j5 Control of Work

Is your company still using paper, spreadsheets or word processor documents to manage and record safety-critical control of work information?
The Problem

According to the Health and Safety Executive (HSE), when using permit to work systems to safely control work, major hazards could arise from the following:

- Wrong type of work permit used
- Wrong information about work required in the work permit
- Failure to recognise the hazards where work is carried out – e.g. flammable substances
- Introduction of ignition source in controlled flameproof area – e.g. welding, non-spark-proof tools, non-intrinsically safe equipment used in intrinsically safe zones
- Terms of work permit not adhered to – e.g. failure to isolate plant and / or drain lines of hazardous substances
- Failure to hand-over plant in safe condition on completion of work / cancelling of work permit
- Unauthorised staff performing work permit functions
- Poor management of the work permit system
- Insufficient monitoring of the work permit system
Ever-present hazards are difficult to control if paper, spreadsheets, word processor documents, scattered databases or other inadequate tools are used to manage and record safety-critical Control of Work information at industrial facilities. There have been several tragic accidents across different decades and industries where substandard permit to work systems were highlighted as a contributory factor in government agency case studies and investigation reports, such as:

- **2017** Packaging Corporation of America Hot Work Explosion
- **2014** DuPont La Porte Chemical Facility Toxic Chemical Release
- **2013** Phillips 66 Uncontrolled Release of High Pressure and Temperature Steam
- **2006** Bethune Point Wastewater Plant Explosion
- **2006** Jamegy Inc. Mill Tank Fire
- **2006** Partridge Raleigh Oilfield Explosion and Fire
- **2005** Valero Refinery Asphyxiation Incident
- **1992** Hickson & Welch Fire
- **1989** Phillips 66 Disaster
- **1988** Occidental Piper Alpha Explosion
In their 2010 “Seven Key Lessons to Prevent Worker Deaths During Hot Work In and Around Tanks” Safety Bulletin, the U.S. Chemical Safety and Hazard Investigation Board (CSB) highlighted how inadequate permit to work procedures have contributed to numerous accidents where a flammable vapor came in contact with an ignition source.

One of the key lessons from those tragic incidents was that companies should use written permits and:

"Ensure that qualified personnel familiar with the specific site hazards review and authorize all hot work and issue permits specifically identifying the work to be conducted and the required precautions.”

Seven Key Lessons to Prevent Worker Deaths During Hot Work In and Around Tanks
U.S. Chemical Safety and Hazard Investigation Board (CSB)

The American Petroleum Institute (API) and National Fire Protection Association (NFPA) also highlight the importance of Control of Work procedures in:

- **NFPA 51B**: Standard for Fire Prevention During Welding, Cutting, and Other Hot Work
- **NFPA 326**: Standard for the Safeguarding of Tanks and Containers for Entry, Cleaning, or Repair
### Isolation Details

**Isolation Certificate**

<table>
<thead>
<tr>
<th>Details</th>
<th>Value</th>
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<tbody>
<tr>
<td>Isolation Discipline</td>
<td>Mechanical</td>
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<tr>
<td>Equipment to be Isolated</td>
<td>Crude Oil Distillation unit</td>
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<td>Reason for Isolation</td>
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**Isolation Plan**

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<tbody>
<tr>
<td>1</td>
<td>V232</td>
<td>3 Phase HL</td>
<td>Efflux in Place</td>
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<tr>
<td>2</td>
<td>V204</td>
<td>Torque Outlet Valve</td>
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<tr>
<td>3</td>
<td>V501</td>
<td>Vivier Outlet Valve</td>
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<td>4</td>
<td>V155</td>
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<td>5</td>
<td>V22</td>
<td>Water Outlet Valve</td>
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**Work, Materials and Controls**

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<td>Work Assessment Report</td>
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**Work Order**

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<td>Permit Number</td>
<td>CW2</td>
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<tr>
<td>Work Order #</td>
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**Description of the Work**

- Inspect, repair and then recertify the exposed surfaces of a rail valve.
*j5 Control of Work*

The Solution

The digital j5 Control of Work solution has been developed to reduce operational risk and help ensure that the:

1. **Right type of work permit is used**
   Using strict approvals and workflows

2. **Right information about work required is on the work permit**
   Using required data fields, clear digital entries and collating key information from relevant information sources

3. **Hazards are recognised where work is carried out**
   Comprehensive advice and information is accessible on a mobile device at each workflow step

4. **Introduction of mobile devices to manage and record Control of Work procedures does not increase the risk of an ignition source in a controlled flameproof area**
   j5 Mobility can be used on intrinsically safe mobile devices

5. **Terms of work permit are adhered to**
   Using strict approvals and workflows

6. **Plant is handed over in safe condition on completion of work / cancelling of work permit**
   Each step of every procedure recorded using j5 Control of Work is transparent and j5 Shift Handover can be used to communicate the status of all open, closed and cancelled permits between the outgoing and incoming shift workers and contractors

7. **Staff performing work permit functions are authorized**
   Enforces a process of worker identification and required signatures before and after each work function

8. **Work permit system is managed effectively**
   Provides quick information access to the relevant personnel and allows for consistent procedures which can be configured by authorized personnel as requirements change

9. **Effective monitoring of the work permit system**
   j5 Dashboards, Reports and Views enable effective monitoring and assists in managing and scheduling permits across the enterprise
**j5 Control of Work Technology**

**Enterprise Scalability**

j5 Control of Work is powered by patented j5 IndustraForm® Templates, which allow companies to transform paper, spreadsheets, word processor documents and scattered databases into enterprise-level applications quickly and with minimal disruption to operations.

**Patented Spreadsheet-Like Configurability**

While j5 Control of Work is an enterprise-wide digital platform, the j5 IndustraForm Designer allows personnel to configure j5 Control of Work in a familiar, patented spreadsheet-like environment. This makes configuration easy and accessible to those who don’t have programming skills, while also reducing expensive vendor change requests and reliance significantly, which lowers the cost of ownership.

**Comprehensive Mobility**

This configuration extends to mobile devices, where j5 IndustraForm Templates can also be used extensively, meaning that companies can develop mobile applications internally with minimal effort. This is significant with j5 Control of Work because it is important — according to the Health and Safety Executive (HSE) — to recognise hazards when and where work is carried out.

**Tried and Tested Solution**

j5 Control of Work is not an underdeveloped add-on; it is part of a solid digital platform solution that has been designed to continually improve with minimal disruption and to futureproof your Control of Work processes. j5 Operations Management Solutions is a consistent, upgradable digital platform where site configuration is modular to allow for relatively effortless upgrades.

**Increased Efficiency and Time Savings**

As all j5 Operations Management Solutions elements exist on the same desktop and mobile framework, upgrading multiple j5 IndustraForm Templates is stable and hassle-free. This simple upgrade process also saves time and financial costs, allowing customers to allocate more resources towards the safe operation of their plants.
j5 Operations Management Solutions offers the advantage of having a proven industrial solution whilst having the option to provide any complementary module that you would need for a specific requirement.”

Laurent Hardy
Operations Manager, European Synchrotron Radiation Foundation (ESRF)
Hexagon is a global leader in sensor, software and autonomous solutions. We are putting data to work to boost efficiency, productivity, and quality across industrial, manufacturing, infrastructure, safety, and mobility applications.

Our technologies are shaping urban and production ecosystems to become increasingly connected and autonomous — ensuring a scalable, sustainable future.

Hexagon’s PPM division empowers its clients to transform unstructured information into a smart digital asset to visualize, build and manage structures and facilities of all complexities, ensuring safe and efficient operation throughout the entire lifecycle.

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