2500 Series®
Programmable Automation Control System

Global specialty food ingredients manufacturer migrates from DOS-based APT® to CTI's Janus® Workbench Software to modernize legacy controls system and enhance production capabilities

Overview

A leading supplier in the food and pharmaceutical industries, has successfully transitioned from the outdated DOS-based APT® programming language to CTI's Janus Workbench Software "JSoft" running on the advanced CTI 2500-JACP coprocessor. This strategic move not only ensures future-proofing their operations but also significantly enhances their system's capabilities and efficiency.

The Challenge

At the customer's site in the NE region of the United States, eleven CTI 2500 Series® 2500-C400 PLCs, initially programmed with the obsolete APT® language, required significant updates. With one PLC nearing full capacity, offloading part of its process control application and gaining both the capacity and the capability to add new functionality became a critical issue. With the plant running 24/7, it was not feasible to attempt a wholesale program conversion from APT to JSoft (or any other programming package).

The Solution

Rather than migrating the complete APT® program to a Janus CPU, the customer preferred to keep the original 2500-C400 CPU with the addition of a **2500-JACP Janus Coprocessor** with a partial migration of only 3 APT® Units (out of the 22 Units in the existing APT® program) to Janus Workbench Software ("JSoft").

This transition **reduced the RLL program size in the existing 2500-C400 CPU by 16% from 1904 Kb to 1593 Kb (out of 1905Kb configured),** creating space for future APT enhancements.

NAPA International's Expertise

CTI subcontracted to NAPA International France (CTI's longstanding official distributor for Europe), leveraging their extensive experience in automated migrations. NAPA's custom tool facilitated a 95% automatic migration, including all tables (I/O, DECLARE, DEVICE, RECIPE), programs (SUBROUTINES, CFC, SFC) as well as I/O Module and Profibus configuration, ensuring minimal disruption and maintaining the integrity and look-and-feel of the original APT® code.

The Process

1. **Preparation and Migration**:

NAPA's tool efficiently translated the 3 APT$^®$ Units to CTI Janus Workbench Software, retaining the original variable names, program structures, and SFC graphics. This specific tool detected and corrected any discrepancies,


ensuring a flawless transition. Internal tests ensured synchronous operation of the old and new systems, identifying and resolving any discrepancies.

2. Rigorous Testing and Seamless Integration

NAPA's engineering team conducted thorough internal tests, running the two platforms synchronously:

• The 'old' 2500-C400 with the complete APT$^®$ program (22 APT$^®$ Units).

• The 'new' 2500-C400 with the optimized APT$^®$ program (19 APT$^®$ Units) in tandem with the 2500P-JACP managing the migrated 3 Units.

ROCK SOLID PERFORMANCE. TIMELESS COMPATIBILITY.
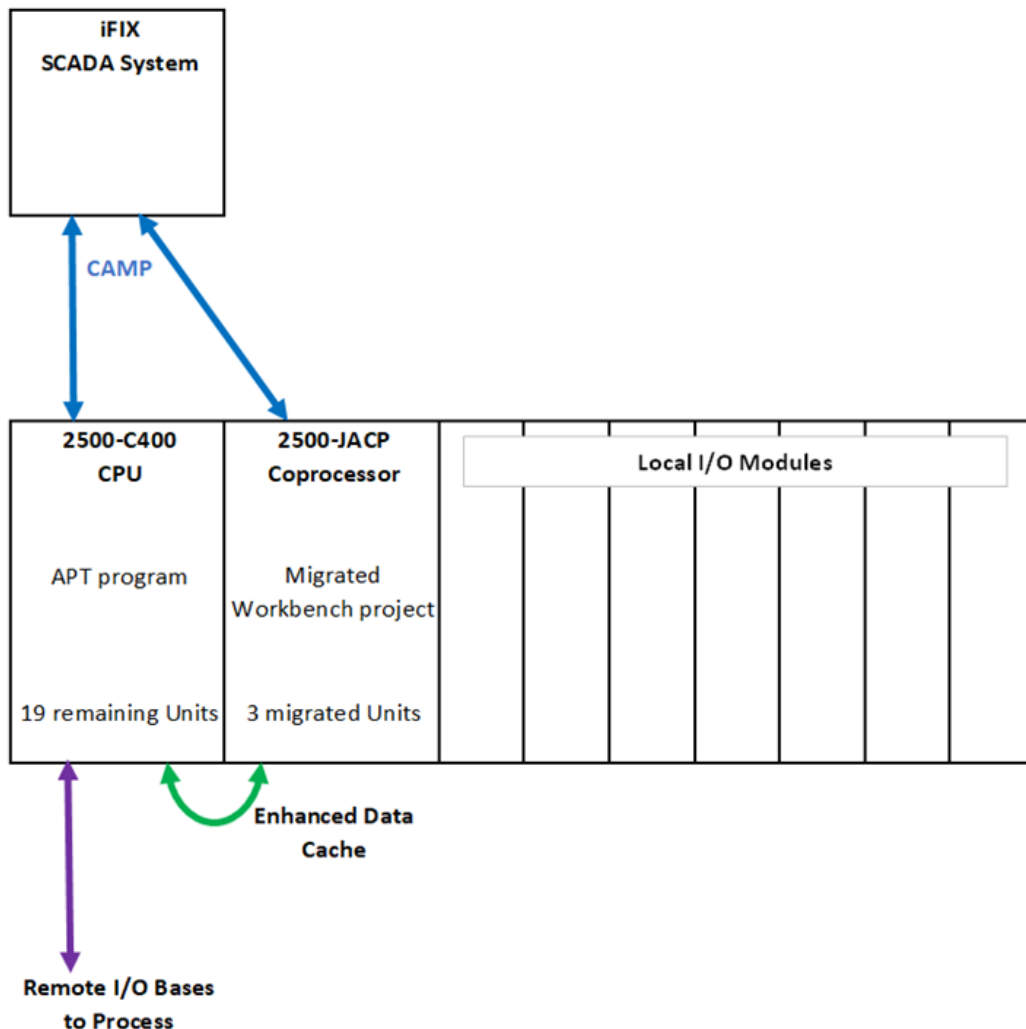
Why 2500-JACP and CTI Workbench?

