup> Murzuk basin, south of Jabal Fezzan, is estimated to hold 4,800 km<sup>3</sup>.

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## Nelprof, the control valve selection software



Nelprof® control valve selection software by Metso Automation is a powerful tool for selecting the right control valve package quickly and accurately. Nelprof software predicts the performance of the control valve package as a part of the system before installation. By comparing the predicted performance of different valves, you can select the most appropriate control valve package to ensure the desired process performance.

With Nelprof, you will avoid oversizing of valves and undersizing of actuators, in

other words you are able to reduce valve acquisition and maintenance costs while optimizing your process control.

A comprehensive tutorial of the Nelprof also helps you learn more about process and control valve behavior. For your own copy, please contact your nearest sales office. For contact details visit our website [www.metsoautomation.com](http://www.metsoautomation.com) > Contact us.

All copies of the software have been virus scanned with Norton AntiVirus software.

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vesa.lemminen@metso.com

Visit our webpages at  
[www.metsoautomation.com](http://www.metsoautomation.com)