



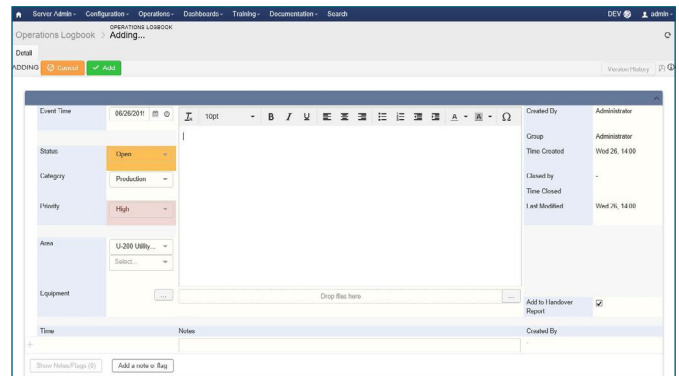
## WHAT'S NEW IN j5 2019?

At Hexagon PPM we strive to support our Customers digital transformation journey for the long haul. As a result, j5 2019 brings another set of new Customer requested features and functionality to j5 Operations Management Software. j5 2019 further enhances the j5 Framework, j5 Shift Operations Management, j5 Mobility, and the j5 IndustraForm® Designer / j5 IndustraForm Templates, which are all key components of j5 Operations Management Software.

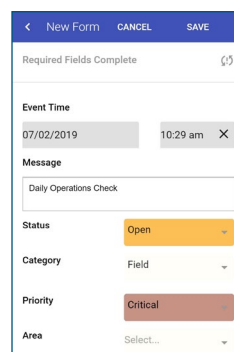
### Full j5 IndustraForm Designer Configuration for the j5 Operations Logbook and j5 Work Instructions (Desktop and Mobile)

In previous versions of j5 Operations Management Software, both the j5 Operations Logbook and j5 Work Instructions could only have j5 IndustraForm Template functionality when these were attached in a separate tab. In j5 2019, the j5 IndustraForm Designer has been enhanced further to allow the j5 Operations Logbook and j5 Work Instructions to be fully configured in a flexible spreadsheet-like environment. Allowing these j5 Applications to become more dynamic as the process evolves and for different layouts to appear for different plant scenarios. This means that these j5 Applications can now be fully based on j5 IndustraForm Templates, instead of having different configuration methods for the same j5 Application. This is particularly useful when

using j5 Mobility, because these j5 Applications will be configured the same for both Desktop and Mobile use with the j5 IndustraForm Designer. This significant enhancement allows Customers to configure j5 Applications themselves easier, which lowers vendor reliance and the cost of ownership.



New j5 Operations Logbook Entry Screen on a Desktop

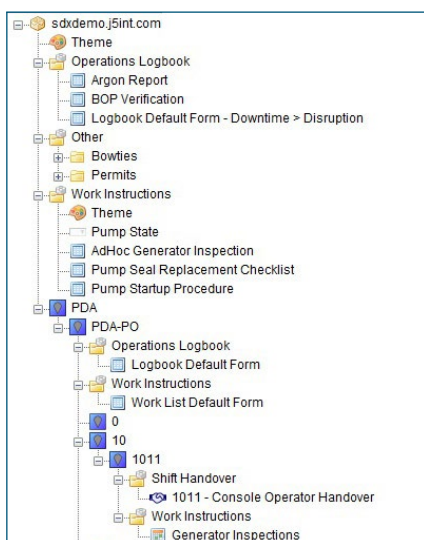


New j5 Operations Logbook Entry Screen on j5 Mobility



## Easier to Navigate j5 IndraForm Template Hierarchy in the j5 IndraForm Designer (Based on Operational Areas)

In previous versions of j5 Operations Management Software, j5 IndraForm Templates did not have an easy identifier on where they would be used on an Industrial Site and which j5 Application they are associated with. To improve this, j5 2019 brings a unified approach to organizing and maintaining j5 IndraForm Templates in the j5 IndraForm Designer. A j5 IndraForm Template's position in the j5 IndraForm Designer's Library Tree Structure is now determined by which Operational Area it is used in. It is possible to define j5 IndraForm Templates that can be used in multiple Operational Areas by adding them higher up in the Operational Area Tree Structure. Users can only interact with j5 IndraForm Templates that are based on their own Operational Area permissions and User Rights are now also based on Operational Areas, so Power Users can manage the j5 IndraForm Templates for their Operational Area but cannot change j5 IndraForm Templates in other Operational Areas.



