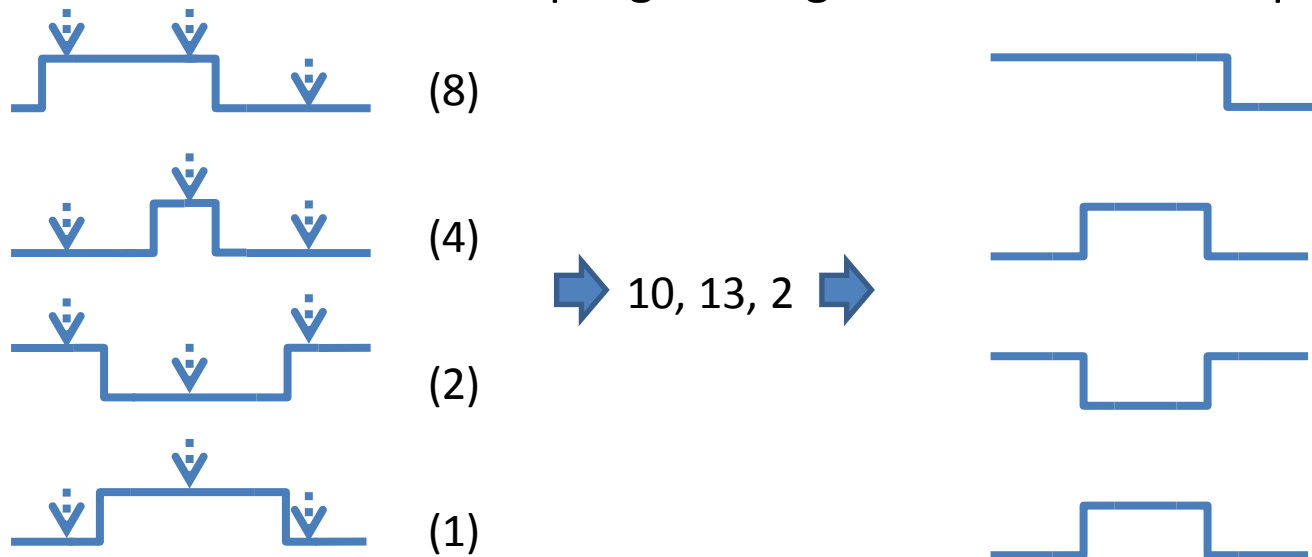


New Signal Transfer Scheme with FPGA

- In KEKB, we transfer the E/O converted signals via optical cables for the detector and accelerator communication (injection control, ...).
- For SuperKEKB we have developed the new signal transfer scheme using the VME-FPGA board which is developed for Spring-8.

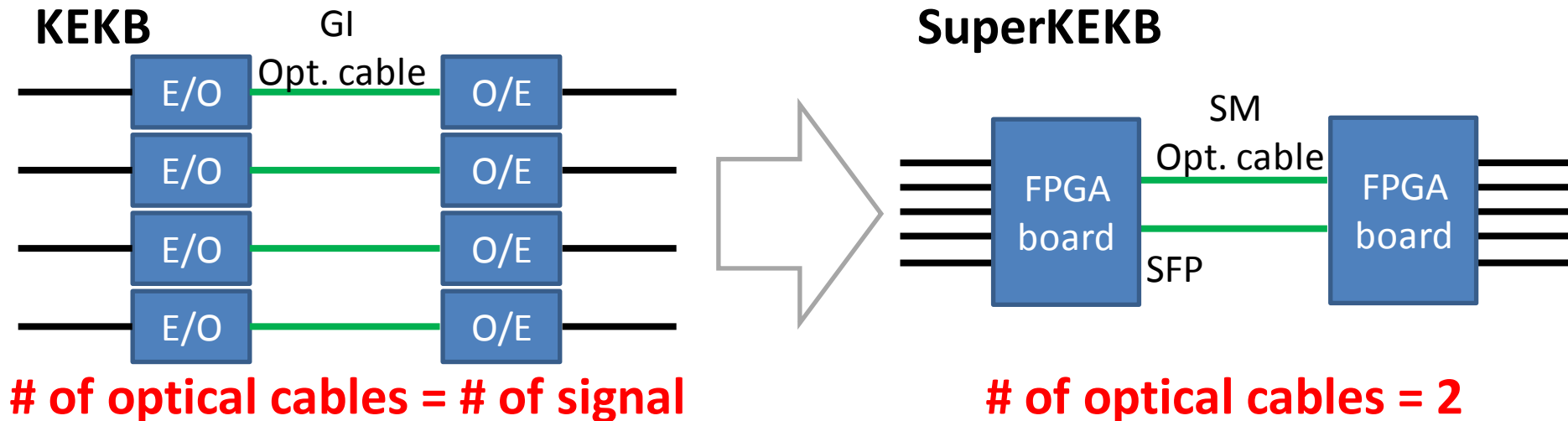
Based on the sampling, parallel to serial, and serial to parallel conversion using the FPGA boards.

