Programmable Automation Controllers (PAC) in a Concrete Mixing Facility

Application: Facility Management
Location: Taiwan

Project Introduction:

With the continuous development of modern cities, the quality of construction materials has improved drastically, as have the standards. Regarding concrete alone, a high level of measurement precision and automatic mixing with high productivity is essential. The introduction of new industrial products and the development of new control systems is helping to develop more flexible, precise and reliable control methods, leading to better and stronger construction materials.

System Requirements:

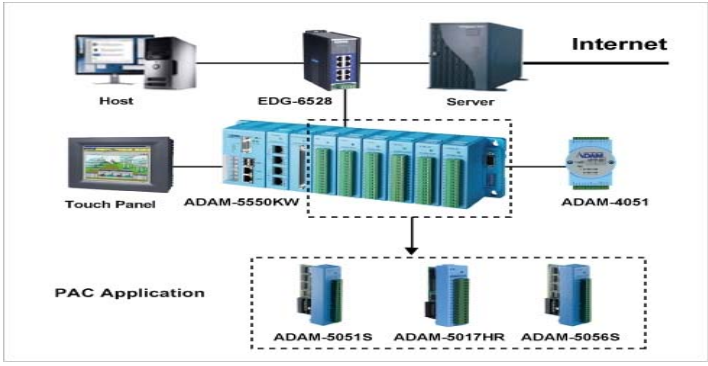
With the popular concrete mixing plants in big cities are expanding, and looking to the future, implementing unified production methods, enhancing efficiency, and providing material reference and monitoring in the field. These are very new concepts for systems which traditionally provide little flexibility and weak communication. The customer had the following requirements:

- The controllers must have powerful processing ability, and be able to collect data in real-time; support large volumes of storage, and follow standard conditions and formats.
- The control system must have a modularized, flexible and elastic structure to fit demands of different levels.

Project Implementation:

ADAM-5550KW:	Dual CPU, 8-ch, High Performance and Multi-tasking PAC
ADAM-5051S:	16-ch Isolated Digital Input Module
ADAM-5056S:	16-ch Isolated Digital Output Module
ADAM-5017HR:	8-ch High Speed Analog Input Module
ADAM-4051:	16-ch Isolated Digital Input Module
EDG-6528:	8-port 10/100Mbps Industrial Ethernet Switch

System Diagram:



System Description:

ADAM-5550KW, ADAM-4000 modules and ADAM-5000 modules compose this control system.

1. We use the ADAM-5550KW to replace the control logic and mixing functions. At the same time, we add the auto-start, auto weighing and mixing-adjust online.
2. Through redundant Ethernet and dual port LAN connecting with multiple Hosts, ADAM-5550KW can realize the multi controllers and multi task, allowing the system to achieve high safety.
3. We can develop the data collection, storage and system allocation software under the WinCE OS of ADAM-5550KW. Therefore through a VGA port, ADAM-5550KW can display the screen on touch panel and storage the data on a large volume of CF card. Without a Host server, it is a simple and reliable system. Furthermore the system can meet a small plant and the demand of high reliability and high performance. By connecting an industrial switch, ADAM-5550KW can link to the Host and compose a full function of monitor system. Besides, it can link to the ERP system and satisfy the large scale enterprise.

To realize the function of software is the key point in this system and keep the system stable with dynamic measurement precision.

1. The high speed analog input module ADAM-5017HR can make sure the data collection is precise.
2. We designed high performance filter calculations which guarantee the precision of measurement while using fewer resources.
3. The controller must make sure to finish the process within cycle time. That is a key point. ADAM-5550KW has strong calculation, supports multi-task and can integrate the data-resources and measurement into a single task. By setting a high priority, it can fit 200 samples per second.

Conclusion:

ADAM-5550KW uses a Dual-CPU infrastructure, with a fanless design, built-in storage, dual LAN ports, and high extension. The system supports the standard IEC-61131-3 programming languages, making it easy to code. Furthermore, users can take advantage of the VC++ and Visual Studio .NET to develop customized control systems. As a new generation of PAC, ADAM-5550KW is robust, reliable, and open, with a high performing CPU.