Compared to a full APT® to Janus CPU migration, the primary challenges were related to the intricate non-regression testing of the 19 units still operating on the 2500-C400 processor during production. Additionally, configuring the enhanced data cache communication between the APT® CPU and the Janus Coprocessor, as well as updating the iFIX® database to seamlessly switch CAMP communication channels from the 2500-C400 to the 2500P-JACP for these 3 units variables, required precise attention. Despite these complexities, our team's expertise ensured a smooth and efficient transition, minimizing downtime and maximizing operational continuity.

The 2500-JACP coprocessor offers numerous advantages, including compatibility with various communication protocols (OPC UA, MQTT, Modbus TCP, Ethernet/IP) and the flexibility to expand using APT® object library or any IEC61131-3 library. This adaptability makes it a robust choice for ongoing and future developments such as migrating other APT® Units to 2500P-JACP or migrating complete APT® Program(s) to Janus CPU(s).

3. Implementation

The 2500-JACP installation and CTI Workbench program download were completed in less than 24 hours.

Production downtime was minimized to just 30 minutes, with additional training provided to ensure smooth transition.

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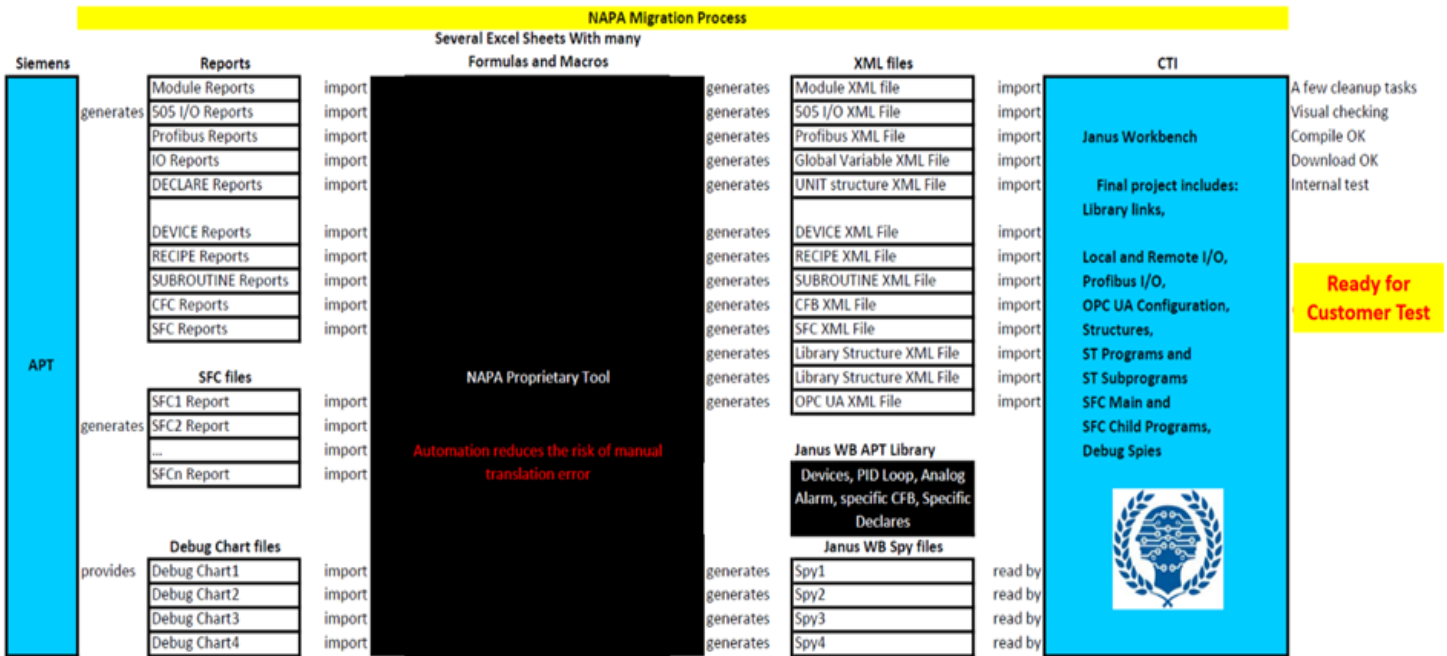
Conclusion

The installation on-site of the 2500P-JACP and its CTI Janus Workbench Software program, as well as the download of the modified APT® program and the update of the iFIX® database to switch CAMP communication channels from 2500-C400 to 2500P-JACP, were smoothly completed in less than 24 hours. Production on the remaining 19 units was only stopped for 30 minutes. An additional 8 hours of training and Q&A were included in the NAPA contract. The customer was then ready to start formal Operational Qualification (OQ) on the new system.

The customer's successful migration to 2500-JACP and CTI Janus Workbench Software marks a significant milestone in modernizing their production capabilities. For a fraction of the time, money and downtime required by competing automation solutions, this transition not only resolves current capacity issues but also positions them for sustainable growth and innovation in the competitive food and pharmaceutical industries. At CTI, that's what we call Smart Modernization™.

Testimonial

Andrew D, the customer site engineer responsible for this migration, said he did not expect the migration to go so well and is satisfied that the migrated program looks so familiar that the maintenance team will not get lost in translation.

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