CASE STUDY

Digital innovation in master data management for a global petrochemical company



Key facts:

Company: LG Chem

Project site: LG Chem, Yeosu Plant, South Korea

Website: lgchem.com

Industry: Petrochemical

Country: South Korea

Octave products used:
InConcert Core
(HxGN SDx)

Key benefits:

- Systematic management of master data based on global standards (ISO 14224, CFIHOS)
- Establishment of governance for master data change processes and integration with related systems
- Enhancement of data quality and consistency
- Improved reliability of facilities
- Compliance with regulations and legal requirements

Background

LG Chem is a leading global company in South Korea's petrochemical industry, internationally ranked 4th among chemical companies in FY23. With extensive operations spanning domestic and international landscapes, and a workforce of approximately 19,250 employees, LG Chem undertook process innovation (PI) initiatives to streamline facility management and standardize equipment information. This initiative aimed to prevent recurring safety incidents and enhance operational efficiencies for on-site engineers.

LG Chem has plants across various regions. At each of these facilities, a range of equipment (sourced from a variety of EPC companies) is being used. This diversity led to disparities in data quality, terminology, units of measure and attributes. This resulted in posing challenges to operational consistency and management efficiency. LG Chem responded by initiating comprehensive PI consulting and addressing these challenges through the introduction of an Master Data Management System (MDM) system, recommended by global consulting firm PwC.

Key challenges

Asset master data refers to classification systems such as location/ type and attributes for operations and maintenance. MDM systems consist of asset master data alongside other functions to keep data up to date. This includes handover data management and change management. Interfaces with related systems are the main functions of an MDM system.

As each piece of equipment has its own management criteria and functionalities, standardization proved challenging. Varying licensing and management levels across factories lead to disparities. Therefore, a reliable global standard was necessary, forming the basis for LG Chem's standardization efforts.

As the project progressed, the scope of managed data continued to evolve, posing significant challenges in establishing interfaces across numerous systems. Additionally, without systematic change management, post-initial construction, the potential need for re-evaluation several years later remained a concern.

Furthermore, to accommodate diverse users across different regions and plants, a user-friendly user interface (UI) was essential to ensure the following:

1. Accommodate all types of data in the desired format without constraints
2. Data retrieval from necessary systems with a change management functionality
3. An intuitive UI that anyone can easily use without extensive training

The solution

InConcert Core offered an ideal solution to these challenges due to its object-relationship data model and flexible data management structure. These capabilities facilitate the easy extension of attributes based on equipment types. InConcert Legacy enabled the establishment of taxonomy, aligned with ISO 14224, across nine levels and global CFIHOS standards - tailored to incorporate LG Chem's specific requirements. The Data Dictionary (where admin defines all attributes in advance) enabled an unrestricted setup of classification systems and the management of attributes based on equipment types.

By establishing relationships between objects without constraints, InConcert Core not only accommodated ISO 14224's taxonomy, but also depicted complex relations between facilities in a user-friendly format via the info maps functionality. The project successfully adapted to frequent changes in attribute definitions during execution and achieved a seamless integration with diverse period systems at LG Chem.

Results

Implementing MDM with InConcert Core yielded significant outcomes for LG Chem:

- Establishment of a single source of truth for master data
- Development of a data classification system based on ISO 14224 taxonomy
- Standardization of data and management systems
- Ensured data integrity across related systems through system-to-system data integration



Next steps

Building on these achievements, LG Chem expanded implementation beyond LG Chem's Yeosu Plant to encompass both domestic and international operations. Plans are also underway to extend these efforts to other business units such as New Materials. Once data maintenance was finalized, the goal was to establish a digital twin based on intelligent P&IDs or 3D models, enabling all stakeholders to leverage high-quality standard data for factory operations and maintenance.

About Octave

Octave is a leader in enterprise software, turning data into decisive action and intelligence into your edge. Our software solves for and simplifies complexity, from the design and build to operations and protection of people, property and assets – for any scope, at any scale. For decades, we've partnered with customers to sharpen performance, elevate efficiency and amplify results. From factory floors to entire cities, our solutions are tuned to scale up what's possible from day one onward.

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