HINZ
A Rockwell Automation Company

Albchem Industries Ltd.
PLC Genius Bus Upgrade

The Client:

Albchem Industries Limited has operated a Sodium Chlorate production facility near Bruderheim, Alberta since 1991. Sodium Chlorate is a chemical that is used in creating the bleach used by paper production facilities. Albchem's success in this industry lead to a plant expansion in 1997.

The Requirement:

The original PLC configuration included multiple 90-30 PLCs communicating with a main 90-70 PLC via a Genius Communications Module (GCM). The 90-70 collected the data from the field PLCs, passed it on to a Fisher Provox DCS, and returned commands from the DCS to the field PLCs. The first limitation of the GCM is that it allowed only eight devices on a bus for Global Data communication. Two buses were required to accommodate all the field PLCs, with only three spare addresses for future PLCs. The second limitation of the GMC card is that only 256 bits or 16 words of global data are allowed per bus. This meant the 90-70 was configured with a complex multiplexing routine to increase the data that was being transferred on the bus.

This configuration was designed to allow each remote PLC ten words for incoming and ten words for outgoing communication. This in itself would become a new limitation when considering the future addition of a graphics system with the expansion of the plant and the availability of newer communications modules on the market, Albchem approached Hinz with the task of upgrading the Genius Bus configuration. Albchem asked that the system be expandable at any time without disrupting the operation of the main PLC.

The Design Solution:

Since the original commissioning of the plant, GE has developed a Bus controller for the 90-30 PLC. This provided an opportunity to replace the 90-70 with a less expensive 90-30 model 351 (Main PLC). A second 351 90-30 was purchased as a warm back up to the main PLC. This decision will save the cost of buying future updates of the 90-70 software, the cost of stocking expensive 90-70 replacement parts, and was cheaper than buying a second 90-70.

Each of the 90-30 CPUs in the plant was upgraded to the latest version of the 323 and 331 controllers. This upgrade allowed the replacement of GCMs with Bus Controller Modules. This configuration allowed as many as 32 PLCs on each Bus, eliminated the need for the complex multiplex program in the main PLC, increased the amount of data that could be transferred to an indefinite amount, and improved communication rates by a factor of approximately eight times.

The communications programming in the remote PLCs was replaced with a Datagram Read and Write instruction. By having the remote PLCs handle the Datagrams, the Main PLC will not require interruption should a new PLC be added to either Bus. This would not be the case had we chosen Global data as the configuration requires that the processor be stopped. To help Albchem maintenance, Hinz simplified the Datagram code by providing modificatory parameters that would allow the same code to be inserted into any remote PLC. By changing three parameters, the code calculates the proper Datagram header information, and is directed to the proper destination address in the main PLC.

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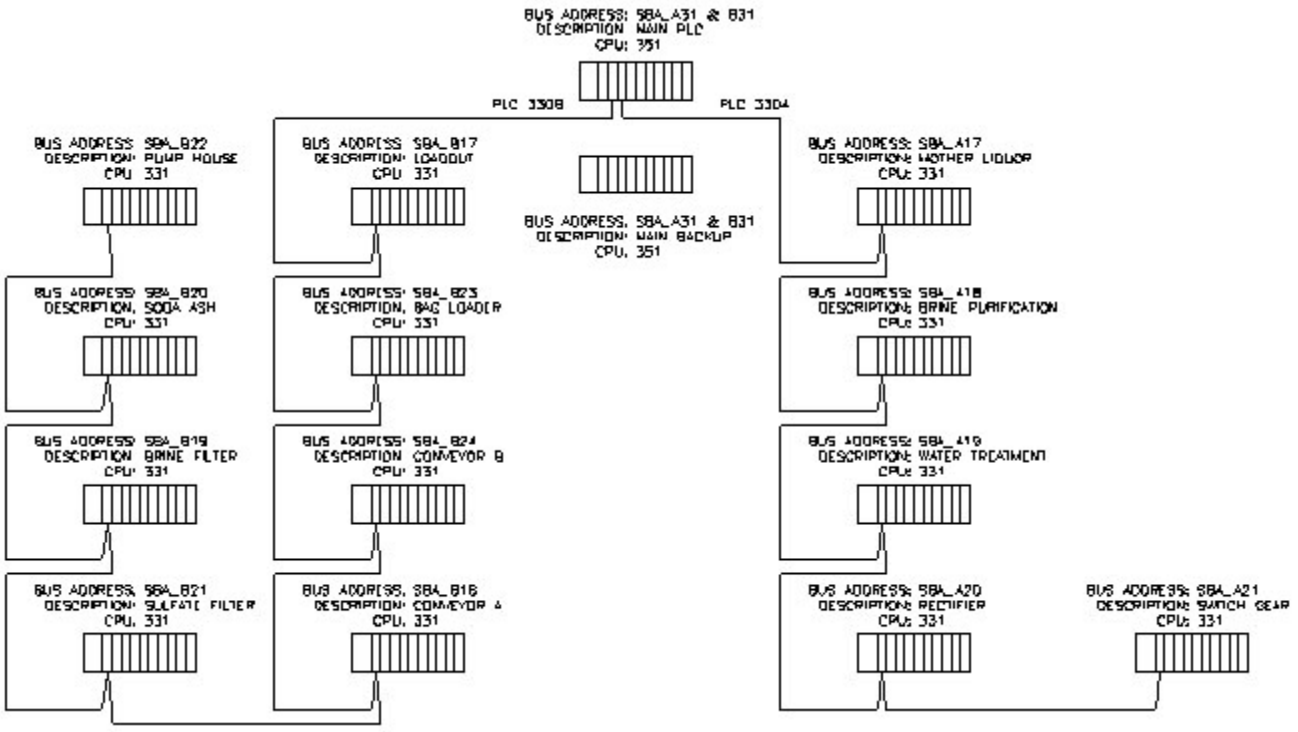

For further information or to contact a Hinz office near you, please check our website at:

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