Keeping Shift Operators up to date.

A M Johnson, Diamond Light Source, Chilton, Didcot, Oxon OX11 0DE

Abstract.
The Operator shift patterns at Diamond include whole weeks of normal 9 to 5 ‘off shift’ days, which allow for holiday and emergency cover. To provide operators with relevant, timely and concise information we have developed a number of tools. These range from web based tools for viewing information on smart phones to large displays in the control room. Operator experience has shown that keeping up to date via these tools makes for shorter easier handover sessions and less chance of important information being missed or lost.

Introduction.

Diamond Light Source is a 3rd Generation synchrotron light source located in the south of England. Diamond consists of a 100MeV Linac, a 3GeV Booster synchrotron and a 3GeV Storage ring with a circumference of 561m.

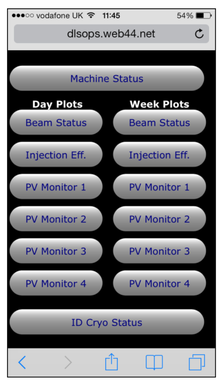
A shift crew of 8 Operators are employed to operate the accelerators and associated sub systems as well as providing Safety cover. During normal operation only one machine Operator is needed in the Control Room.

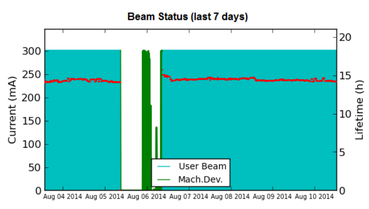
Web based Tools.

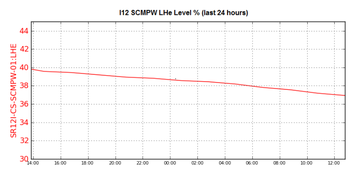
At Diamond the machine operators have a range of tools available to maintain awareness of the Machine status and reliability. These tools have been developed for portable devices so that machine information is available anytime and anywhere. This cuts ties to the Control Room so freeing ‘off shift’ crew to pursue other duties, but still remain informed.

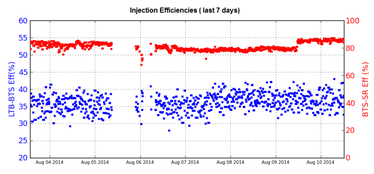
Web pages.

A suite of web pages provide information on beam and machine status. These have been optimised for smartphone use and are under Operations control so they can be modified and new content added quickly.









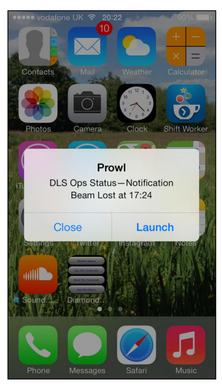
Twitter feed.

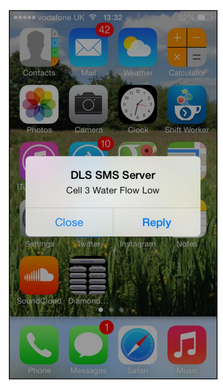
Initially set up to provide a live feed of machine status to the Operator, it uses a php script to sends tweets whenever the beam is lost or restored and to tweet the messages that are posted to Beamlines by Operations.

Notifications.

Real time notifications of Beam Trips are sent using Prowl for iOS. A php script is used to monitor the beam current and send a notification when the beam is tripped.

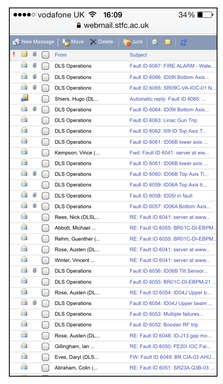
An SMS server is also available to send text messages whenever a PV state is outside of predefined limits.





E-Log and E-mail.

Old favourites but essential for keeping up to date with both Operational and Machine Development issues. These are the only tools that are not under Operations control.



Handover Information.

An electronic summary sheet is used to record essential parameters, long and short term issues, short term instructions and the ongoing shift log. This info is posted to E-Log at shift handover. Each shutdown the handover information is reviewed and archived into a wiki page.

Control Room Displays.

