Company: Domino Printing Sciences

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The project is to develop and new ink delivery system that will provide flow between two fluid vessels. The finished system is to have flow and temperature control, as well as diagnostic capabilities.

The intended work plan assigned to me over the course of the project has been briefly summarised into the points below by my supervisor.

# **Ink delivery system to printing heads Summer placement Domino Printing Sciences**

Read requirements documentation.

Create a task list of the steps to be executed. This shall be entered onto smartsheet and monitored by the team along with other projects.

Understand the hardware provided how to interface with them.

Interface hardware components and circuitry with a national instruments DAQ (data acquisition device).

Demostrate the ability to read from and write to the devices. Examples of this and solenoid drivers shall be provided.

Design software architecture to be used, it is likely to be a simple state machine architecture with messaging to parallel processes to maintain houskeeping functions.

Write software in LabVIEW - Implement PID control of the heaters with a software controlled digital output.

Write software in LabVIEW - Implement PID control of the pumps to provide pressure difference to the two fluid vessels.

Produce a circuit to measure the level within the vessels using the internal level sensors, (assistance will be required for this task).

Produce circuit digram using ORCAD for the signal conditioning.

Write software that combines the temperature control and pressure control along with turning a return pump on and off to maintain specified tank levels.

Write up and document project, enter parts, software and documentation onto our systems (support will be needed to use our systems).

It is hoped that the above is achievable within the time, if not there are natural modules as described above to stop at. If the tasks are completed more quickly there is a great deal of functionality to be added to the software that could be attempted (flushing routines, priming routines, data logging etc...)

It is also expected that the student will get time to get exposure to some of our other projects working with our test engineers to gain experience of the different types of project that we undertake.

Assigned/completed work as of Week 3 - 20/06/16 – 24/06/16:

-Initial requirements document covered and discussed.

-LabVIEW programming Core 1 Course + exercises completed.

-Software architecture initial design completed.

-Software architecture design criticised and refined with LabVIEW specialist.

-Software architecture specification document underway.

-Initial circuitry work - wiring individual components for establishing basic functionality.

-Able to interface software with many hardware components (Pumps, valves, heaters, DAQ)

-Currently familiarising with reading DAQ input and PID control, with the goal of implementing feedback control.

-Continuous project documentation employed throughout.