



## Enhancing Maximo with mobile SCADA and maintenance delivers 6-month ROI for Toyota UK

Toyota UK began using IBM Maximo as its EAM system in 2004, to standardize production maintenance processes and improve effectiveness whilst reducing costs. Although successful, a level of manual intervention and subjectivity inevitably remained within maintenance processes.

When a fault occurred, SCADA monitoring would visually display an alert. The control room operator then nominated a maintenance engineer working on the shop floor to immediately leave their work area and attend to the alert. After the inspection, the engineer would return to a PC and input relevant maintenance data manually into Maximo.

This way of working resulted in inefficiencies and it was clear there were opportunities to further improve. Toyota UK began exploring how mobile devices could be used within maintenance operations because management believed mobile working would result in further operational improvements, widen access to maintenance information and help to cut costs.

### Linking SCADA with maintenance

After a market evaluation, Toyota UK made the decision to implement EXTEND7000 from SCHAD. As a mobile SCADA and maintenance solution, EXTEND7000 stood out because it offered a unique ability to connect SCADA controlled automation systems to the Maximo driven maintenance system. Of particular interest to Toyota UK was EXTEND7000's ability to link directly to the factory's main SCADA systems and pick up asset data directly from the PLC.

Toyota UK also wanted to gather detailed information about asset breakdowns. For instance, recording why a failure occurred, the spare parts used, time to fix and total downtime, which is essential for gaining a deeper understanding of maintenance issues.

After implementing EXTEND7000, Toyota UK saw a significant improvement to maintenance efficiency. In addition, the need for a dedicated operator per shift to monitor SCADA alarms and control the maintenance process was removed. Instead, PLCs sent maintenance alarms directly to engineering teams, with relevant data transferred into Maximo at the same time. This has helped to achieve huge cost savings and also removed the subjectivity of having an operator make on the spot maintenance decisions. Associated data related to an asset fix is retained and flows straight into Maximo, to enable greater analysis of general machine health and condition.

### Better communication and workflow

All personnel involved with assembly line maintenance now use EXTEND7000 on every shift. Based on a traffic light warning system, alerts are open to any team member and once accepted, an alert is assigned to a named individual. This ensures that all members are aware of the status of active issues and can respond quickly. Each alert then remains in the system until the relevant PLC machine notifies the central server that the asset is working as normal again, at which point it is deleted. The benefit of using EXTEND7000 is that at all times, the whole team is fully informed of all maintenance activities and if an alert is not responded to, a follow up alert is triggered to explore why no one has accepted it.



### Benefits

- Direct link to main SCADA systems with asset data collected from the PLC
- Removed need for operator to monitor SCADA alarms & control maintenance
- Huge cost savings & removed subjectivity of having operators make instant maintenance decisions
- Fix data flows straight into Maximo enabling machine health & condition analysis
- Quality of data capture has improved which improves preventative maintenance



Toyota UK's maintenance operations have benefited in many other ways from using EXTEND7000. The dead time incurred by engineers walking between jobs has been cut, which means more maintenance tasks can be completed each day. Workflow management has also improved and team members have a 'mobile jobs list' showing a clear outline of work assigned plus their ongoing workloads. In-between attending to breakdown calls, team members can pick up another planned task or attend to alarms.

### Improved preventative maintenance performance

As well as boosting maintenance efficiency, the time required for processing information about completed jobs has reduced. In addition, the overall quality of data captured has improved, which in turn improves preventative maintenance performance. This is based on maintenance engineers working across all maintenance shifts and represents a reduction to annual labour costs. Significantly, no adverse effect to shop floor OPR was reported during the implementation process and maintenance operations were able to continue as usual.

Having seen how EXTEND7000 can benefit Toyota UK's assembly line maintenance, use of the system is being extended to other areas. In addition, EXTEND7000 will start to manage significant planned maintenance tasks supported by additional documentation, for instance drawings, instructions or wiring diagrams, which are sent to the mobile device with each work order.

Training is another area that will be driven by EXTEND7000 in the future. Using EXTEND7000, training based work orders will be sent to each device directly, allowing individual members to manage their own training programmes.

Spares ordering will also be completed through EXTEND7000, with orders and replenishment requests sent directly from the mobile devices. Ordering spares using EXTEND7000 represents a very important improvement because it means maintenance workers don't have to leave their work areas, saving a huge amount of time.

### Full ROI in 6 months

Reflecting on the success of the project as a whole, Toyota UK has measured a full return on the investment made in EXTEND7000 within 6 months, through a wide range of cost savings and efficiency improvements. The initiative was well received by the maintenance teams and all involved appreciate the operational benefits of greater mobility. Now, Toyota UK is planning to mirror these achievements in other maintenance divisions, starting imminently with plastics.



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SCHAD GmbH was founded in 2007 by Christian Schad, with the aim of developing a global standard for the mobile operation, control and maintenance of automated systems using an ordinary mobile device.

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