



# Entellisys™ Low Voltage Switchgear

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## Flexibility Scenario

Due to the EPA-mandated Clean Fuel initiative, a major player in petro-chem must completely redo its refining process and comply with the new NFPA 70E mandates on arc flash energy.

Time is critical: 52 weeks to design the job, order the equipment, shut down the facility, put in the new gear and get everything to work,

Here's the difference Entellisys makes in the 5 step process facing the customer:

### 1. Design Changes

- a. After the initial spec, the customer decided they needed automatic throwover (ATO) due to load criticality, which required additional protective functions, and they also wanted waveform capture for diagnostic purposes
- b. A traditional system might take six to eight weeks for drawings and another 8-10 for assembly.
- c. With Entellisys, we estimate two to four weeks for drawings and six to eight for assembly.
- d. Had the customer attempted to add ATO after the system was installed, the costs for putting in the specific devices and wiring them, although significant, would have been dwarfed by the downtime and lost productivity costs, which would have ranged in the millions of dollars.

### 2. Installation

- a. With its reduced wiring and terminations, Entellisys will save the customer at least one day of installation time.

When Entellisys goes operational, the customer expects to enjoy operational efficiencies:

- With remote HMI options and their intuitive screens, the customer expects the human error factor to be reduced. Entellisys reports critical data to PCs, no longer requiring operators to read gauges and record data on the process floor – even if they receive a system email of an alarm state.
- The alarm condition can be checked remotely on a PC, using system diagnostics, and any intervention, [such as tripping a breaker], can be handled remotely and safely.
- Expedited root cause analysis: receiving synchronized waveforms from all the breakers and utilizing a time-stamped event log, the customer anticipates rooting out problems faster and with greater specificity.
- The simplified, intuitive HMIs reduce the training required for operators; Entellisys custom security levels enable the customer to match operators' data access to their skill sets.

The net impact of Entellisys on this customer's life?

On the front end – specing, manufacturing, installation, and initial operation, including typical changes required during the process, – we estimate a savings of at least 5 weeks.

Installation? Entellisys will take 2 days; traditional switchgear at least an estimated 3.

Near-gear/and-or/remote HMIs keep operators out of NFPA 70-E-defined flash protection boundaries and virtually eliminate that risk.

Bus differential protection yields NFPA 70E PPE reductions: Level 4 to Level 3 for this particular substation.

The remote racking accessory limits operator exposure to dangerous arc flash energy when breakers need to be racked out or in.

The additional protection provided by bus differential, dynamic ZSI, and multi-source ground fault protection means the customer gets fast protection AND selectivity, unlike the compromise traditional low-voltage switchgear usually involves.