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SmartFlow – Progress Report

Project Timeline

Over the past two months, the engineering team at SRC Telemetry Incorporated has progressed through the first stage in the development of the SmartFlow prototype unit; a considerable amount of work has also been done on the second stage to ensure that a complete and working prototype of the device is constructed by December 16, 2011. Stage one consisted of the overall unit proposal, and both the functional and design specifications of SmartFlow. Stage two consists of the actual integration, testing, and debugging of the unit as outlined below:

1. Software design and coding of the Programmable Logic Controller
2. Assembly and integration of the GSM module
3. Assembly and testing of the float switches, relays, and pumps
4. Integration and testing of the fluid level sensor
5. Implementation and design of SmartFlow's feedback mechanisms
6. Design and integration of the emergency shut-off system

Currently, action items 1 through 3 have been completed and work on the remaining items is in progress.

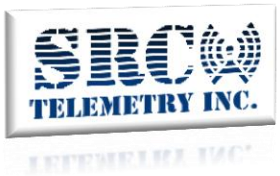
Requirement Analysis

As described in the functional specifications document, SmartFlow has been designed and is marketed towards organizations (particularly the gas and oil industries) that would like to control fluid levels in distant storage vessels by use of text messaging. The simplicity and the ease of use of our product will not only prove to be a cost effective and reliable method for controlling such systems, but with some minor tweaking, SmartFlow could also be marketed towards the control of household devices (such as thermostats) by the elderly and the disabled, this versatility gives our product an increased market niche.

System-Level Analysis

The team at SRC has split into several smaller groups in order to complete each of the remaining modules and tasks more efficiently. The overall functionality and design specifications set forth by SRC Telemetry's engineers for the SmartFlow prototype unit has been met and the integration, testing, and debugging of the hardware has already commenced. Significant amount of time has been spent already in tweaking and in finalizing some of the initial ideas and circuit designs in such a way to ensure that the most efficient and robust solution could be achieved and utilized in SmartFlow.

To minimize the risk of failure of the device, float switches and relays with high tolerances have been utilized in conjunction with water pumps whose flow rates could be adjusted. Additionally, two 65 Litre water storage vessels are also utilized as the inflow tank and the storage tank respectively. To achieve the required liquid level in the storage tank, voltage output values from the level sensor are fed back into the PLC and the appropriate action on the hardware is then taken through the designed PLC



software system. Furthermore, clients will be notified of the resulting outcome of their request through generated text messages that are sent back to their cellular devices. These ideas will be demonstrated as a proof-of-concept for SRC's SmartFlow prototype unit.

To prevent damage to the system, SmartFlow will be powered by a $110\ V, 5A$ external power supply source and will further include an emergency shut off system to ensure that pump operation is only allowed between a pre-defined liquid level range.

Technical Specifications

SRC has been able to adhere closely to the specifications that were presented in the original project proposal and is confident that these requirements will be met in time for the proof-of-concept demonstration on December 16, 2011.

Budget

SRC engineers have worked hard over the last two months to ensure that the prototype SmartFlow unit could be built on a much smaller budget than initially suggested in the proposal. The team has taken the utmost care and consideration in ensuring that all of the features and safety precautions presented earlier have still been met. To lower the costs of the essential components of the system, SRC engineers undertook a significant amount of research and networking with various local and online electronic part manufacturers and distributors to ensure that the components could be bought at the lowest possible prices. The current total expenditure stands at around $500.

Team Dynamics

The team at SRC Telemetry Incorporated has been able to work well with each other over the past two months. Over the next few weeks, the team will split up the remaining work in such a way to ensure that work on prototype unit can be completed in shifts. This will allow an almost continuous daily work on the project by different group members while ensuring that each member has enough time to devote to other responsibilities such as final exam preparations. This may also suggest that, over the next few weeks, some members of the team may have put in additional time to finalize the unit once their final examinations are done; but we do not see this as being the source of any new conflicts; our engineers are dedicated to completing the prototype SmartFlow unit in time for the proof-of-concept presentation on December 16, 2011.

Action Items

The remaining tasks include action items 4 through 6 which include the integration and testing of the level sensor, the feedback mechanisms, and the emergency shut-off system. We predict that these tasks should be completed by December 4, 2011, and all additional testing to be finished by December 15, 2011.