Industrial Wireless
- Enabling Safety

Kamran Alkan– Honeywell
Agenda

• Background
• Wireless as Enabler
• Case Studies
HSE Regulations Continue to Increase

**EPA’s Clean Power Plan**
“Estimates are that it will cost the power industry up to $480B over the next 15 years to comply.”
NERA Economic Consulting

**Tighter Emission Controls for Automobiles**
“Rules are likely to cost Refiners $10B in capital costs and $2.4B/year in compliance expenses.”
Baker & O’Brien Consulting

**National Emission Standards for Hazardous Air Pollutants**
“Estimated cost to the Oil & Gas industry for compliance will be $170M annually.”
Environment Protection Agency

**Boiler MACT**
“The final boiler MACT rule is estimated to cost the Pulp & Paper industry $3B.”
Pulp & Paperworkers Resource Council
Safety Remains the Highest Priority but Plateauing

Incident rate continues to drop, however 0 is the goal

<table>
<thead>
<tr>
<th>Year</th>
<th>Incidents per 100 Full Time Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>3.9</td>
</tr>
<tr>
<td>2009</td>
<td>3.6</td>
</tr>
<tr>
<td>2010</td>
<td>3.5</td>
</tr>
<tr>
<td>2011</td>
<td>3.4</td>
</tr>
<tr>
<td>2012</td>
<td>3.4</td>
</tr>
<tr>
<td>2013</td>
<td>3.3</td>
</tr>
</tbody>
</table>

Challenges

- Asset monitoring
- Inventory Management
- Explosions
- Limited access to critical data
- Unmonitored Areas and Processes
- Spills and HSE threats
- Deteriorating infrastructure
And Even Bigger Challenge…

**2015 Americas CAPEX ($B)**

<table>
<thead>
<tr>
<th>Category</th>
<th>2015</th>
<th>CAGR 2010-14</th>
<th>CAGR 2014-15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil &amp; Gas</td>
<td>$280</td>
<td>12%</td>
<td>-28%</td>
</tr>
<tr>
<td>Power</td>
<td>$160</td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td>Batch</td>
<td>$100</td>
<td>1%</td>
<td>0.5%</td>
</tr>
<tr>
<td>MMM</td>
<td>$90</td>
<td>6%</td>
<td>-7%</td>
</tr>
<tr>
<td>Chemicals</td>
<td>$60</td>
<td>3%</td>
<td>2%</td>
</tr>
<tr>
<td>Refining</td>
<td>$40</td>
<td>-2%</td>
<td>-10%</td>
</tr>
<tr>
<td>P3</td>
<td>$20</td>
<td>9%</td>
<td>0%</td>
</tr>
<tr>
<td>Water</td>
<td>$15</td>
<td>2%</td>
<td>-5%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$760M</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: IS15 May 2015 Estimates

![Change in OPEX Spending vs Prior Year](chart)

Do More with Less CAPEX and OPEX…
Wireless is The Enabler

- Lower CAPEX
- Faster Deployment
- Lower Maintenance

- Process Monitoring
- Level Measurement
- Gas Leak Detection
- Overfill / Spill Monitoring
- Vibration Monitoring
- Safety Shower Monitoring
- Personnel Safety Monitoring
- Video Monitoring
Utilizing the Enabler

- Time Critical Perimeter Monitoring
- Oil Storage Terminal Safety Compliance
- HSE Regulations Compliance
- Customer Innovation
  - Using Wireless for Enhancing Safety
## Case Study 1
### Perimeter Monitoring – Time Critical

**LNG Facility in Middle East - Brownfield**

### Challenges
- Alarming system for detection of gas leaks without extensive cabling.
- Meet 3 seconds alarm requirement.

### Solution
- FDAP based ISA100 Wireless network with XYR6000 Universal Transmitters and solar power panels.
- Fully redundant system end to end.

### Results
- Improved site safety system within budget.
- 3 seconds alarming requirement met.
- Compliance to government regulations for HSE.
“...requirement for the end to end cycle of the moment of detection of fire and gas until the moment of activation of the sounders and beacons, as well as *with absence of line power.*”
# Case Study 2

## Meeting Safety Compliance

Tank Farms across India - Brownfield

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Solution</th>
<th>Results</th>
</tr>
</thead>
</table>
| • Secondary level tank gauging to meet safety compliance - M B Lal recommendations  
• 49 locations spread out around the country  
• Require end to end solution within budget | • Honeywell Enraf FlexLine ISA 100 Wireless with OneWireless Network using FDAPs  
• Total 90 FDAPs, 98 WDMs and over 550 Enraf FlexLine ISA100 Wireless radar gauges being deployed across the 49 locations | • Compliance within budget and project schedule  
• Consistent deployment across all sites  
• Comprehensive solution to meet requirement |
### Case Study 3

**Meeting HSE Compliance**

Refinery South America - Brownfield

<table>
<thead>
<tr>
<th>Challenges</th>
<th>• New environmental regulations required ENAP to monitor and collect environmental data for the water being discharged into the ocean.</th>
</tr>
</thead>
</table>
| Solution | • OneWireless Network  
• Six OneWireless XYR 6000 High Level Analog Input Transmitters |
| Benefits | • Gained fast access to critical data that was previously unavailable due to rough terrain  
• Met environmental regulations at a fraction of the cost of running wires  
• Saved more than $100,000 by avoiding the costs associated with wiring |

"…We were able to gain quick access to data, meet stringent environmental requirements and save money by avoiding hard-wired costs…"

*Ricardo Trujillo, ENAP Aconcagua Refinery*
Case Study 4
Customer Innovation...
Refinery Middle East- Brownfield

Challenges
- How to make the emergency response command aware of the scene in real time.
- Increase effectiveness on emergency response.

Solution
- Site wide OneWireless Network with vehicles mounted with PTZ cameras, mobile computers and DVM solution.

Results
- Live feeds from incident commander vehicles help the remote command address the situation more effectively.
- Improved plant safety performance.
- Recording of the incidents and response helps continuous improvement (training).
Questions?

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