SoftPLC APPLICATION STORY
Replacement of Allen Bradley PLC-5/80E with SoftPLC

Fonterra Co-operative Group Limited is a leading multinational dairy company, owned by 13000 New Zealand dairy farmers and the world's largest exporter of dairy products. Bonlac Foods is a division of Fonterra. At the Bonlac Foods plant in Tasmania, Australia they process milk arriving by tanker from dairies around the state and produce a range of powdered milk products.

The plant was controlled by a network of Allen-Bradley PLC's communicating with each other via a DH+ link. The plant also has a number of large Profibus valve networks. The wet process area was originally controlled by a PLC-5/80E that was out of memory and I/O capacity. The ladder program consisted of 12,665 rungs of ladder code - primarily drives, valves, 17 PID control loops and 200 control sequences. All these were controlling routing and cleaning of milk lines and silos, where each line must be rinsed, caustic washed, rinsed, acid washed and rinsed again before use.

In 1999, the plant required an upgrade which involved the addition of 30 additional Profibus valves and other associated equipment in the wet process area. Since the system already used the largest PLC in the Allen Bradley range and it was completely full, no expansion was possible so an alternate solution was required. The existing PLC-5 system was also experiencing numerous network communication faults, due to the heavy communications load.

After a long process of reviewing the possible upgrade/replacement options, including splitting the process into multiple PLC-5's, a SoftPLC PAC *(Programmable Automation Controller)* was chosen as the best option for the reasons of cost effectiveness, reliability and long term maintainability. The SoftPLC offered Bonlac the ability to use a "drop-in" PLC CPU replacement that would easily interface with all the existing equipment, networks, PLC controllers and Citect SCADA system. Another huge advantage was that the programming and configuration of all the other equipment did not need to be changed in any way.

Using the tools supplied by SoftPLC, the Allen-Bradley PLC-5 ladder logic was imported to SoftPLC with no logic changes required! Then the programming for the new equipment was added to the system. The SoftPLC was able to be connected to the existing 7 racks of SLC-500 I/O, with no wiring changes.

The SoftPLC services communications networks which include an ethernet connection to (2) Citect I/O servers and (6) Citect Display Clients; a DH+ connection to (9) A-B PLC-5's, (8) A-B Panelviews and (1) A-B SLC-5/04. The Citect System uses a total of 28,000 tags. All of this with a throughput time of only 12msec on the SoftPLC!

The SoftPLC has been running the Wet Process Section of the Bonlac Foods milk powder production facililty since 1999. The PLC-5/80 replacement at Bonlac Foods Ltd., Tasmania was complete success. The system was upgraded with minimum disruption to the process, in fact the plant continued production throughout the upgrade. The SoftPLC has proven to be all that was claimed to be with no down time due to SoftPLC faults.

The SoftPLC CPU was upgraded in 2008 to add an additional Profibus network, and to move to a faster, newer model. Other than the additional logic required for the new Profibus hardware, no changes to the I/O, network, or SCADA were required for this upgrade which cost under $2500 USD.