Hall C Magnets' Screen Conversion

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Hall C's Human Machine Interface (HMI) slow control screens, made using Rockwell Automation's FactoryTalk View software, are being converted to EPICS CSS-BOY screens and are being updated to improve functionality and ease of use. This note discusses the proposed screen upgrades and the status of the project.

Hall C magnet HMI screens, Fig. 1, are being converted to EPICS CSS-BOY screens to provide a clear and consistent user interface that uses the same EPICS framework as in Halls B and D. Upon completion of the conversion, slow controls screens of all halls will have CSS-BOY screens, enabling the Detector Support Group (DSG) to support and maintain EPICS across the Physics Division [1].
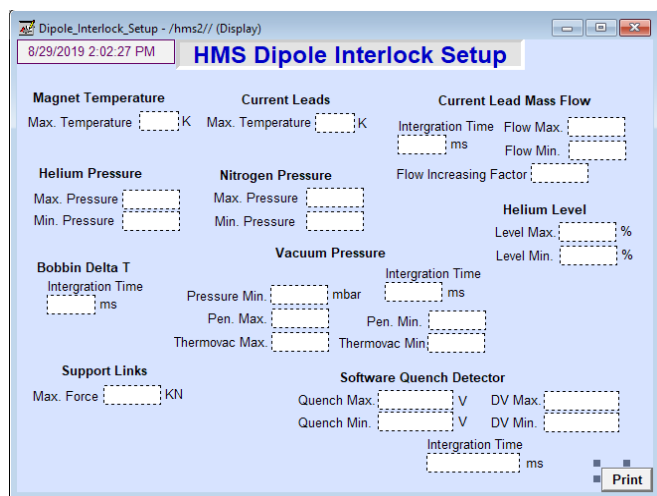

FIG. 1. Current HMS Dipole Interlock Setup HMI screen. Some input fields are missing units and relevant information is not displayed in a coherent manner.

To create CSS-BOY screens, current HMI screens are inspected to determine if any widgets need to be regrouped, added, removed, or combined. The visual aspects of the screen's monitors and controls are then created by placing the widgets in the appropriate areas.

Once the screen is ready, EPICS PVs associated with the PLC tags are attached to their respective widgets. The list of existing PVs is checked to see if the needed PV (associated with the PLC tag) exists. If the needed PV exists, it is verified that this PV is associated with the PLC tag on the network. This PV is then incorporated into the CSS-BOY widget.

If the needed PV does not exist, the PLC tag properties are added to the proposed PV and linked to the appropriate widget on the CSS-BOY screen. All rules/scripts are then written for buttons that initiate an action, LEDs, and text/numeric update fields.

The proposed conversion plan is not to simply reproduce the HMI screens that are currently in use (Fig. 1), but to improve the functionality of the screens by regrouping the information that is displayed so that relevant information is easily accessible (Fig. 2). By doing so, not only can the user easily find the information they're looking for, but the information will be displayed near other relevant information.
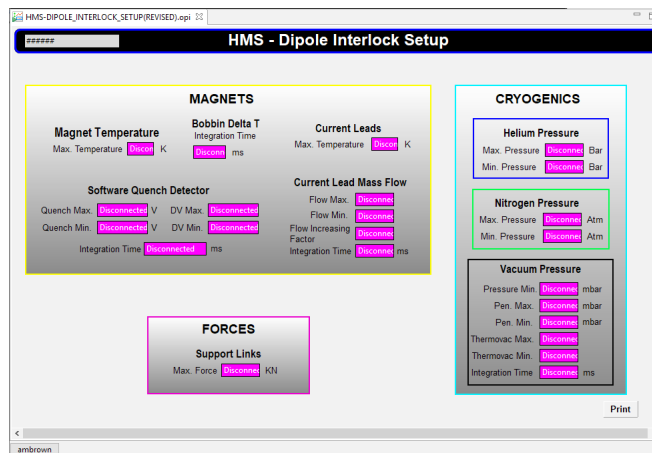

FIG. 2. CSS-BOY screen groups information into easily identifiable sections.

In conclusion, DSG is converting the Hall C magnets' HMI screens to CSS-BOY screens. Along with this conversion, changes to the content and layout are being made to improve functionality and to make the screens easier to use. Thirty-five of the 273 HMI screens have been converted to CSS-BOY.

[1] P. Bonneau, et al. *Hall C EPICS Slow Controls and Monitoring System*, DSG Presentation 2018-23, 2018.