Those who have ever been responsible for retrofit projects know that they are significantly more complicated than new, greenfield projects. The existing plant infrastructure presents real challenges: equipment, piping, cable trays, and electrical conduit must remain in place; prints are usually not up-to-date; onsite activities need to be coordinated, in order to avoid impacting other activities; and there is a limited time window to accomplish all the outage goals.

GE is very familiar with these constraints, having executed literally hundreds of controls retrofit projects, large and small, on the following major systems:

- Excitation systems
- Turbine control systems
- Drive systems

Although every project is different, GE has found that the following deliverables are very common, to varying degrees, across all these projects:

**New Electrical Drawings**
- Cabinet and termination drawings
- Cable schedule
- Conduit and tray schedule
- Cable drawings
- Conduit and tray drawings

**Equipment Layout Updates**
- Equipment location (on layout drawings)
- Operator panel modification designs

**Structural Design and Mounting**
- Mounting and anchoring
- Structural analysis
- Structural modification designs

**Existing Electrical Drawing Updates**
- Plant system drawings
- MCC and power distribution
- Loop diagrams
- Conduit and tray drawings

**Contractor Specification**
- Electrical takeoffs

**HVAC Upgrade Design**

**Plan for Success**
These deliverables constitute an Engineering Design Package (EDP). Not every project team considers an EDP during the planning stages, but it is very important to have an EDP for a successful, on-time project. Although an EDP does not guarantee that a project will proceed without any surprises, it does allow the team to anticipate problems before they occur.
Here is a typical case. A utility power generation customer was upgrading multiple units; the scope of work on each unit was a new hydraulic skid (for BFPT’s), and a new local operator panel. There was no EDP requested on the first unit. The project was completed satisfactorily, but because the project teams had to deal with events as they occurred, the schedule inevitably shifted. On the second unit, the customer insisted on an EDP up front, and the project proceeded smoothly.

While individual EDP components can be assigned among the various project parties, it often makes greater sense to assign responsibility to a single party.

The GE Advantage
As a major turbine/generator OEM, GE brings formidable knowledge and experience to every project. Not only do GE people know what has (and has not) worked, they also know the theoretical and practical limits of the machines involved. Having GE prepare your EDP gives you a successful head start.

Benefits
• Puts GE’s 100+ years of OEM experience to work for you
• Single point of responsibility—no more “I thought”’s
• GE’s commitment to safety is among the strongest in the industry
• GE uses its well-known LEAN methods and Six Sigma Quality processes to make sure your project is planned and executed correctly
• Extensive pool of trained service engineers available

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