AGL Water Management for Gas

SCADA Integration of existing plant may seem routine when the project brief consists of 5 words, however good engineering practice, a systematic approach to managing requirements and the discipline to “stay the course” is what produces good results time and time again. As a member of the Control Systems engineering community, it’s embarrassing to admit that the industry approach to software engineering too often includes working it out, on the spot, on site, on the day you are first confronted with the challenge. Of course there are unique and very infrequent situations where an “on the spot Johnny” approach to solving a problem is imperative, however these emergency breakdown situations are better served by engineers who have practiced a systematic approach to problem resolution and who are well versed in the essential process of taking a step back to understand the impact of their ways.

The AGL Rosalind Park Gas Plant – Produced Water System SCADA Integration project was a routine job for Parasyn. So why choose a routine project to talk about? We have chosen this project to outline the typical processes and practice that shape a not so complex project delivery cycle, thus not getting lost in the challenge, the big story or the outstanding headlines. That doesn’t mean that this project wasn’t without its challenges, it just means to illustrate the point of process leading good outcomes, a simple project is best. Good process, in this case, catered for not knowing everything about the requirements and being able to effectively manage these unknowns without negative results.

To keep this simple, the following section outlines in mostly list form, the tasks and processes that governed how we delivered a basic Control Systems project. Activities like correspondence management, weekly progress reporting and other management activities are not included here.

Only the sequential “one off” events are shown to keep it simple.

- Initialise works including WHS, Requirements Management & internal systems
- Identify, document and build the Tag database based on the P&ID and operator requirements
- Develop a Functional Description for the SCADA system based on the stakeholder’s information including new requirements and existing system design. This includes identifying and documenting controls such as shut-down processes based on operator or field inputs.
- Develop a system diagram for the system based on the P&ID and the Functional Description
- Create SCADA Mimic mock-ups for client review.
- Prepare environment and safety documentation.
- Prepare Quality Test Plans (QTP).
- Prepare Installation & Transition Management Plan.
- Prepare Master Record Index / Requisition listing.
- **Submit Design data/information for approval.**

In our opinion, this is the single most important hold point of any project. It highlights that the bulk of the planning and the design is complete. In more complex projects the design management process is far more complex than outlined here. Being disciplined at this point saves the customer money. It saves the engineering group rework effort. It ensures a more efficient development stage of the project because all the inputs are known before development and testing activities begin.

Now that we have approval to use the design we are confident in procuring equipment.

- Complete requisition for components
- Setup development test environments
- Configure & program the software applications and devices based on the function requirements and design inputs
- Perform Pre-FAT on software applications and devices. Again, this saves the customer time and increases the efficiency of FAT. When pre-FAT is performed, the only unknowns are new inputs or conditions not previously outlined in the design approval and testing documents.
- Prepare and execute formal Factory Acceptance Testing
- Update documentation and commissioning Plan (QTP)
- Finalise Installation and Transitioning Management Plan (ITMP). Even though the transition plan is often drafted at the design stage of the project, this finalisation stage is about capturing the lessons learned during testing. Alas, this is a customer time saver too.

On-site Works – Installation, Staging & Commissioning comes next.

- Prepare & Mobilise Site Services and Materials by preparing detailed WHS documentation, site task lists, scheduling including travel.
- Perform installation of hardware, communication devices and software and test
- Perform system commissioning including QTP test log sign off
- Conduct operator Training and any form of change management requirement to ensure safe and functional use of the improved or modified system.
- SAT support, soak test monitoring, burn-in support and performance reporting
- Project Close Out including finalising documentation and a close-out meeting on site

There are so many other things to consider including requirements management, program management & scheduling, defining the deliverables, transmittal management and so forth. The important point for engineers is to focus on the core engineering with attention to the requirements. To the contrary and at the risk of the quality, if the delivery process is not defined and known, energy and effort is being diverted elsewhere by workers positioning themselves in front of customers, being careful to cover up for a lack of skill or preparedness, and the list goes on. We expect good engineers to be disciplined, don’t we? If the discipline is not evident in the practice of planning and delivery, can we really expect it to be present in the underlying engineering? Probably not!

We have to encourage engineers to practice their craft by providing good systems of management that shape and channel their efforts to success. A successful project, small or large, is no accident. Perhaps stakeholders and service providers have a responsibility to encourage collaboration on the framework to ensure engineers are given permission to act responsibly and then insist by good governance they follow the approved approach to delivery.