

BTeV has:

Purchased:

Module rack with 10 slots	\$1470
MBI card to talk to PC	\$1400
iFix SCADA node	\$3,900
(Software interface to APACS PLC for visual monitoring/historical archiving)	
iFix APACS driver	\$500

Scrounged:

Processor module (\$6720 value)
Both experiments can easily use the same processor module.

Std. Analog I/O Module, 32 channel (\$1680 value)
(reads 4-20 mA, flammable gas sensors, some pressure transducers)

Resistance Temperature Module 16 channel (\$1820 value)
(reads RTD probes)

E907 Needs to get started:

Short term to make BTeV system a complete control system:

Standard Discrete I/O module 32 channel \$1470
(actuate solenoid valves etc.)
Termination Panel \$330
I/O cable \$210

Voltage Input Module 16 channel \$1820
(mass flow meters for gas mixing, some pressure transducers)
Termination Panel \$455
I/O cable \$210

Short Term Total: \$4515

Longer term estimate:

BTeV will probably use all their Temperature Channels so E907 needs their own RTD module. Hopefully we can share the Std. Analog I/O Module with BTeV.

Resistance Temperature Module 16 channel \$1820
Termination Panel \$455
I/O cable \$210

Can use BTeV iFix node in MTEST to start with, but not practical for long term sharing/monitoring.

Software to program/monitor controls from E907 PK

iFix Developer Client \$3500

\$4 per variable software charge \$250

Standard PC for iFix ~\$1500

Cabling:

There are two options for running the cables. Both ways are technically equivalent, but the cost and convenience will differ.

Option 1:

Run all the instrument cables 400 ft. back (need to check this distance!) to the BTeV setup in MTEST. I estimate 8, 15 pair FNAL stop room cables (\$1.09/ft.) would cover the general gas system. This would be \$3,488. This does not include any rack protection or hydrogen target controls. The hydrogen target instrumentation is on par with the general gas system in magnitude. So for the general gas system, hydrogen target, and some rack protection, cabling might run around \$7,000. The advantage if this setup is that we can share modules with BTeV. But the only one I thought we could share is the Std. Analog I/O Module (\$1680 value).

Option 2:

Set up a remote module rack at E907. We have one at PAB that can probably be refurbished for \$500. The E907 modules then go in this rack and the instrument cable runs are much shorter. Two cables with a total cost of \$1600 communicate between the E907 module rack and the BTeV module rack with the processor and SCADA iFix node. The disadvantage of this is we cannot share modules easily, so E907 would need its own Std. Analog I/O Module (\$1680 value). So the option two cost is about \$3780 with the advantage that adding I/O does not add to significantly to the cabling cost.

Thus I recommend option 2 unless someone thinks we can run instrument cable much cheaper than I estimate.

Plan:

I recommend E907 refurbishes the PAB module rack and installs it locally. Then the cable to run back to BTeV and one of each type of module should be purchased. And the iFix software license should be purchased and a PC found. No matter what avenue we pursue we need to buy the modules I list under need to get started. The APACS prices

reflect a 30% discount that Fermilab gets because we have purchased a large quantity of hardware. So this needs to be taken into account as to where the PO is placed from.