

## Before start-up, why not confirm “results”??

**Issue** Production capacity cannot be confirmed without actual equipments

**Measure** Confirm productivity for each layout/operation in digital

- Verifying multiple production layouts before investment.
- Utilizing as a tool to improve KAIZEN process.

**Issue** Hard to convince best placement of workers, robots and AGVs

**Measure** Calculate the layout that minimizes investment and improves ROI

- Verifying the number of workers, placement, and division of the work.
- Verifying the minimum required number of equipment such as robot/AGV.

**Issue** When starting up, design rework inevitably occurs

**Measure** Detect potential design bugs in advance and reduce rework

- Front-loading program debugging by combination with simulator.
- Preventing communication errors between designers by checking 3D models.

## Case Study

Mitsubishi Electric  
Nagoya Works

We validated and compared the production capacity across multiple layouts and adopted the layout/operation that has the highest productivity.



Verification contents		Before	After
<ul style="list-style-type: none"> <li>✓ Target production volume is achieved or not.</li> <li>✓ The number and location of work-in-progress, storage areas.</li> <li>✓ Operating rate of equipment and workers.</li> </ul>	Cycle Time	128 min/unit	93 min/unit
	Line efficiency	83.1%	88.9%

### Benefits

- ① Achieved target cycle time: **103 min/unit**
- ② **Increased profit** by approximately **12 million yen/year.**
- ③ **Reduced loss cost** by approximately **600,000 yen/year.**