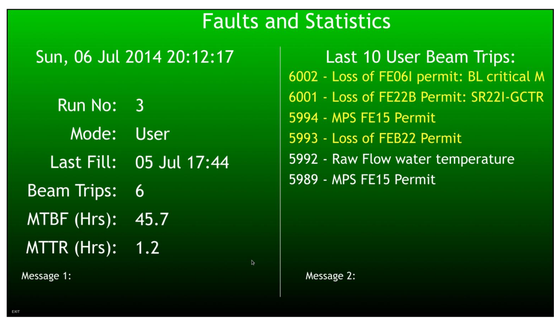
A permanent set of machine status and reliability displays has proven to be a useful addition the Diamond Control Room. These displays allow operators to maintain awareness of the machine status when they are in or passing through the control room, and provide useful information to the incoming shift operator prior to handover.

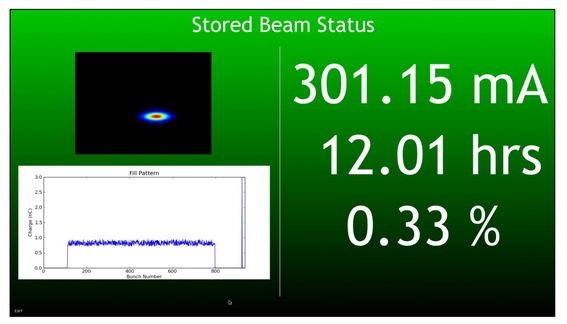
Display screens.

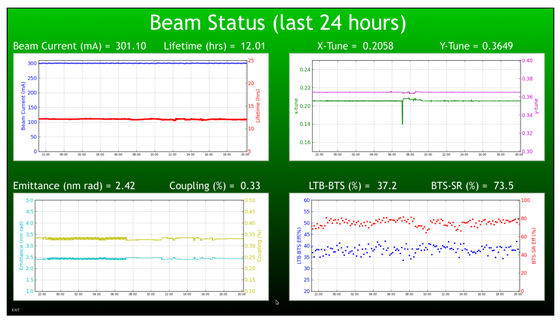
The displays comprise of four HD TV sets suspended from the ceiling. Each display is controlled by a small Linux PC running python scripts to display the information.

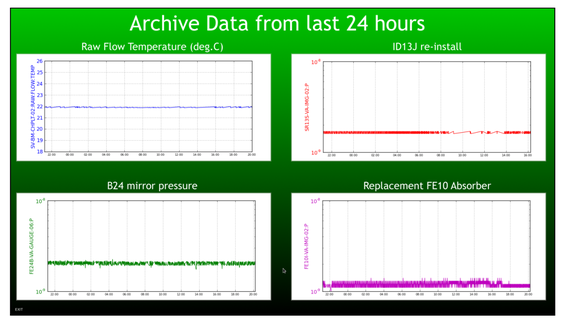
Run Time Screens.

When the accelerators are operating the screens are used to show machine and beam status / reliability information.









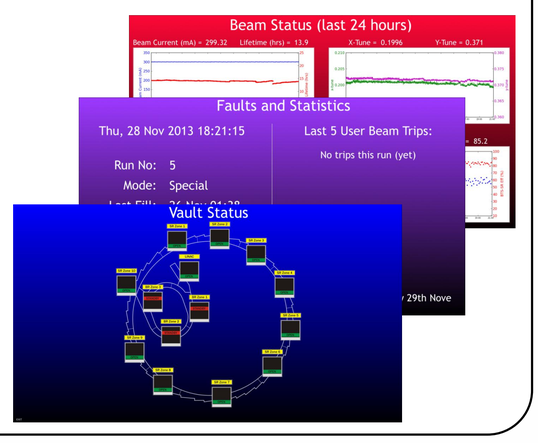
Plots cycle between the last 24 hours and the last 7 days. Archive data plots are editable so that any pv that is of current interest can be displayed. These plots are also made available via the Web pages.

Background colouring.

The background colour of the displays is dependant on the Beam mode and status.

Green, User beam ok.
Red, User beam tripped.
Purple, MD / Special beam
Blue, Shutdown

During machine Shutdowns the screens switch to display content relevant to the shutdown tasks.



For more information please visit www.diamond.ac.uk or contact Adrian Johnson at adrian.johnson@diamond.ac.uk