PCaPAC 2018 Abstract

Garrett Bischof

Title **A General Solution for Complex Vacuum System Controls**

Submitted 15-MAY-18 18:06 (GMT)

Classification Control System and Component Integration

Modified 24-MAY-18 21:56 (GMT)

Presentation Poster

Presenter Garrett Bischof

Paper ID

Author(s) Garrett Bischof, Richard Ian Farnsworth, Christopher Alberto Guerrero, Oksana Ivashkevych (BNL, Upton, Long Island, New York)

Abstract At the National Synchrotron Light Source II (NSLS-II) there are many different ultra-high vacuum system configurations on the unique beamline end-stations. The proposed controls solution attempts to capture the requirements of all of these configurations with a single standard logic and graphical user interface. Additional design considerations include: resource management for multiple users, providing a high level of abstraction to simplify operation for users, providing a high level of flexibility to do non-standard operations, minimizing shock from pressure differentials when opening valves, supporting a variety of pumps, and maximizing pump lifetime. At NSLS-II it was determined that all vacuum configurations can be captured by the composition of three standard objects: a "rough vacuum group", and "high vacuum group", and a "smart vacuum manifold" which implements a blocking queue. These objects can be flexibly linked together to meet the needs of the beamline experiments. This solution is platform independent, but implemented and tested here using Pfeiffer vacuum pumps, Allen Bradley PLC, EPICS, and Control System Studio (CSS).

Word Count: 166 Character Count: 1133

Footnote

Funding Agency