Library Tree Structure in the j5 IndraForm Designer

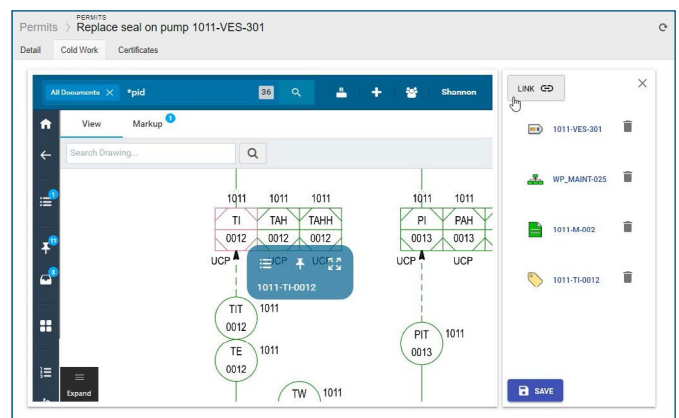
## Create Default j5 IndraForm Template Designs Based on Operational Area and Category

New to j5 2019, the j5 IndraForm Templates used when adding and editing j5 Operations Logbook or j5 Work Instructions entries are called the "Main Form Template". A set of "Default Form" j5 IndraForm Templates can be configured using the j5 IndraForm Designer, where the appropriate j5 IndraForm Templates are automatically selected based on the Operational Area and Category of the entry. Each level of the Operational Area hierarchy inherits the j5 IndraForm Templates from the parent Operational Areas above. For example, a "Default Form" j5 IndraForm Template can be assigned to the j5 Operations Logbook across an entire organization which can be configured for individual Industrial Sites and customized further for individual Industrial Site Sections or Industrial Site Section Units.

## Integration with Other Hexagon PPM Solutions Like SDx® and SmartPlant Enterprise for Owner Operators (SPO)

Following the Hexagon acquisition of j5 Operations Management Software in January 2019, there is now possible integration with other Hexagon solutions in j5 2019 like SDx® and SmartPlant Enterprise for Owner Operators (SPO) allowing Customers to now incorporate real-time situational awareness of facility operations into their digital twin, adding unique and continuous value to industrial sites from engineering through to operations. This is achieved using the Hexagon SPF WebClient, which is the web interface that is used for both SDx and SPO. The integration allows SDx content to be linked in to j5 IndraForm Templates and provides links back to j5 Applications from within SDx.

There is also a new j5 IndraForm Template input type called the "SDx Object Selector" that allows a User to navigate through SDx and link any "Object" - for example, a Document or Tag - into a j5 IndraForm Template. "Objects" can be selected from the SDx List Pages, Info Map Pages, and even from Interactive 3D Models and P&ID Diagrams. Linked "Objects" can also be viewed in j5 IndraForm Templates and when links are selected it navigates to the corresponding Info Map Page in SDx. It is also possible to now configure additional SDx Action Menu entries that open an embedded j5 Application screen from the "Objects" that have been linked using the "SDx Object Selector". This automatically applies a Filter to include j5 Application entries that link to the "Object". When viewing j5 IndraForm Templates from within SDx, clicking on the linked "Objects" open the corresponding Action Menu without navigating to another screen. There is also an alternative configuration that applies a Filter based on an Operational Area when linking from a Plant Breakdown Structure "Object" in SDx.



