

Engineering Environment for Motion Controllers

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1. Introduction

Various industrial machines employing servo systems contain many combinations of different FA components such as programmable controllers, motion controllers, servo mechanisms, and display units. To improve the performance and multifunctionality of those machines, an increasing number of man-hours is spent on programming, parameter setting, start-up, and debugging the FA components built into the machines. An engineering environment to reduce this time is now an important factor when selecting FA components.

We have developed "MT Developer2", an engineering environment for motion controllers that complies with the integrated platform of controllers. This improves the overall software development efficiency by combining the engineering environment for programmable controllers or engineering environment for display units.

This report describes the features of the MT Developer2 motion controller programming software compliant with the integrated platform of controllers, and introduces the challenges and solutions faced during development as well as future development prospects.

2. Features

The MT Developer2 motion controller programming software provides an engineering environment that complies with the integrated platform of controllers, and has the following features.

- (1) Improved program development efficiency
 - 1) Improved program creating efficiency
 - The motion program offers label programming to simplify standardization of user programs.
 - CAM data is created by importing the data from CSV-format files for greater freedom in CAM data creation.
 - 2) Shorter man-hours

As the engineering environment complies with the integrated platform of controllers, the sequence program and motion program are created seamlessly through the unified user interface.
- (2) Reinforced program management function

Unauthorized access to the project is prevented by a stronger user authentication function, thus protecting users' know-how against leakage.

- (3) Improved debugging efficiency

With highly improved operability of the digital oscilloscope, which can sample the data from the motion controller and servo amplifier and also display them in waveforms, debugging efficiency is greatly improved.

3. Challenges and Solutions

3.1 Programming using labels

The motion controller has various devices for storing user data, such as word data and bit data, which can be used in the motion SFC program and servo program. In conventional methods, creation of these programs required using device names that had been designated previously. With MT Developer2, the devices are labeled to allow user-designated labels when programming (Fig. 1).

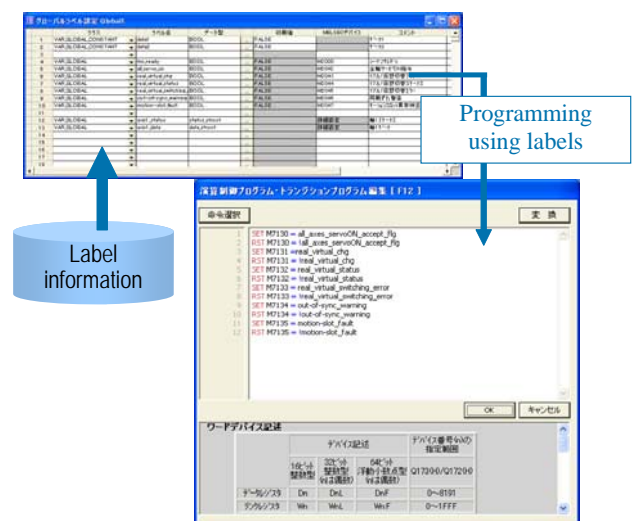


Fig. 1 Programming using labels

As a result, program creation is more efficient and the program is more readable.

3.2 Increased efficiency of cam data creation

In the conventional methods, dedicated software included in MT Developer had to be used to create cam data. However, with MT Developer2, CSV-format data can be imported for CAM data creation (Fig. 2), and the CAM data created by the software can be exported.

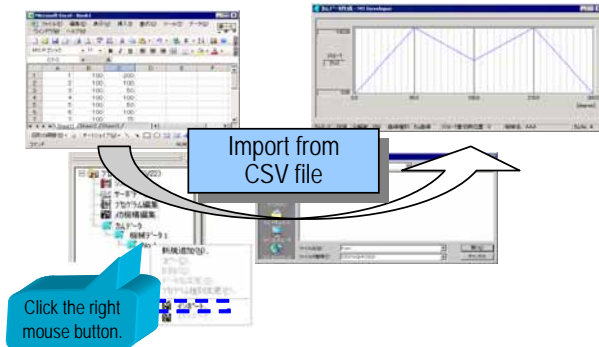


Fig. 2 Import of CAM data

As a result, CAM patterns created by the user can be used, and CAM data can be set more easily and flexibly than by the CAM data creation software of MT Developer.

3.3 Unified user interface

The motion controller is used in combination with the programmable controller; the users need to operate the programming software of the two devices respectively. The unified user interface makes program development more efficient (Fig. 3).

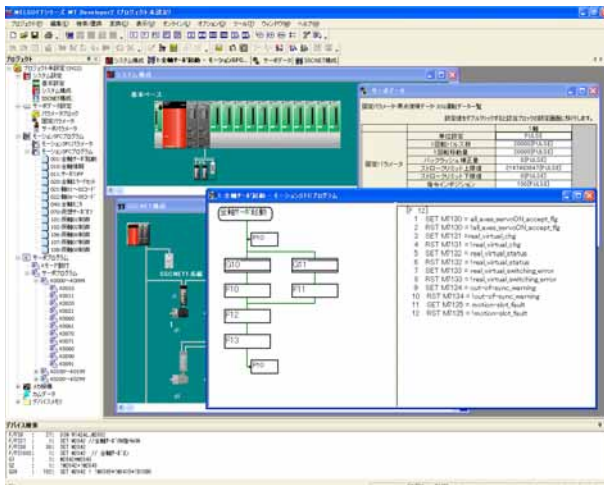


Fig. 3 Unified user interface

With MT Developer2, the user interface is identical with that of the programming software for MELSEC programmable controller “GX Developer2”, for seamless programming.

The data link between applications allows jumping from the sequence program to the motion program and vice versa, thus improving the efficiency of user programming.

3.4 Security

In conventional methods, there was no limit on the use of project data, and so the master project data was sometimes accidentally changed by inexperienced operators, or confidential data could be leaked.

MT Developer2 incorporates the same user authentication and access control as in GX Developer2; only those users with access authority can perform such operations as displaying and editing the program, thus ensuring off-line project security.

3.5 Digital oscilloscope function

The digital oscilloscope, which can sample the data from the motion controller and servo amplifier and also display them in waveforms, provides handy functions for starting up and debugging FA devices (Fig. 4).

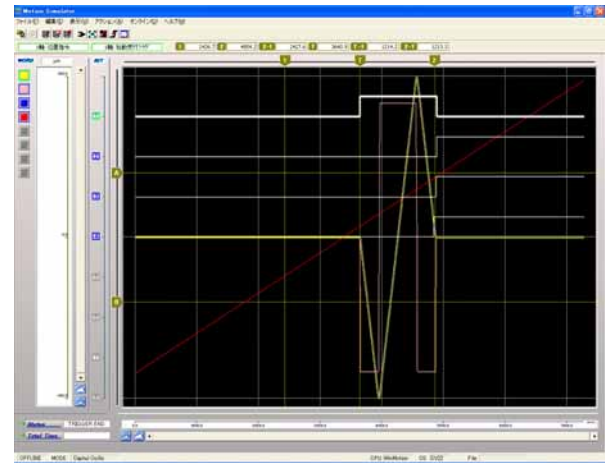


Fig. 4 Digital oscilloscope

The digital oscilloscope in MT Developer2 has conventional functions with remarkably enhanced operability of expanding or reducing the graph display scale as well as data processing. As a result, users can start up and debug their devices more efficiently.

4. Conclusion

We will further improve the efficiency of software development and overall system performance by reinforcing the integrated linkage function of the engineering environment, which complies with the integrated platform of controllers for motion controllers, can be used seamlessly with various programming software for motion controllers, programmable controllers, display units, and the like, and is designed to speed up device development by users.