

CASE STUDY:

Manufacturer Breaks Constraints to Double its Throughput

The Client

As a result of a perfect storm of circumstances, including COVID-19, a leading silicon components manufacturer's throughput was suffering in its two facilities with significantly increasing demand.

The Challenges

The goal was to be on pace to double throughput by the end of the year and build in-process inventory levels to accommodate this increasing demand. USC had done a previous project to improve productivity with an enhanced Management Operating System, but this was still a tall order that specifically required understanding of current capacity, inventory levels, and additional capacity needed to accommodate the constant quarter over quarter increase in demand.

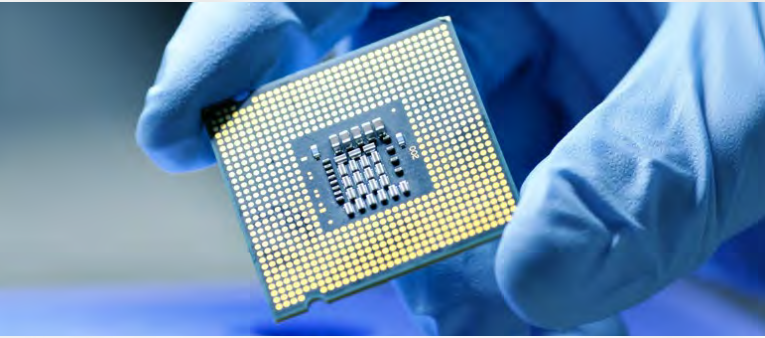
Accomplishing the goal of doubling the company's throughput meant two things: USC needed to rapidly maximize the existing capacity within both sites and add capacity at each facility, both while ensuring in-process inventory levels were built up and maintained to support this increase.

The USC team took a constraint-based approach to this challenging project by looking at the company's processes through the lens of the operational bottlenecks that were hampering them.

The separate operations (machine processing work centers) were underutilizing capacity, so

providing high-level visibility, as well as tools that added focus at the Value Stream Level and the Constrained Equipment Level were needed to prioritize the areas to address. One powerful tool that was used was the **T-Max** (short for "theoretical maximum.") **Diagnostic**. It involves identifying capacity constraints by focusing on the theoretical maximum of production at work center groupings to understand where the bottlenecks existed based on each operation's optimal capability. At the prioritized constrained operations at each site, additional focus on "4 Pillars" was used to manage:

1. **Equipment Availability** (no machines down for mechanical reasons)
2. **WIP Availability at the Constraint** (no machines waiting on parts)
3. **Equipment Operation** (no machines down for labor needs)
4. **Escalation Protocols** (Ensure that none of the above conditions were causing lack of operational optimization)



The Solution

Building a constraint-centric management system to support optimized use of the “4 Pillars.”

- **Monitoring Daily and Weekly trends to ensure quarterly production targets will be achieved at each site.** Are the facilities hitting their daily and weekly targets for overall volume and for each Value Stream (product line)?
- **Understanding what the constraint is by utilizing a tool that provides visibility to validate the constraint, so the right immediate need is addressed (Process T-Max).** Where is the constrained operation and what needs to be done to manage the 4 pillars?
- **Additionally Managing the constraint with tools that provided visibility to support the “4 Pillars” focus.** Capture the causes of any delays (downtime) and causes of inadequate WIP levels, along with reasons for personnel shortages. Addressing root causes of these issues at the constrained operations by developing action items to address problems as they arose.
- **Supporting the Value Stream Managers and Supervisors with the tools that enabled them to focus on addressing issues at the right operation, if they weren’t meeting their daily/weekly volumes.** Additional tools were put in place to use leading indicators to understand what Value Streams were on track to meet quarterly targets to validate that the correct constraint was still in need of continued focus and support.

- **Understanding Future Capacity.** From a capacity standpoint, did they have enough machines to get the job done? It was a matter of understanding customer demands on a quarterly basis and how the right visibility would provide insight to additional equipment needs or product shifts (if the volume of those particular value streams would increase or decrease at either or both sites). In some cases, as with a newer product, the volume was increasing. It called for additional machines, but in some areas, certain products were decreasing in volume. The machines that produced those products would be available for other uses. So, it wasn’t just adding machines to the mix. It was about taking a careful look at each product, the existing equipment or assets, and in some cases, reallocating them.

Performance Results

The client is on track to double its throughput by the end of the year (Q3 finished at \$97M in Shipments up from \$60M the previous year’s Q3, while achieving \$105M for Q4 which was up from \$70M for Q4 in the prior year).

Many manufacturing companies have experienced increasing demand in the face of ongoing supply chain disruptions this year. At USC Consulting Group, our specialty is helping companies find efficiencies and increase throughput.

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