



EUROPEAN SYNCHROTRON RADIATION FACILITY (ESRF), FRANCE

Key Facts

Company: European Synchrotron Radiation Facility (ESRF)

Website: www.esrf.eu

Description: The European Synchrotron Radiation Facility (ESRF) is a 6 GeV X-ray source in Grenoble, France.

The accelerator complex comprises of a linear accelerator, a synchrotron and a storage ring that have been routinely operating for over 20 years in a 24h/24h mode.

This source delivers 5,600 hours of X-ray beam to 43 beam lines simultaneously.

Industry: Particle Acceleration

Products Used:

j5 Operations Management Software

THE PROBLEM

The ESRF operation is managed from the control room by a two person crew rotating over 24 hours in 3 shifts of 8 hours. The crew must ensure that the beam meets the required operating specifications. Many technical and decision-assisting procedures have been set up and the crew is responsible for documenting all their observations, and for actions. Before ESRF implemented j5 Operations Management Software in 2004, most of their procedures were written in a template format and classified in a file.

In the control room, all events on the accelerators were handwritten in paper logbooks (30 logbooks per year / 6,000 pages per year). The main limitation of the handwritten logbooks was the difficulty of retrieving old information when needed. Several institutes had developed their own e-logbook and offered the possibility of sharing it with ESRF. These e-logbooks fulfilled some of the ESRF specifications but none of them satisfied their requirements in term of flexibility. At that time, ESRF discovered the j5 Operations Logbook and a study of its capabilities confirmed that it met most of their requirements, either natively or with minor enhancements.

Another attraction of the j5 Operations Logbook was that it can use any standard database (Oracle, SQL Server and Postgres). j5 Operations Management Software also only needed to be installed once onto a server PC while still allowing every user access via a standard web browser. ESRF wanted a solution that was customizable and flexible to change with their specific requirements. They found that j5 Operations Management Software is extremely easy to customize to meet particular requirements and anyone who understands the fill-in-the-form procedure can do it without coding. ESRF discovered that virtually any kind of document / file can be attached to a j5 Operations Logbook entry and these attachments can be displayed immediately from the log. j5 Operations Management Software can also be used to create a whole spectrum of j5 Applications like custom logbooks, reports, document repositories, work permits and more and the user-interface is intuitive enough that there is no requirement for special training. Therefore ESRF decided to implement j5 Operations Management Software.





BENEFITS OF j5 OPERATIONS MANAGEMENT SOFTWARE

j5 Operations Management Software includes a real-time resource ideally suited to the connection with the ESRF Tango control system. When Tango sends events, an entry in j5 Operations Logbook is generated automatically. Thus, any power supply problem is now automatically logged. In addition to the real-time resource, j5 Operations Management Software has steadily evolved to meet the special needs of ESRF:

- Filtering has been substantially improved and integrated into the main ESRF page, additionally, custom filter buttons can be configured to meet the needs of frequently used filters.
- The j5 Framework is tab-based for the hierarchical management of multiple j5 Applications and individual beam lines can now be implemented and managed efficiently.
- A new wizard-based configuration functionality has been added, enabling fast creation of new j5 Applications.
- New and more representative visualizations including charts, photographs and special scriptable buttons are configurable through a wizard.
- LDAP authentication enables the centralized management of large numbers of users.
- Provision of standard and custom applications like j5 Permit to Work, j5 Inspection Rounds, j5 Alarm Management and many more.
- j5 Applications can be accessed via PDAs to allow remote access.
- There is an ability to have j5 Applications within j5 Applications, these sub-logbooks are especially useful, for example, when a main event has several sub-events.
- j5 Dashboards, Reports and Views and “ripple through reporting” allow the scheduling of daily, weekly and monthly PDF or spreadsheet reports.
- Third party software can access the j5 Applications.
- Entries from one j5 Applications can appear on another j5 Application.

HOW j5 OPERATIONS MANAGEMENT SOFTWARE PROVIDED THE SOLUTION

j5 Applications matched the ESRF requirements closely, but a huge advantage to ESRF was the flexibility to easily add their own enhancements:

- The enhanced filtering and searching capability enables a user to locate a j5 Operations Logbook entry quickly by selecting options from multiple fields and locate specific text within the attached pdf files, for example: a user may want to display all “failures” from the “klystron” of the “Radio-frequency” system in the last seven days
- Special fields allow experts to add explanations or corrective actions to j5 Operations Logbook entries entered by operators
- A gallery for screenshots was added to the j5 Applications and thumbnails of the screenshots were shown in each entry
- An enhanced User Permission system was created, giving fine grain control of who can perform an operation
- Multi-key combination options were added so that a user can accurately describe situations that cover multiple overlapping areas
- Special procedural business rules were added, for example, j5 Shift Handover forces selected users to read status information at the start of the shift
- A powerful notification functionality was added, therefore an email or an SMS can be sent out to a selected group of recipients: if the conditions in the j5 Applications meet a configured requirement, if the Shift Crew wants a list of recipients to be informed of any new entry or at a scheduled time during the day.

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.