Hexagon SDx Embedded in j5 Permit to Work

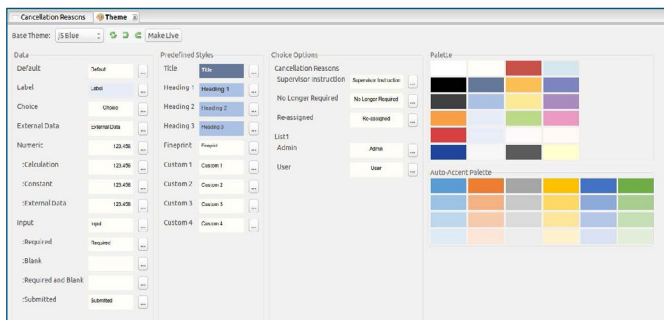
Permit No.	Valid From	Valid Until	Site	Section	Permit Type	Description of work to be done	Status	Select Location
CW2	06/25/2019 13:30	06/27/2019 13:00	PDA	PDA-PO	Cold Work	Replace seal on pump 1011-VES-301	Drafting	Select Location
CW3	06/25/2019 13:30	06/26/2019 13:00	PDA	PDA-PO	Cold Work	TK12 Borescope scheduled.	Drafting	Select Location

Please write up separately the normal Non-Rotating Hydraulics and turning gear LOTO forms and tags.

j5 Permit to Work Embedded in Hexagon SDx

## Intelligent j5 IndustraForm Template Theming

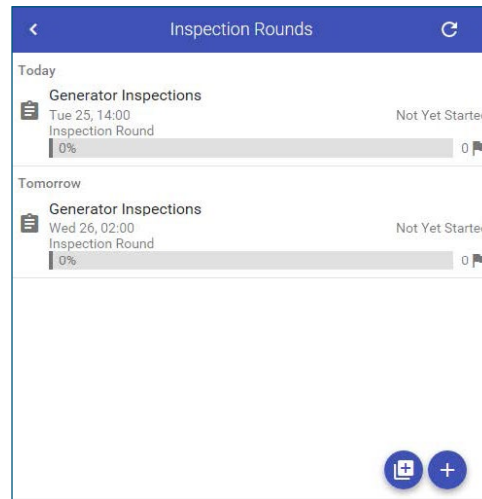
j5 2018 supported rich formatting functions on j5 IndustraForm Templates such as background colors, foreground text colors, bold, italics, underline, horizontal text align (left, center, right or justified), vertical text align (top, middle or bottom) and font size. These could be applied and edited on each Cell in j5 IndustraForm Templates. j5 2019 has taken this to another level by allowing for Default or Stock j5 IndustraForm Template Themes that can be applied across the j5 IndustraForm Designer Library Tree Structure. Themes can be customized in layers by Operational Area and by Scope and can apply to j5 IndustraForm Templates in the same position in the j5 IndustraForm Designer Library Tree Structure and to any of those below them. As a result, Themes in “Child” j5 IndustraForm Templates can inherit all the Theme settings from their “Parent”. Users can edit the styles of different Field Types using the Theme Editor Panel in the j5 IndustraForm Designer. This significantly reduces configuration time and complexity.



Theme Editor Panel in the j5 IndustraForm Designer

## Automatic j5 IndustraForm Template Delivery on j5 Mobility

In previous versions of j5 Mobility, workers needed to manually choose the j5 IndustraForm Template they wanted to work with. To solve this problem in j5 2019, scheduled j5 IndustraForm Templates are automatically delivered in j5 Mobility. j5 Mobility checks for new j5 IndustraForm Templates every few minutes and j5 IndustraForm Templates are removed from j5 Mobility one day after they no longer meet the Date Range and Status criteria. A “Refresh” button has also been included which retrieves all the j5 IndustraForm Templates available on the server immediately. The criteria for which j5 IndustraForm Templates are automatically loaded onto j5 Mobility depend on the j5 Application. For example, with the j5 Operations Logbook it will be all “Open”, and any “Closed” entries from the last 24 hours and for j5 Work Instructions it would be any entries that are categorized as “Mobile” and aren’t “Complete” or “Cancelled” that are scheduled for up to 1 day ahead and have an “End Time” that hasn’t passed already.



