INTEGRATING REAL-TIME SIMULATION MODELS INTO A SCADA ENVIRONMENT

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We are what we repeatedly do.
Excellence, then is not an act, but a habit.

ARISTOTLE

Table of Contents Page No

SUMMARY

Due to their low cost and reliability SCADA systems have found great favour in industrial control/monitoring operations. Control system engineers have long wanted to incorporate complex real-time simulations into SCADA systems but have been put off by the long development times. This project deals with a method for automatically generating background simulation/control tasks directly from a development environment to run in a SCADA system. The Matlab/Simulink simulation environment is used in conjunction with the Real-Time Workshop (both from The Math Works) which can build real-time simulation tasks directly from the Simulink model. Data is passed between the stand alone simulation model and the real world by the use of specific Real-Time Workshop (RTW) device drivers which are written in C. These device drivers can be used to communicate with the FIX SCADA database using a library of EDA (Easy Database Access) functions. The device drivers currently exchange data between the simulation model and the SCADA database via disk files. This restriction may be removed with the future release of the Real-Time Workshop software.

This document describes:

- A method for automatically generating background simulation tasks from Simulink graphical models that can access a SCADA database in real-time.

- The application of this method to a simulation model of a falling-film evaporator.