Automation Planning Solutions

EHPM Solutions – The Journey Continues:
TDC/TPN – Experion® PKS Control Unification

March 2014
Honeywell Evolution Vision

- Keeps your reliable system running longer with modernization
- Protects intellectual property and capital investments
- Provides services support for small incremental technology upgrades when needed

Delivering continuous evolution for 40+ years

Committed to Protecting Your Automation Investments
## Traditional Challenges in Automation Planning

<table>
<thead>
<tr>
<th></th>
<th>Pros</th>
<th>Cons</th>
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<tbody>
<tr>
<td>Keep existing</td>
<td>• No immediate CAPEX</td>
<td>• Limited support</td>
</tr>
<tr>
<td>system running</td>
<td>• No Training</td>
<td>• High support cost (OPEX)</td>
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<tr>
<td></td>
<td>• No Engineering</td>
<td>• Retiring workforce</td>
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<td></td>
<td></td>
<td>• No productivity gains</td>
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<tr>
<td>Replace existing</td>
<td>• Support Longevity</td>
<td>• High CAPEX</td>
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<tr>
<td>system with new</td>
<td>• New functions and features</td>
<td>• High engineering effort</td>
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<td></td>
<td></td>
<td>• Extensive training</td>
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<td></td>
<td></td>
<td>• Replacement downtime</td>
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<tr>
<td>Modernization</td>
<td>• Investment linearity</td>
<td>• Lower productivity gains</td>
</tr>
<tr>
<td>and incremental</td>
<td>• Support longevity</td>
<td>• IP validation effort</td>
</tr>
<tr>
<td>upgrades</td>
<td>• Minimal CAPEX</td>
<td></td>
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<tr>
<td></td>
<td>• Minimal engineering</td>
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<td></td>
<td>• Unplanned downtime risk</td>
<td></td>
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<tr>
<td></td>
<td>• Minimal engineering</td>
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## Addressing the Process Automation Needs

<table>
<thead>
<tr>
<th>Process Automation Needs</th>
<th>Old system</th>
<th>Rip/Replace</th>
<th>Modernize</th>
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<tbody>
<tr>
<td>Minimal process disruption</td>
<td>✓</td>
<td></td>
<td>✓</td>
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<tr>
<td>Preserve products quality</td>
<td></td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Retain intellectual property</td>
<td>✓</td>
<td></td>
<td>✓</td>
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<tr>
<td>Support longevity</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Ageing workforce independency</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Low operational cost</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Effective process operations</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Plant assets utilization</td>
<td>✓</td>
<td></td>
<td>✓</td>
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<tr>
<td>Existing workforce utilization</td>
<td>✓</td>
<td></td>
<td>✓</td>
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<tr>
<td>Reduced risk &amp; cost of change</td>
<td>✓</td>
<td></td>
<td>✓</td>
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<tr>
<td>Short changeover time</td>
<td></td>
<td></td>
<td>✓</td>
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Economical control system modernization with EHPM Solutions
Technology Development in the Past – Summary

- 1975 – TDC 2000
- 1983 – TDC 3000 Universal Station
- 1988 – Process Manager
- 1996 – FSC integrated in TPS / TPN
- 2004 – Experion Station TPS
- 2007 – C300 and SM integrated in Experion PKS
- 2010 – Unified HMI using Experion PKS
- 2013 – Ethernet based EUCN and EHPM

Classic Technology

21st Century Technology

Committed to Protecting Your Automation Investments
The TPN/Experion PKS System in 2010

Unified Human Machine Interface (HMI)

Production Plant

Unified HMI; Separated Control Networks
The TPN/Experion PKS System in 2016

Unified Human Machine Interface (HMI)

2013 - 2016

Unified Control

Production Plant

Unified HMI; Unified Control Networks
EHPM Solutions Benefits

**Sustainability**
- Keeps your plant running longer
- Protects your Intellectual property (IP)
- Protects your CAPEX investments
- Utilize skills / resources

IP, CAPEX life extension till 2035

**Operation / Control Efficiency**
- Expands production with identical controllers
- Consistency in operations
- Small incremental upgrades approach
- Reduced process downtime

Up to 50% reduction in engineering cost

**Maintenance Efficiency**
- Better diagnostics
- Reduced maintenance
- Skilled labor availability
- Reduced footprint

Maintenance cost reduction larger than 5% with modernization

Support Longevity and Improved Plant Performance
EHPM Benefits Roadmap

2014 – 2016

• Extended effective life of assets with small modernizations and CAPEX / IP protection,
  • Honeywell process controllers (2013)
  • Honeywell safety and interlocking systems (2014)
  • 3rd party devices communication (2016)
• Reduced downtime, step-wise incremental upgrades
  • On-process HPM-EHPM controllers upgrades (2015)
  • Segmented incremental upgrades of TPN control networks (2015)
• Plant control effectiveness, reduced investment cost for expansions
  • Direct peer to peer between different generations controllers (2014)
  • Plant expansions with controller of choice EHPM/C300 (2014)
• Reduced risk of control system load/response time issues affecting product quality and production continuation
  • EHPM controller historization directly on Experion PKS server (2014)
  • HMI access to EHPM without use of TPN gateways (2015)

Small modernizations for uninterrupted operations till 2035
In Summary

**Key Values**
- Sustainability
- Operation and control efficiency
- Maintenance Efficiency

**What is New?**
- Control level unification between TDC/TPN and EPKS control systems
- Automation planning options for incremental modernization

**Expected Outcome of Incremental Modernization**
- IP retention, CAPEX life extension till 2035
- Up to 50% reduction in engineering cost
- > 5% maintenance cost reduction after modernization
Roadmap to the Future

EHPM Solutions - a milestone in the Lifecycle Evolution Roadmap

- Protects intellectual property & CAPEX investment
- Enables process expansion with reduced engineering effort
- Minimizes process downtime for modernization
- Reduces process disruption risks
- Enables small incremental upgrades

Honeywell’s Commitment to Continuous Evolution