Automatic Delivery of j5 IndustraForm Templates on j5 Mobility

## Import j5 Operator Rounds Tasks Using a Spreadsheet

Often Operator Rounds have many Tasks and in previous versions of j5 Operations Management Software it was time consuming to create j5 IndustraForm Templates with a long list of Tasks. j5 2019 solves this problem because a new “Tasks Spreadsheet Format” has been added for planning j5 Operator Rounds more quickly. The Operational Areas, Tasks and related Task Information are all planned in the “Tasks Spreadsheet Format”. The “Tasks Spreadsheet Format” is then imported using the j5 IndustraForm Designer and converted into a j5 IndustraForm Template, ready to be used and scheduled. Once imported, the j5 IndustraForm Template is ready for use on both Desktop and Mobile devices. j5 Inspection Rounds configurations from j5 1.16 can be exported to the “Tasks Spreadsheet Format”, which helps Customers to upgrade their old configuration to use the new j5 Operator Rounds approach which is based on j5 IndustraForm Templates.

## j5 Mobility Geolocation Data

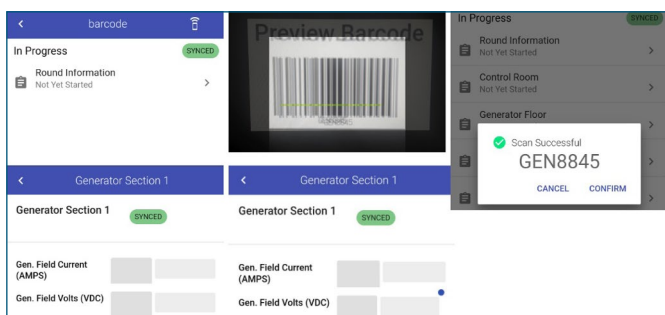
New to j5 2019, Geolocation tagging is available on all fields marked as Tasks in j5 IndustraForm Templates, and can be used across j5 Applications, including j5 Permit to Work. This Geolocation data can interface to visualization tools using a JSON REST web query and includes all the standard Geolocation API details such as latitude, longitude, accuracy, altitude, timestamp, and many more useful data points.

## Cleaner j5 Mobility Displays

In j5 2019, The List View for j5 IndustraForm Templates on j5 Mobility has been simplified to optimise screen space as well as showing more useful information per entry such as the Description, Category and Status. The Sync Status of each entry has also been updated to only show if there is a sync error. For example, on j5 Work Instructions the List View now shows Task Completion with a Progress Bar as well as Flag count.

## j5 Mobility Barcode Scanning Enhancements

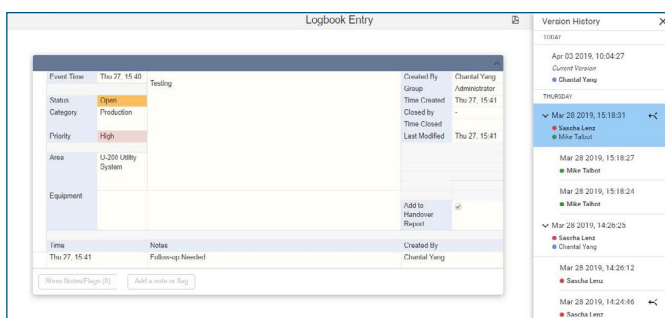
j5 Mobility Barcode Scanning was introduced in j5 2018 to navigate Users directly to the relevant Task or Equipment item, reducing the amount of time spent completing field work. In j5 2019, Users can link Barcode values to j5 IndustraForm Template fields or subsections in the j5 IndustraForm Designer. Barcode values can be set to static values or set using formulas and can be configured using the “Tasks Spreadsheet Format”, making it quick and easy to associate Barcodes to Tasks. If a Barcode is available within a j5 IndustraForm Template, the Barcode icon will be shown within j5 Mobility. Tapping this icon will open the mobile device’s camera allowing for the Barcode to be scanned. Once the Barcode has been scanned successfully, the j5 IndustraForm Template will be opened at the relevant Task field.



