Service Reliability and Upgradeability for Older Testing Machines

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Operating System lifecycles and their end of support influence IT decisions and, consequently, how machines are operated.

- Worldwide now most PCs work with Windows 10 – support ends in January 2020.

- Windows Vista was released about 5 years after Windows XP and Windows 10 was released less than 2 years after Windows 8.1 → faster developments require regular software updates

- In 2020 about 55% of all PCs used in companies will be operated with Windows 10. (Institute for Market Research Gartner, Meike Escherich)
Modernizations of material testing machines have grown steadily at an average annual growth rate of 6% over the past 19 years. Investments in modernizing equipment result in a higher utilization of existing resources.

- Older equipment is usually in good condition but out of sync with advances in IT and electronics
- Investments in older equipment allow users to maximize functionality with new sensors and software features
- Testing laboratories sometimes look to modernizing equipment in combination with new investments
ZwickRoell AG

ZwickRoell is your partner for long-term support – our products are a secure investment.

<table>
<thead>
<tr>
<th>Purchase</th>
<th>Commissioning</th>
<th>Operating the machine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consulting</td>
<td>Preliminary acceptance</td>
<td>Maintenance / inspection / calibration</td>
</tr>
<tr>
<td>Demonstration</td>
<td>Installation</td>
<td>Retrofitting</td>
</tr>
<tr>
<td>Pre-Testing</td>
<td>Instruction</td>
<td>Machine relocation</td>
</tr>
<tr>
<td></td>
<td>Initial calibration</td>
<td></td>
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<tr>
<td></td>
<td>DQ / IQ / OQ</td>
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</tbody>
</table>

- Hotline / support desk
- Repairs
- Spare parts
- Software services
- Training courses – ZwickAcademy
- Contract testing

Modernization
Machine return
Procurement
ZwickRoell guarantees availability of spare parts and service for 10 years from end of production, with an additional grace period, where possible.

<table>
<thead>
<tr>
<th>Year Range</th>
<th>DUPS Electronic</th>
<th>MOPS Electronic</th>
<th>testControl Electronic</th>
<th>testControl II Electronic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992-2004</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>1994-2006</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>2002-2016i</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>2012-2019</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*reliable service  upgradeability  testXpert® III

Note: Except hardness and special systems

This matrix applies exclusively to electromechanical static standard testing machines
Software & Electronic Compatibility

Electronics, test software and operating systems are directly related. Compatibility ensures a reliable level of support.

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Testing Software</th>
<th>DUPS / MOPS</th>
<th>testControl</th>
<th>testControl II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows XP</td>
<td>testXpert™</td>
<td>tXp V9.01 - V12.3</td>
<td>not available</td>
<td></td>
</tr>
<tr>
<td>Windows Vista</td>
<td>testXpert™ II</td>
<td>tXp II V2.0 - V3.0</td>
<td>tXp II V3.4 - V3.61</td>
<td></td>
</tr>
<tr>
<td>Windows 7</td>
<td>tXp II V3.1-V3.31</td>
<td>tXp II V3.1-3.61</td>
<td>tXp II V3.4</td>
<td></td>
</tr>
<tr>
<td>testXpert™ III</td>
<td>tXp III ≥ V1.1</td>
<td>tXp III ≥ V1.1</td>
<td>tXp II ≥V3.7</td>
<td>tXp III ≥ V1.1</td>
</tr>
<tr>
<td>Windows 8</td>
<td>not available</td>
<td>tXp II ≥ V3.5 (V3.6 WIN 8.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Windows 10</td>
<td>not available</td>
<td>tXp III ≥ V1.1</td>
<td>tXp II ≥V3.7</td>
<td>tXp III ≥ V1.1</td>
</tr>
</tbody>
</table>

Legend: Development stopped, Correct version, End of Support, *Except hardness and special systems.
Modernizations

The testing machine is brought up to state of the art using high-quality components as installed in new machines.

- Maintenance-free AC drive for greater precision, outstanding control dynamics and high efficiency
- Modular testControl II measurement and control electronics for enhanced performance in the most demanding applications
- Existing sensors and accessories remain in use and can be expanded via the extensive ZwickRoell range
- Intelligent and reliable testXpert® III testing software for all applications
Modernization concept - Dynamic Applications

Modernization technology for dynamic testing systems. Reliable service and future upgradeability thanks to new technology.

