Mission-critical valves and valve automation development

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Mission-critical valves and valve automation development

Well-positioned in valves and valve automation

Leading position in valve automation

Service excellence supported by digitalization

History and focus in innovation
Mission-critical valves and valve automation development
Neles has a leading market position in valves and valve automation.
Products serve numerous processes and industries

- Gas
- Air
- Steam
- Chemicals
- Petrochemicals
- High viscous
- Solids
- Water
- Slurry
- Powder
- Oxygen
- Ethanol
Key customer drivers in process industry

- Reliability
- Safety
- Performance
- Availability
- Cost
Strong valve brands covering engineered high-performance and standard applications

**Neles®**
Premium engineered metal-seated valve solutions

**Jamesbury™**
Premium performance soft-seated valve solutions

**Easyflow by Neles™**
High-performance soft-seated valve solutions
Valves are mission critical equipment in adjusting and managing flows in process industries.

- Failure or disruption of mission critical factors will result in serious impact on business operations, e.g.,
  - Health & safety
  - Plant downtime
  - Loss of production far beyond equipment value
  - Costly surprise repairs and/or replacement

- Valves are governed by strict international standards and approvals
  - PED, ATEX
  - ISO, ASME, ANSI, API
  - IEC, EN, DIN
  - GOST, JIS
  - Customer approval and certification as pre-requisite for valve supplier engagement

- Strong customer reliance on supplier know-how
- Strong technical understanding is required to ensure appropriate valve selection
  - Industries
  - Customers
  - Processes and applications
  - Products
  - Plant design and process flows

Neles has been proven reliable in all aspects.
Research and development for valves

**PROACTIVE R&D APPROACH**
- Valve platforms maintained and developed to meet latest standards and customers’ specifications
- Systematic product renewal
- Offering extension
- New manufacturing methods

**LEADING TECHNOLOGY PORTFOLIO**
- 281 certificates
- 79 patents (2019: 7)
- Functioning innovation process, not limited to R&D

**COMMITTED RESOURCES**
- Increased attention to R&D and engineering
- Over 150 persons in valves R&D and engineering
- R&D hubs in Finland, China, India, USA, Germany and Korea

**FOCUS AREAS**
- Materials technologies, e.g. 3D printing, HIP
- Modularization and product renewal
- Digitalization and process development: simulation, design automation
- Design for manufacturing
- Design for service
Reinventing reliability in flow control

Customer approvals
- Leading supplier and development partner in fast growing industrial gas market
- Approved vendor for major oil & gas companies globally
- Approved products for major processes in process industries

Technology leadership
- Jamesbury Extreme™ seated valves, with laboratory-grade cleanliness, improved lifetime by 10x at polysilica plant
- Neles Wearblock™ extends lifetime 5x in an Italian refinery
- Metal seated valves operating in Russia, in -55-degree Celsius temperatures

Continuous innovation
- 88" butterfly valve to turbine test unit in China
- 3D printed Q-ball™ a unique solution for severe cavitation
- Neles valves in char filter to handle continuous 600,000 cycle high pressure jet pulse application

Market leadership
#1 supplier for Pulp & Bio mills
Top 10 Pulp & Bio mills in the world rely on Neles valves
#1 supplier for North American oil rail transport valves
Extremely regulated products and quality requirements to meet stringent safety standards
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Service excellence supported by digitalization

History and focus in innovation
Controllers and actuators represent attractive new opportunities

<table>
<thead>
<tr>
<th>CUSTOMER BASE</th>
<th>VALVE AND SYSTEM COMPATIBILITY</th>
<th>APPLICATIONS AND MARKETS</th>
<th>SALES CHANNEL FIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>• End users</td>
<td>• Compatible with virtually all valve types</td>
<td></td>
<td></td>
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<tr>
<td>• OEMs</td>
<td>• Interoperability certified with all major process control systems and industry protocols</td>
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<tr>
<td>• Distributors</td>
<td>• Field net devices for various network protocols to enable communication</td>
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<tr>
<td>• Other valve manufacturers</td>
<td>• Sold across broad set of process industries and applications – also ones where Neles valves are not present</td>
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<td></td>
<td>• Suitable for all sales channels</td>
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<td></td>
<td>• Very competitive availability models due to modular design and late configuration model</td>
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<td></td>
<td>• Design for service</td>
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</tbody>
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Underpinned by digitalization connecting customers and processes
Neles brands in valve controllers and actuation for any need or budget

