

Control Systems for Dye House's

Location – USA

Project Introduction: The owners of Adaptive, Mike Lynch and David Tindale, worked for many years automating plants in the textile dyeing industry. In the early days, mechanical and pneumatic control was the order of the day, eventually to be superseded by custom electronics based on the first available microprocessors in the 1980s.

Interestingly, PLC only control never gained a strong hold in textile dyeing, because the ever-changing production requirements meant that a complex user-interface was always needed as well, preferably backed up by procedure libraries on server computers.

In the late 1990s, it became clear in the USA that rationalization of custom electronic control was overdue, with some plant users finding that old and obsolete electronics could not be maintained. To that end, Mike and David founded Adaptive Control in 1998, with the vision of using standard PC's for all control. I/O would be interchangeable and would be sourced from any of the big-name global electronics companies.

The PC's run powerful control-loops and provide the rich user-experience people have come to expect using Windows and a touch-screen. Over time, the capabilities of PC's improve and their prices reduce, which means that customers can always count on an improving range of hardware products from which to choose.

System Requirements:

- The PC must have a touch-screen and run Windows.
- It must be robust enough for an industrial environment and able to operate for long periods of time without failure.
- It must be networkable to a corporate LAN or WAN so that production data can be made available to anyone on the network.

Project Implementation:

- UNO-2170
- FPM-3120G
- FPM-2150G

System Description:

The Adaptive ePlant Control System is a powerful but simple to use PC-based system, incorporating the latest control and web technologies. The system uses an Advantech Universal Network Controller (UNO) running the Windows XP operating system. It controls and monitors the machine directly on the PC, using distributed I/O modules as its path to the hardware.



A separate server PC holds a master copy of all the recipes, production schedules and batch histories. Out on the plant floor at each dye machine is an UNO, suitable I/O, and an Advantech flat panel monitor (FPM). The server sends to the UNO a works' order, including the recipe that is to be produced. The UNO performs the recipe control on the machine, and simultaneously logs complete process variable information at high accuracy. The completed process data can then be uploaded to the server.

Conclusions:

Using Advantech's products along with a new software package has allowed Adaptive Control's clients to become more efficient by having the ability to produce a batch dye lot successfully every time. One customer has had a 20% increase in production. These types of improvements are very significant in a highly competitive industry.