

Efficient
design/Start-up



Machine simulation can reduce design/start-up time by up to **15%**!

Company A, which used to require a great deal of adjustment time during start-up on the production site.

By introducing machine simulation to achieve design front-loading, they succeeded in reducing the design/start-up time by 15%.

What's their secret?

See inside
for details!

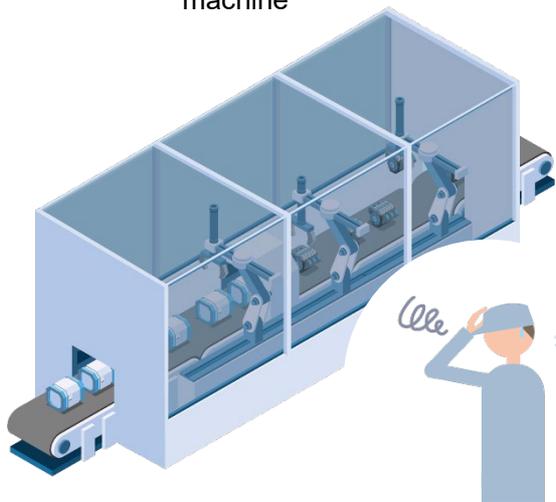


Customer's Concern

Factors such as delays in upstream mechanical design meant that Company A was unable to reserve debug time for downstream control design using an actual machine.

Due to the insufficient debugging time, there was a tendency for extensive start-up rework and prolonged on-site adjustment, and they were looking for a way to shorten it somehow.

At start-up of the machine



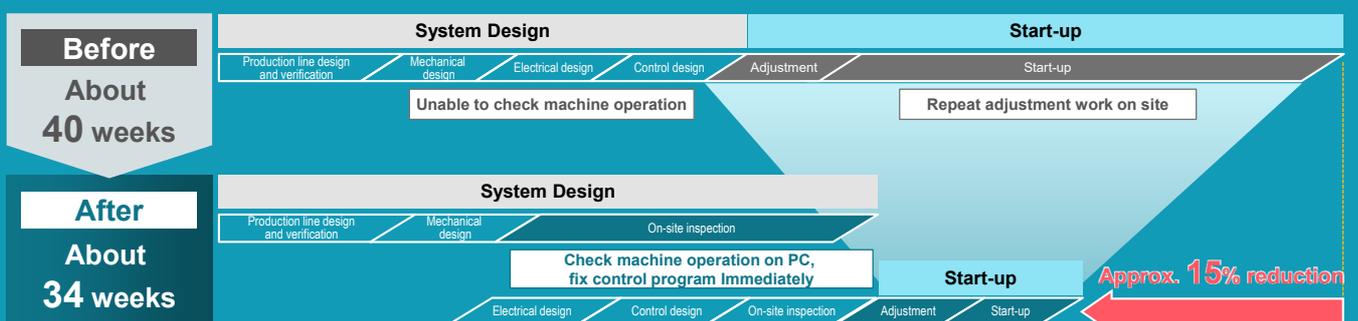
There's a lot of rework on start-up.

The robot interfered and partially broke. We need to get repair parts ...

The cycle time is longer than expected, so we need to fix the control design ...

What has improved

The introduction of the 3D Simulator MELSOFT Gemini allows machine-less preliminary verification of motion anomalies, mechanical interference, and cycle times that can not be noticed by programming alone, and thus greatly reduces the need for on-site rework during start-up. The company has succeeded in shortening the design and start-up period by about 15% compared with the conventional method, and production can be started quickly.





Point 1

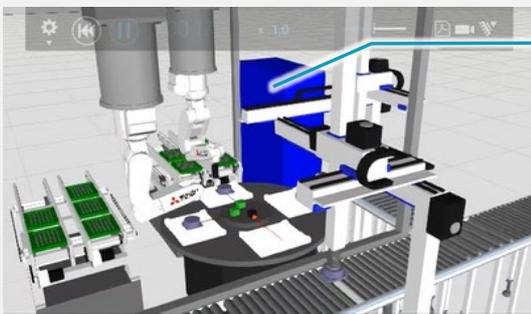
Direct connection with MELSOFT Simulator allows accurate simulation of the control program, as well as the robot's pathing and range of motion without requiring actual equipment

Point 2

Visualizing cycle times to find inefficient operations at the design stage
Review the programming to reduce cycle time before start-up

Point 1 3D models detect malfunctions such as motion anomalies and mechanical interference

