▞ **C3**.ai

Contract Manufacturer Achieves 2.8% Revenue Uplift with AI Scheduling

Value-Driven Benefits

2.8%
Estimated revenue lift for six production lines via optimal production schedules

$37M+
Estimated annual economic benefit with C3 AI Production Schedule Optimization deployed across all facilities

100%
Production capacity utilization with dynamic scheduling and increased utilization of available inventory

Introduction

A global leader in contract manufacturing and supply chain solutions operates in over 30 countries and across complex sectors such as electronics manufacturing. With a dynamic supply chain and demand volatility, the company faced increasing challenges in meeting customer demand, optimizing production, and controlling inventory costs.

Challenges

However, the company relied on conventional planning methods, such as first-in-first-out (FIFO) or manual adjustments to manage production. While adequate for basic scheduling, these systems couldn't adapt to real-time disruptions such as material shortages or shifting capacity. Due to the inability to shift its production flexibly, the company missed high-value opportunities, accumulated excess and obsolete (E&O) inventory, and depended on costly off-schedule work orders to meet customer orders.

Solution

To address these challenges, the company partnered with C3 AI to implement an AI-driven solution for complex production scheduling, the C3 AI Production Schedule Optimization (PSO) application. Within 12 weeks, the team deployed C3 AI PSO to 6 production lines, unified data from 10 disparate sources, and configured a powerful optimization engine that evaluates up to 130,000 potential sequences per manufacturing run. With C3 AI PSO, planners can review optimization recommendations tied to business KPIs and flexibly update production schedules to drive better business performance.

Results

With the initial deployment of C3 AI PSO, the company anticipates an estimated annual revenue lift of 2.8% across 6 production lines and over $37 million of economic value when scaled across its facilities. Building on this success, the company is expanding its partnership with C3 AI to 5 additional AI use cases across its supply chain, including inventory and sourcing optimization.

Challenges

Before partnering with C3 AI, the company lacked advanced tools to optimize production schedules across its global operations. Planners relied on static scheduling systems and methods, such as FIFO and expert judgement to manage runs and respond to issues such as material shortages. However, these traditional approaches couldn't adapt to sudden changes in demand and supply, nor evaluate the revenue impact of alternate plans. As a result, the company faced higher costs, lost revenue, underused capacity, and E&O inventory, while missing opportunities to prioritize high-value orders.

Fragmented data systems further impacted business performance. Planners manually gathered data from disparate sources to address issues such as order prioritization and supply shortages. Without intelligent, automated tools to anticipate change and recommend optimized plans, planners made decisions in isolation and under tight deadlines. This reactive approach limited the company's ability to adapt to change, evaluate alternate solutions, and align production with the highest-value orders.

Approach

Over 12 weeks, the company partnered with C3 AI to configure and deploy C3 AI PSO across six customer production lines representing a range of business models, product complexities, and operational scales. The joint team began by integrating and unifying over 300,000 records from 10 enterprise data sources, including production orders, sales orders, inventory on hand, material master, bill of materials, demand forecasts, and supplier data.

With the unified data in place, the team configured a modular optimization engine capable of evaluating up to 130,000 possible production sequences per run. The engine was designed to respect constraints such as production lead times, inventory availability, order need dates, and program-specific rules. Optimization logic was aligned with business objectives and built to recommend the best use of raw materials, finished goods sequencing, and shortage resolution strategies.

Next, the C3 AI team configured the application's user interface to meet planner needs, including the visualization of shortage lists, production sequences, and clear-to-build analysis tied to business KPIs. Planners could review optimization recommendations, adjust inputs as needed, and generate updated schedules, quickly shifting from manual triage to a data-driven prioritization approach.

As planners onboarded on to the application, C3 AI PSO helped reduce the organization's reliance on off-schedule work orders and enabled more accurate, proactive planning. Given the success of the initial production deployment, the company is now expanding its partnership with C3 AI to 5 additional AI use cases across their supply chain, including optimizing their inventory levels and sourcing costs.

About the Company

- $36+ billion in annual revenue
- 30+ countries of operation
- 800+ program facilities worldwide
- 150,000+ employees

Project Highlights

- 12-week initial production deployment across six diverse production lines
- 300,000+ records from 10 enterprise data sources integrated
- 130,000 production sequences evaluated per run by AI-powered optimization engine
- C3 AI Production Schedule Optimization application user interface configured

Solution Architecture

**C3 AI Production
Schedule Optimization**

Enterprise Data

- Item Vendor Parameters
- Material Received
- Purchase Order
- Bill of Materials
- Customer Forecast
- Work in Progress Inventory
- Committed Work Orders
- Inventory on Hand
- Material Master
- Sales Orders
- Production Orders
- Supplier Data
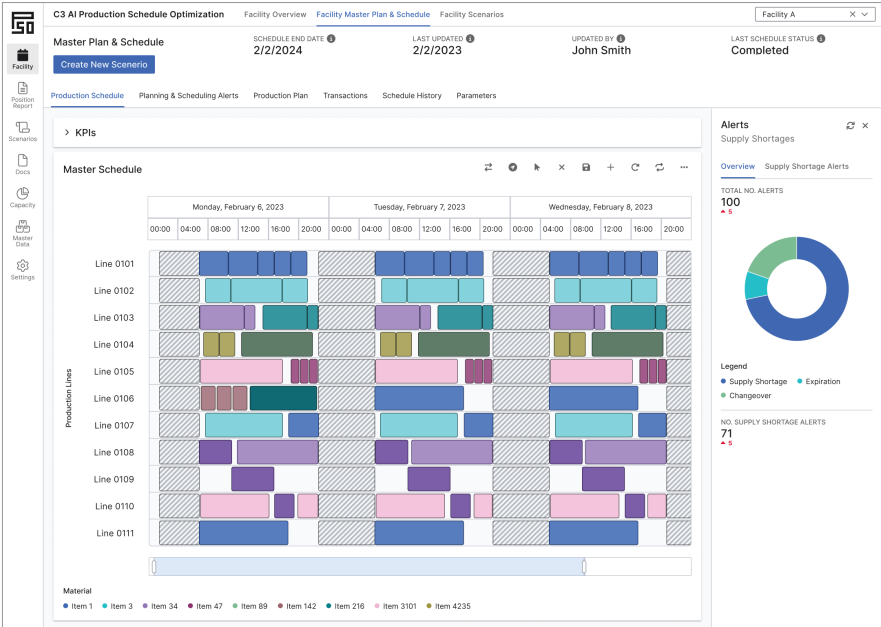
Proven Results in Initial Production Deployment
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