Leveraging well-known brands to win market share in valve controlling and actuation

- Neles™
- Jamesbury™
- Easyflow by Neles™

### Valve controllers

<table>
<thead>
<tr>
<th>CONTROL</th>
<th>SAFETY</th>
<th>ON/OFF CONTROL</th>
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</thead>
<tbody>
<tr>
<td>Control with advanced diagnostics</td>
<td>Integrated valve controller std On/Off (Stonel)</td>
<td>Integraded valve controller, high cycle &amp; critical On/Off applications</td>
</tr>
<tr>
<td>Control with standard diagnostics</td>
<td>Limit switch valve monitoring (Stonel)</td>
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</tbody>
</table>

**Pneumatic**

- ND9000
- ND7000
- VG9000
- Axiom
- Quartz
- SwitchGuard
- NDX

**Electric**

- Valvcon
- B-Series
- N-Series
- VPVL
- RNP
- QPX

**Actuators**

- Small valves, all industries

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Digitalization in the core to improve data integration and knowledge management
- Wireless communication
- Connectivity will open up new business possibilities and improve profitability

- 251 certificates
- 36 patents (2019: 20)
- Remote monitoring
- Remote diagnostics
- Predictive maintenance
- Data integration and knowledge management

- Diagnostics concept for easy to understand graphics for fast decision making

- Platform based products enabling late configuration and efficient manufacturing
- Price competitive and high margin
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Leading position in valve automation

Service excellence supported by digitalization

History and focus in innovation
Worldwide service capabilities

- Worldwide presence of Neles’ own service centers
- Extended network through local partners
- Global installed base knowledge supported by regular monitoring through digitalized equipment
Full suite of parts and service offering

- All product families across core brands
- Globally harmonized processes and quality and safety standards
- 50,000+ valve sets deliveries annually
- Parts available in all continents

- 400+ field service experts and certified smart products service experts
- Profound valve knowledge from ground breaking research to maintenance
- Globally harmonized digitalized service processes ensure quality
- 20,000 serviced valves & 3,000 site visits annually

- Plant lifecycle services
- Availability and performance services
- Device management and maintenance services
- Shutdown service

- Measure and report on performance and profitability
- Support root cause analysis
- Prioritize corrective actions
- Sustain performance
Industry-leading performance solutions

Digitalization at heart

- Optimized performance
- Reliable operations
- Improved safety
- Sustainability

Comprehensive product portfolio

Value-adding services

State-of-the-art digital tools

Reducing project time with digital tools

Plant life cycle management
Global supply network to meet customer needs

Factory footprint close to customers
- Finland
- Germany
- USA
- China
- India

Key material supply strategically in
- China
- India
- Europe

Factories quality certified
Customer specific approvals and certification
All manufacturing units revamped or new

Approvals are required
- Designs
- Products
- Sub-suppliers
- Factories

Takes a decade or two to achieve creating high barrier of entry
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History and focus in innovation
History of innovation and growth – with a renewed focus to reinvent reliability

- World-class brand recognition
- Mission-critical equipment
- Frontrunner in services and MRO
- Continuous innovation
- Global platform for sales & service
- Growing & profitable

Transformation from P&P specialist to diversified process industries technology provider starting early 1990s
- Valve automation and digitalization development since 1995
- Expansion to global reach starting 1999
- Services development and globalization since 2006
- Control valve expansion from 2010 onwards
- Further expansion and focus in automation and controls
NELES

Reinventing reliability