**testControl II & testXpert R**

- State-of-the-art technology for single-axis testing systems
- Maximum safety for the operator thanks to 2-channel safety circuits and operation mode switch for Setup and Test modes
- Modular design with 5 freely selectable slots for maximum flexibility

**Control Cube servo controller & Cubus software**

- Simple handling of complex testing systems
- Modular software structure for optimum customization to the test requirements
- Highly suitable for multi-axial test benches
- Cascadable servo controller
Modernizations

ZwickRoell experts modernize machines either on-site or at the ZwickRoell Modernization Center.

Modernizations at ZwickRoell feature:

- Custom-fit design for new components
- Replacement of all wear parts
- Performance of any necessary adjustments

<table>
<thead>
<tr>
<th>On-site modernizations:</th>
<th>Modernizations at ZwickRoell:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quick, professional execution</td>
<td>Load frame painting</td>
</tr>
<tr>
<td>Only a few days of machine downtime during modernization</td>
<td>Load frame overhauling</td>
</tr>
<tr>
<td>Warranty on all replaced parts</td>
<td>Warranty on complete machines</td>
</tr>
</tbody>
</table>
Modernizations

RetroLine testControl II products provide the optimal solution for modernizing almost every ZwickRoell load frame.

**Static load frames**
- zwickiLine
- ProLine
- AllroundLine
- High capacity
- Hydraulic
- Non-ZwickRoell manufacturer

**Dynamic testing systems**
- Servo-hydraulic
- Vibrophores
- Testing systems
Modernizations

ZwickRoell’s expertise can modernize any machine – made by ZwickRoell or other manufacturers.

ZwickRoell has performed almost 6,000 modernizations

Almost 40% of all ZwickRoell modernizations are performed on machines produced by other manufacturers (approx. 50 different brands)
Case Study: Schoeller Werk, Germany

Uniform laboratory platform guarantees efficient quality assurance.

- Schoeller Werk is a leading manufacturer of stainless steel welded pipes
- They invested in a modernization and a new machine to handle increased test throughput
- Test results are stored in a central database with the data exchange automatically managed by testXpert II
Case Study: Woodbridge

Woodbridge uses a worldwide network of modernized testing machines to strengthen their global quality approach.

- Worldwide supplier for innovative foam products (automotive, packaging, building materials)
- After the modernizations done, Woodbridge can now predict potential quality issues and recommend key processes at quality centers around the world:
  - Centralized testing protocols and methods suit customer specific standards
  - Datatransfer directly into self programmed LIMS
  - Review of data from production- and support-labs
  - State of the art electronics- and software technology
- Conclusion: Reliable test results and upgradeable testing system

https://www.zwickroell.com/de-de/news/woodbridge
Case Study: Redaelli, Italy

Tensile tests at 3,000kN - ZwickRoell modernizes testing machine for steel wire ropes at Redaelli.

- Redaelli’s core product is specialty wire ropes, mostly for offshore and mining industries
- The user tested most samples at a nearby University that had a 3MN machine
- After the modernization, the customer could
  - increase their testing capacity up to 3MN (formerly 2.5MN)
  - test according to EN and ISO with the higher testing capacity and specially-designed wedge grips
  - obtain a new CE marking for safety with a specially designed safety shield
Case Study: MPA BAU Hannover, Germany

The MPA BAU Hannover Institute invests in the latest technology through a modernization of two Zwick machines.

- The MPA BAU Hannover institute provides independent materials testing, component testing and design testing in the construction field
- The laboratories use 2 Zwick testing machines built in 1996 and 2001
- After the modernization to testControl II, the user could
  - rely on guaranteed spare part availability with the new testControl II electronics
  - use new optical sensors to their full capability with testControl II
  - use the latest software features available with testXpert II
Modernization of old testing equipment is driven by growing or changing test needs. Reevaluating these needs are critical in determining the best solution for an individual situation.

- Trends in IT and changing industry needs drive the modernization concept

- Modernizations allow testers to increase utilization of existing equipment by adding software features and new sensors

- Guaranteed spare part availability is renewed and reliable due to the use of new electronic and drive system components
Thank You!