3D Simulator MELSOFT Gemini



Color notification of interference points



High-precision simulation with direct connection

MELSOFT Simulator

Programmable controller simulator



Display device simulator



Robot simulator

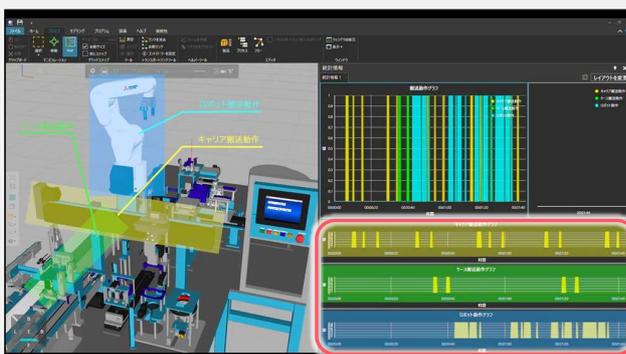


Motion Controller Simulator



Point 2 Reduced cycle time through pre-startup program verification

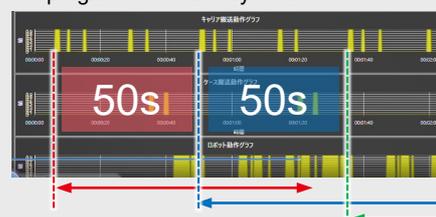
3D Simulator MELSOFT Gemini



Long cycle time due to long waiting times



Fix program to reduce cycle time



See the next page for configuration of this system

Return on investment (ROI)



Cost

- MELSOFT Gemini
- Gemini training
- Development with Gemini



Effect

Gain up to 6 weeks of production gain from a shortened start-up period
* If daily production profit is 1.6 million yen, a profit increase of 48 million yen over 6 weeks x 5 days of operation



Set-up Period

Shortened by about 6 weeks
* If the daily system integration cost is 80,000 yen, the cost reduction is 2.4 million yen over 6 weeks x 5 days of operation.



Payout period

About 5 days
* Assuming an installation cost of 10 million yen, a cost reduction of 2.4 million yen from shortening the set-up period, and an installation effect of 1.6 million yen per day

System overview

This system consists of the **3D Simulator MELSOFT Gemini** and **Mitsubishi Electric's MELSOFT Simulator**, it is easy to set this up by just installing the software. Additionally, two-day basic training (paid, Japan only) is available to help you learn basic MELSOFT Gemini operations, and how to setup machine simulations.



3D Simulator MELSOFT Gemini



MELSOFT Simulator

Direct connection



Operating Environment for MELSOFT Gemini (recommended configuration)

Item	Content
CPU	Equivalent to/greater than Intel® Core™ i7-8xxx processor
Memory	8GB
Hard Disk Drive	3GB available space
Graphics Card	NVIDIA® GPU with at least 4GB dedicated memory (Equivalent to/greater than GeForce® GTX 1080)
Graphics Display	1920×1080(Full HD) or more
Mouse	3 buttons
Operating System	64-bit Microsoft® Windows®10

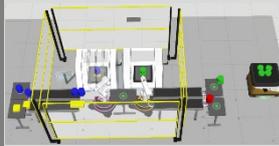


3D Simulator MELSOFT Gemini Basic Training

Learn the basics of how to use using the 3D Simulator MELSOFT Gemini with exercises

Period	2 days
Number of trainees	1 ~ 3 trainees
Venue	<ul style="list-style-type: none"> Nagoya FATEC Training School In your company Online

Line simulation



What you will learn (Day 1)

You will be able to build simple lines and simulate them

Machine simulation



What you will learn (Day 2)

You will be able to configure and simulate the motion of the 3D CAD model of a machine

Product line-up Please prepare your own computers, etc. to run the products listed below.

Type	Model	Overview	Standard price (yen)
1 3D Simulator			
MELSOFT Gemini Professional (License + 1 Year Maintenance Contract)	SW1DND-3DSIMR-MQ12	Basic version where customers can newly create/set operations of 3D models in imported 3D CAD data	open price
MELSOFT Gemini Professional for a limited time (6 month license)	-	MELSOFT Gemini Professional and maintenance contract, usable for 6 months (coming soon)	open price
MELSOFT Gemini Professional for a limited time (12 month license)	-	MELSOFT Gemini Professional and maintenance contract, usable for 12 months (coming soon)	open price
MELSOFT Gemini Product Basic Training (Japan only)	-	Paid two-day training for prospective MELSOFT Gemini users to learn how to set up machine and line simulations through basic training exercises	open price
2 MELSOFT Simulator			
MELSOFT iQ Works Version 2	SW2DND-IQWK-E	FA engineering software (English version)	220,000
MELSOFT RT ToolBox3	3F-14C-WINE	Robot programming software (with simulator)	open price

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Safety precautions

To use the products listed in this publication properly, be sure to read the relevant manuals before use.