Revolution = 100KHz → Sampling rate higher than 1MHz is required



New Signal Transfer Scheme with FPGA

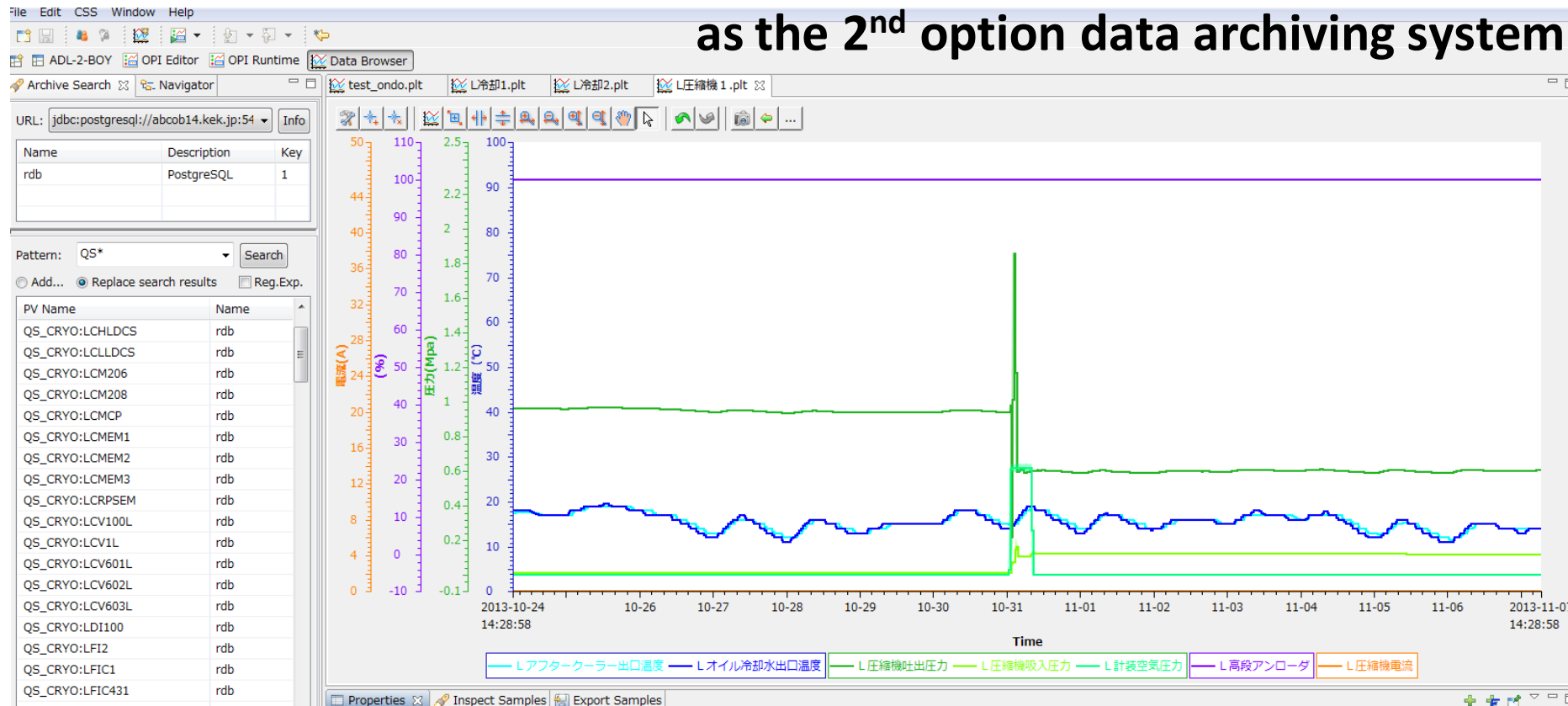
- In KEKB, we transfer the E/O converted signals via optical cables for the detector and accelerator communication (injection control, ...).
- For SuperKEKB we have developed the new signal transfer scheme using the VME-FPGA board which is developed for Spring-8.