j5 Mobility Barcode Scanning

## Enhanced Audit Capabilities With New j5 IndustraForm Template Version History View

In j5 2019, Users can view the history of changes made in a j5 IndustraForm Template by clicking the “Version History Button”. A “Version History Pane” appears to the right of the j5 IndustraForm Template, displaying an easy to read Audit View of all its versions over time. The “Version History Pane” shows changes made by different Users, grouped by Date and Time Range where individual changes longer than 30 minutes apart are grouped separately. Each version has the name of the User who committed the change displayed in bold. Clicking on an individual change within the “Version History Pane” displays a snapshot of the j5 IndustraForm Template as it appeared at that point in time in read-only mode. Changes made on j5 Mobility are also shown in the “Version History Pane” and in the case where offline changes are made at the same time as another User’s, merges made to the data will be shown in the “Version History Pane”.



j5 IndustraForm Template Version History View

## j5 IndustraForm Templates Testing Improvements

In j5 2019, the process of previewing a j5 IndustraForm Template in the j5 IndustraForm Designer and making it live has now been enhanced. In the j5 IndustraForm Designer, the “Publish Live” upload and download buttons have been replaced with a single “Make Live” button. As a result, changes to j5 IndustraForm Templates can now be safely previewed and edited without changing the “Live” version. Once a User is satisfied with any changes, pressing the “Make Live” button causes any future j5 IndustraForm Template instances to use the new version. j5 IndustraForm Templates that have been edited but have not been made live on the server are highlighted with an asterisk (\*) in the navigation pane in the j5 IndustraForm Designer. These changes are saved on the server, so it is safe to leave a j5 IndustraForm Template with draft changes for several days if required.

## Addition of Password-Based Approvals in j5 Applications

It is common for multiple people in different Roles to be viewing a j5 Application entry on the same computer monitor. In j5 2019, Users other than the currently logged in User can now “Approve” or “Reject” Sections by entering their login credentials. Users no longer need to sign out and in to “Approve” or “Reject”. This is particularly helpful for j5 Shift Handover and j5 Permit to Work. This feature is currently not available on j5 Mobility.

## New j5 IndustraForm Designer Library-Based Option Lists

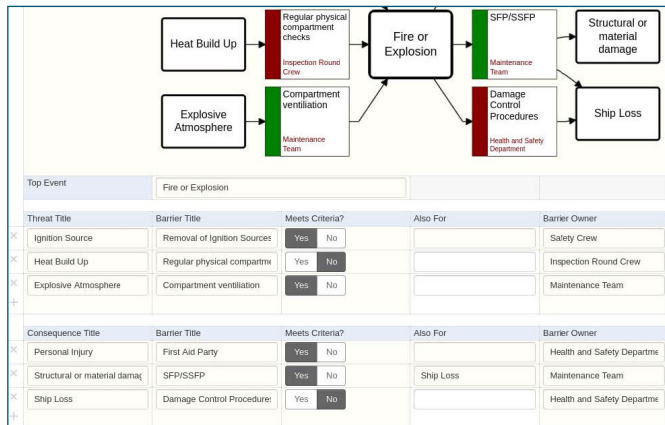
To help maintain consistency across many j5 IndustraForm Templates, Option Lists can now in j5 2019 be defined in the j5 IndustraForm Designer Library Tree Structure. An Option List can be used as the source for Choice fields across multiple j5 IndustraForm Templates and updating the Option List updates all the available Choices in the corresponding j5 IndustraForm Templates. Option Lists work similarly to Themes in that they affect the j5 IndustraForm Templates in the same position in the j5 IndustraForm Designer Library Tree Structure and can be customized by Operational Area and by Scope. Each Option in an Option List can also be styled using the Themes Editor. These Option Themes are visible on both Desktop and Mobile j5 IndustraForm Templates.

## New “Tree Hierarchy Select” Field Type

In j5 2019, the “Tree Hierarchy Select” field type now allows hierarchy data of an any depth to be selected in a more visual way. This is particularly useful for hierarchy data that has many levels and when multiple selections are required (for example, Industrial Sites with many Operational Areas or a large organizational tree). The “Tree Hierarchy Select” field is configurable through the j5 IndustraForm Designer and this component can also be used for j5 Application hierarchy fields.

