# OSART Good Practices
## MAINTENANCE
### Work Control

## Belleville, France

Mission Date; 9-26 October, 2000

The electrical section has developed a user-friendly computer application to manage on-line the work of each supervisor, the status of each work order, rescheduling, etc. All the situations are displayed using colour coded information which is easily managed.
While the team does not condone the independent development of the process, it recognizes the unique computer application aspect, which could be applied plant-wide and be potentially useful for other plants.
Each preventive maintenance programme for each piece of equipment has been divided into maintenance actions, each of which appears on a separate line of the screen, showing the name of the action, the priority, frequency, duration, cost, subcontracting if necessary, the name of the planner in charge and the decrees requiring this operation for safety related equipment and pressure vessels.
This data base has been started and there are at present 2000 maintenance actions in it, 90% of which can be found in the Sygma data base, and a colour code shows if an action is ready to be performed when requested or is awaiting more information, spares or other resources.
The data base allows us to:
- find out, rapidly, the cost, duration and work load during outage,
- manage the working load of each planner and track accurately the inclusion of different documents such as basic preventive maintenance programmes, mail, periodic testing, experience feedback,
- generate a ten-year schedule of the activities during operation and outages and to a yearly work load for the section,
- extract on a yearly or monthly basis the preventive actions for the work shop, to allow accurate tracking and avoid missing any out.

## Ignalina, Lithuania

Mission Date; 5-21 June, 2006

The plant has implemented an on-line monitoring application for the management and work control of maintenance tasks in all areas (mechanic, I&C, electrical, welding, etc).
A deep detailed programme of continuous management and work control was developed at the plant. Within the frame of this programme an intranet computer system was developed. The on-line system tracks all daily and weekly activities and monitors them in the aspect of maintenance management, planning and control.
Such system allows management staff to perform an effective and efficient control of activities in the following maintenance directions:
-weekly and daily tasks;
-weekly reports on the results and performance indicators of the work fulfillment;
-minutes and protocols of all meetings, plans and schedules of maintenance and repair works;
-on-line monitoring of contractors' work arrangement;
-on-line monitoring of quality evaluation of activities of all maintenance departments including contractors;
-authorized access and review of plans and schedules of maintenance and repair works by means of 'PRIMAVERA 5.0' Programme.
-informing and announcements for the maintenance personnel;
-on-line control of works fulfillment stages by means of intranet computer programme ' FOBOS'.
The results of on-line monitoring are applied effectively for implementation of corrective actions. The maintenance personnel are well informed. The implementation of on-line monitoring programme allowed to reducing the number of log-books and other records, filled manually. The monitoring history is used in annual reports, what helps to improve feed-back. The on-line monitoring programme is actively applied in improvement of targets and performance indicators. The monitoring programme is reviewed periodically. The existence of comprehensive on-line monitoring system allows effectively manage and control the maintenance activities of all the plant departments and may be considered as good practice.

## Loviisa, Finland

Mission Date; 3-21 Aug, 2007

The plant has introduced a computerized work control system (LOMAX) which efficiently provides support in several aspects of work planning.

LOMAX has the following attributes:
−Fault orders related to safety systems are automatically routed to the shift supervisor for a safety inspection and approval according to the Technical Specifications
−Automatic updating of safety system related work in plant logbooks as well as manual update of work in any logbook.
−Real-time plant status viewable in all system applications.
−Both plant units have their own colour code, which is on the printed matter delivered from LOMAX.
−Cross-fault check before work order is approved and again before work is started.
−In addition to the process and room hierarchy, the system has an electrical hierarchy, simplifying the planning and management of electrical isolations by displaying power supply for the location. The system checks safety system electricity feeds during cross-fault check.
−All isolations are managed in a single system, and clearance plans can be designed and inspected using a graphical navigation tool. The graphical navigation tool shows the isolation area as a coloured process image. The navigation software is utilized in daily work planning.
−Isolations are connected with work, and the system prevents restoring the isolation in case unfinished work. The isolations are printed on the work order papers.
−Standard job plans are always used for preventive maintenance, and used in fault repair works. A protocol or procedure may be directly attached to the standard job plan.
−Electrical work circulation from work request to completion allows for real-time work monitoring. The electrical circulation includes related work permits, such as radiation, Quality Control, fire protection, Environment, Health and Safety and Technical Specification permits.
−If the related permissions to start work do not exist, a red text saying"work has no permission to begin" is printed on the work order paper print, so the work order cannot be used to perform work. Previously, the plant had several events where work was carried out without all necessary permissions. Since the LOMAX system was introduced, there have been no similar events.
−Ability to carry out work using mobile application.
−The work order printout required for work performance includes all related work permits, work phases, pre-job briefing, equipment technical information, electricity feed information and hazards and precautions related to location. The work order prints out a barcode simplifying signing work into the system.
−The Documentum system documents may be attached to all LOMAX system applications. This ensures that the user always has access to the latest approved version.
−On a work-specific basis, other procedures, protocols, photographs and web links may be attached to the work order. An automatic printing request may be defined for work. It is automatically printed along with the work order.
−The application specific user manuals may be opened directly from the application. Most fields in the system have a Help field, providing information on the operation of the field to the user.
−The system incorporates hierarchies for observations, failures and root causes, guiding users to give correct feedback. The system allows for feedback to be sent to selected users.
−Spare parts, materials and labor hours are directly linked to the work.
−The LOMAX system is connected to the measurement calibration system, which takes

over the calibration work. After calibration, the calibration information is transferred back to the work.
−The system includes versatile search and reporting possibilities. The reports and derived benchmarks are used to monitor maintenance costs and effectiveness. The studied items include amounts of delayed repairs and preventive maintenance, unhandled work orders per responsible work planners, planned vs. actual costs per work classes, equipment condition reports, monitoring of work in safety systems, completion state of maintenance work and organizations, etc.