Introduction

With many synchrotron facilities retiring or going through upgrades, what is the future of some of the state-of-the-art equipment and the beamlines built for a specific science at these older facilities? Can the past investments continue supporting the current scientific mission? The Beamlines Developed by NSLS-II (BDN) are reusing scientifically valuable equipment recovered from the now shuttered NSLS.

Beamlines

Complex Material Scattering
CMS 11-BM
and
Tender Energy X-ray Absorption Spectroscopy
TES 8-BM
Construction completed in 2016, had its first light in August 2016 and started general-user operations in 2017

X-ray Fluorescence Microprobe XFM 4-BM
and
Quick x-ray Absorption and Scattering
QAS 7-BM
First light in September 2017, and plan to take general users in 2018.

Frontier Synchrotron Infrared Spectroscopy/Time-Resolved Optical Spectroscopies
FIS/MET 22-IR
and
Pair Distribution Function
PDF (28-ID1)
Is being built now, to be completed in 2018.

SOME OF THE RECOVERED INSTRUMENTS

QAS monochromator retrofitted with Direct Drive Nikki Denso servomotor with 3.6Mct/rot
CMS monochromator controls were modified to conform to the NSLS-II standards.

QAS new controls for direct drive servomotor
XFM Vertical mirror from two identical mirrors from NSLS X16A and X16B.

CUSTOM INSTRUMENTS

BDN is the home for instruments developed by scientific non-commercial groups. CMS(11-BM), TES (8-BM) and XFM (4-BM) use KB-mirrors, designed by the Center for Advanced Radiation Sources (CARS) at the University of Chicago [3]. In-house developed electrometer by P. Siddons was used in many beam diagnostic solutions at all BDN beamlines. This design is now sold commercially [4].

CONCLUSION

Reused, rebuilt, or refurbished scientific equipment, sometimes decades old, can be successfully retrofitted with modern controls solutions and customized to fit the control system standards. This then brings the component up to current specifications and gives the design a long life and the world class performance.

REFERENCES