

## SUCCESS STORY

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## Maximizing Reliability and Engineering Efficiency of Air Separation Plants with STARDOM Network-based Control System

Location: Japan  
Order Date: First order in year 2005  
Industry: Chemical



**TAIYO NIPPON SANSO**  
The Gas Professionals

### Executive Summary

Taiyo Nippon Sanso Corp. was looking for a system that could be easily adopted to its plant architecture. For the following reasons, Yokogawa's STARDOM system with the FCN autonomous controller and the VDS Web-based SCADA software was selected as their control system for a Water-<sup>18</sup>O plant and other facilities:

- Highly reliable non-stop system
- Improved efficiency in engineering through application reusability
- Use of IEC61131-3 standard programming languages
- Remote operation capability by means of Web-based SCADA

The customer is very pleased with STARDOM's capabilities and the system is currently installed at four sites, with further installations scheduled.

### About Taiyo Nippon Sanso Corporation

Taiyo Nippon Sanso Corporation was founded in 1910 and is a supplier of oxygen and other industrial gasses. In 1935, the company built Japan's first air separation plant. It currently exports these plants around the world and is well known internationally as a leader in this field.

Recently, Taiyo Nippon Sanso became the world's first company to develop a cryogenic oxygen distillation technique for producing the Water-<sup>18</sup>O isotope used in the FDG-PET method to diagnose cancer. The company's long experience with cryogenic air separation plants was a key asset in this undertaking.



Fig. 1 Water-<sup>18</sup>O

### Customer Endorsement

*"During the plant test-run phase, many engineers are required to put in long hours performing adjustments and checks. Thanks to its Web-based SCADA, I can modify and check the logic on site all by myself using just my Web client. When I am working on site, I no longer have to use my mobile phone to keep in constant touch with the control room!"*

--- Masahiro Ikeda and Isao Shimamura,  
P&I Section, Design Dept. , Plant Engineering Center Onsite Plant Div.



Mr. Masahiro Ikeda  
Section Manager



Mr. Isao Shimamura

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## The Challenges and the Solutions

### Highly reliable non-stop system

Cryogenic air separation plants produce condensed pure gasses such as nitrogen, oxygen, and argon for use in a wide variety of industries manufacturing metals, semiconductors, and other materials. To ensure stable supply, mid-sized air separation plants are often built next to the major industrial plants that uses these gases. With its dual-redundant CPUs, networks, and power supplies, STARDOM's highly reliable FCN controller ensures the stable gas supply to the main plants, so that these manufacturing operations can continue without interruption.



Fig.2 Installation Site

### Application reusability for greater engineering efficiency

Processes vary at individual air separation plants, so re-configuration and re-engineering are often required. By encapsulating process know-how into function blocks, engineering work can be standardized.

Highly advanced control engineering is also facilitated with application portfolios holding Yokogawa's process expertise.

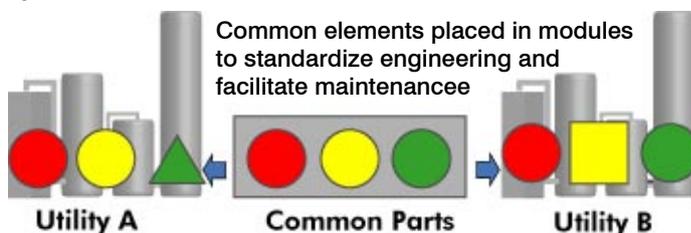


Fig.3 Modules

### IEC61131-3 international standard programming languages

Taiyo Nippon Sanso Corporation has exported more than 200 plants to over 30 countries. The provision of engineering and maintenance services for these plants around the world is expected to be greatly improved by STARDOM's reliance on the five programming languages of the IEC61131-3 international standard.

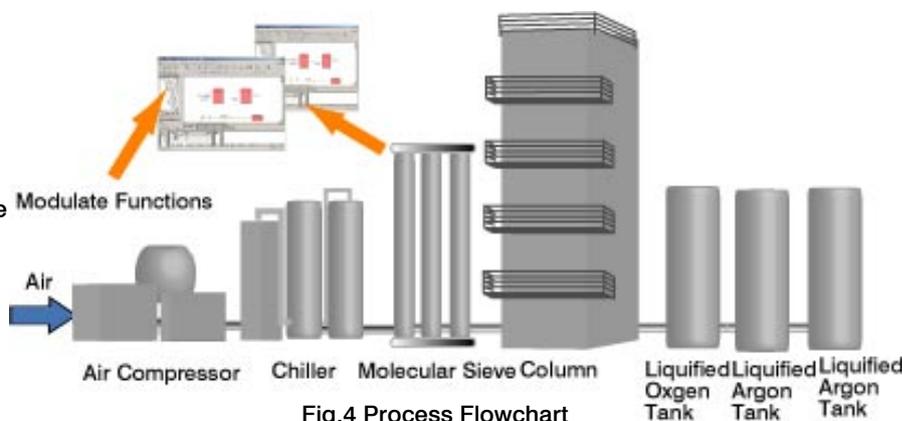


Fig.4 Process Flowchart

### Remote operation using Web-based SCADA

With the Web-based SCADA, there is no need for additional software to perform remote operations. During the test-run phase, as necessary modifications and adjustments are made to an application on site, it is possible to monitor them on site away from the central monitoring, greatly improving engineering efficiency.



Fig.5 Operation and Monitoring at site

<System delivered>

STARDOM Autonomous Controller: STARDOM FCN

STARDOM SCADA: VDS