## Dynamic Bow Tie Diagrams Within j5 IndrastraForm Templates

Bow Tie Diagrams are visualizations that provide an overview of Risk (“Top Event”), ways to mitigate that Risk (“Barriers”), and help identify what the results of those Risks are (“Consequences”). In j5 2019, Bow Tie diagrams are now supported in j5 IndrastraForm Templates as a Chart type, using the new BOWTIE formula.



Bow Tie Diagram in a j5 IndrastraForm Template

## Scheduled j5 IndrastraForm Template Reports

In j5 2019, the Scheduled Reports functionality can now produce reports from j5 IndrastraForm Templates in addition to Reports based on a BIRT Report template. A j5 IndrastraForm Template Report Template can be created in the j5 IndrastraForm Designer using the IMPORT functions to gather the required data. On the configured schedule, the j5 IndrastraForm Template will be updated with the external data, exported to a PDF and emailed to the recipients.

## j5 Work Instructions and Scheduled Reports Now Managed in the j5 IndrastraForm Designer

In j5 2018, j5 Shift Handover schedules and their associated j5 IndrastraForm Templates could be managed in the j5 IndrastraForm Designer. This has now extended to j5 Work Instructions and Scheduled Reports with both the schedules and their associated j5 IndrastraForm Templates managed directly from the j5 IndrastraForm Designer Library Tree Structure. Existing j5 Shift Handover configurations managed in the j5 IndrastraForm Designer will be automatically moved into the new j5 IndrastraForm Designer Library Tree Structure when upgrading to j5 2019.

## Predefined Messages in j5 IndrastraForm Template Rich Text Fields

Now in j5 2019, Predefined Messages can now be configured for all j5 IndrastraForm Template Rich Text fields. Each Rich Text field in a j5 IndrastraForm Template can also be configured to use a different Predefined Message List.

## New Data Carry-Over Mechanism for j5 IndrastraForm Templates in j5 Work Instructions

Previously in j5 Work Instructions, data could only be carried over from one j5 IndrastraForm Template to the next in the schedule at the time it was created. This meant that each j5 IndrastraForm Template could only be created once the previous one had been “Complete”. Now in j5 2019, j5 IndrastraForm Template data can be carried over into those in “In Progress”, so entries can be created ahead of time and edited if planning notes need to be added before work begins. If the current j5 Work instructions entry is not “Complete”, and a User navigates into a future j5 IndrastraForm Template, the User is able to select whether to carry over data into this entry, and which previous entry to carry data over from. This is helpful when part of a scheduled series of work is skipped, because the data can still be carried over and the trends retained. This new carry-over mechanism is not used by j5 Shift Handover.

## j5 Standing Orders Improvements on j5 Mobility

In j5 2019, j5 Standing Orders on j5 Mobility has been updated to use a j5 IndrastraForm Template to present information to the User. j5 Standing Orders entries can be viewed and “Acknowledged” by online j5 Mobility Users. With this change and the merging of the two j5 Operations Logbook home screen tiles, all j5 Mobility home screen tiles now use j5 IndrastraForm Templates.

## Other Advanced Technical Improvements

- Server-side External Data Refresh and the Addition of the ISPAST Function for j5 IndustraForm Templates
- Improved Database Schema Management
- “Form Settings Tab” in the j5 IndustraForm Designer
- Predefined Datastore Choice Option for User Rights Groups
- “Complete If” Formula for Top Level Sections with no Submit Button
- “Editable When Complete” Checkbox for Input Element
- Configuration of j5 IndustraForm Template Titles
- New j5 IndustraForm Designer Functions: FORM.CREATEDBYGROUP, FORM.CREATEDBYUSER, FORM.CREATEDTIME, and ISPAST
- Additional Support for Microsoft Windows Server 2019 and PostgreSQL 11



## ABOUT HEXAGON

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.