We also apply the VME-FPGA board to the signal transfer of soft abort request, beam gate control, QCS quench detection, ... for SuperKEKB

Data Archiving System

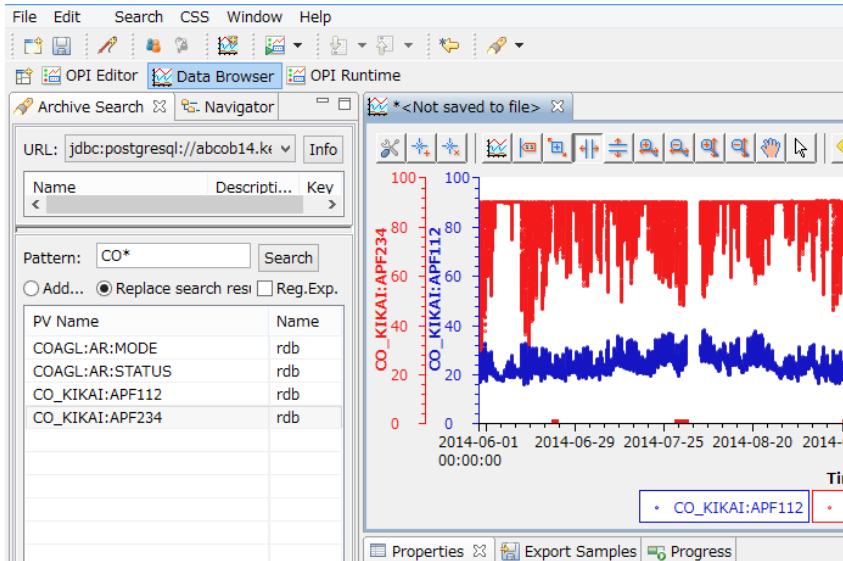
- **KEKBlog** as a primary data archiving system (file based logging system)
- **CSS(Control System Studio)-based Archiver + PostgreSQL**



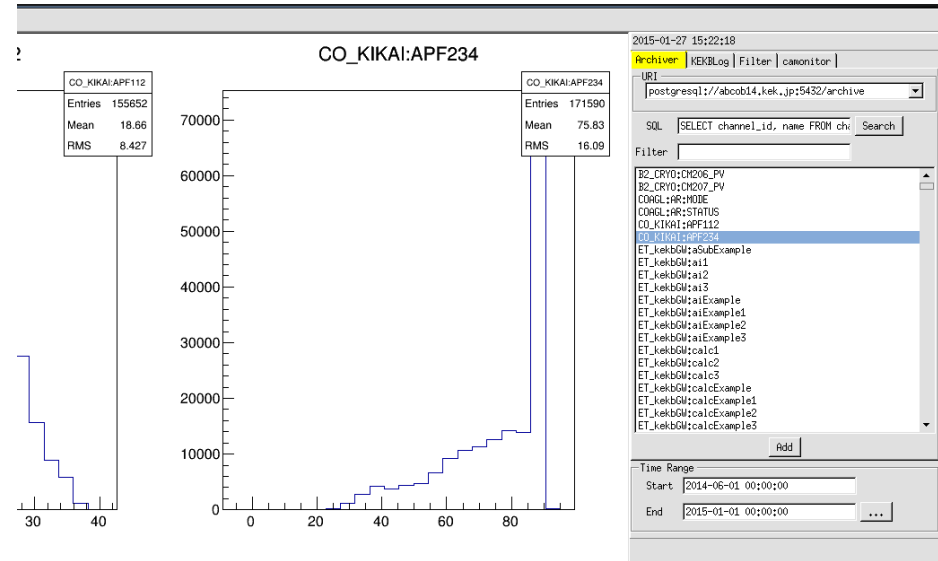
We accumulate the vacuum system (from 2015) & the QCS cryogenic system (from 2014) data with the new CSS archiver + PostgreSQL
→ Store ~10,000 points every 1-10 seconds.

Data Archiving System

Data Browser based on CSS



Data Browser based on ROOT



User's PC with CSS or data browser based on ROOT can remotely access to the PostgreSQL server for real-time / historical / trend monitoring

Summary

Upgrade of the accelerator control system for SuperKEKB is now in progress

Currently preparing for the 1st SuperKEKB operation in 2016 Feb.

Please also see the details of the accelerator control system upgrade in the following presentations

**S. Sasaki et al., MOPGF141,
“Upgrade of Abort Trigger System for SuperKEKB”**

**T. T. Nakamura et al., WEPGF085,
“The Construction of the SuperKEKB Magnet Control System”**

**H. Kaji et al., WEC3004,
“New Event Timing System for Damping Ring at SuperKEKB”**

Back Up

Layout after the renovation

Everyone can directly watch the main accelerator status display.

