



IX[®] Case Study

Installing Massive New Equipment Without Disrupting Production

**Transforming a space-constrained facility into a scalable
production system**



**IMPLEMENTATION
ENGINEERS[®]**
BEYOND CONSULTING

IX® in Action

**Increased
throughput
velocity**

**Reduced
queue times
at critical
processes**

**Lower defect
risk**

A specialty alloys manufacturer faced a critical growth challenge: major new plate-finishing equipment had been ordered to expand capacity, but the existing facility had no available space to install it without severely disrupting ongoing operations.

The new plate stretcher and plate shear were extremely large assets requiring significant floor space, structural support, and overhead crane access — forcing the relocation of existing equipment and the redesign of material flow across multiple product families.

Leadership needed a solution that would:

- Install new equipment on schedule
- Avoid prolonged production downtime
- Maintain delivery commitments
- Improve — not degrade — overall plant performance
- Support long-term growth

Implementation Engineers was engaged to design and implement a footprint transformation that would enable expansion without breaking the plant.

The Challenge: Growth Colliding with Physical Reality

Years of operational evolution had produced a layout optimized for past conditions, not future demand. Existing space was fully utilized, and material flow was already inefficient.

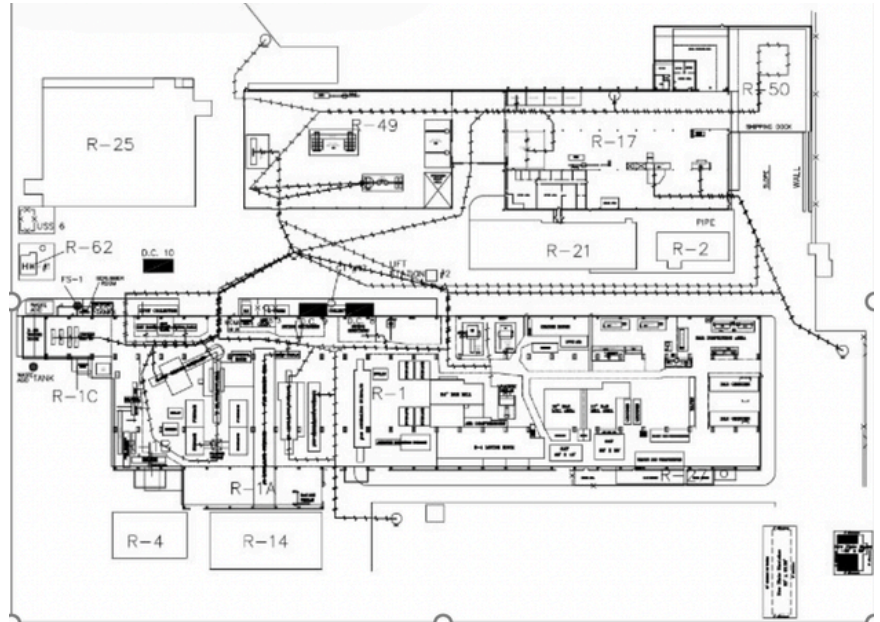
Installing the new equipment within the current configuration would have caused major disruptions, including:

- Extensive equipment relocation
- Severe interference with existing product flows
- Increased handling and congestion
- Risk to safety and quality
- Prolonged production downtime

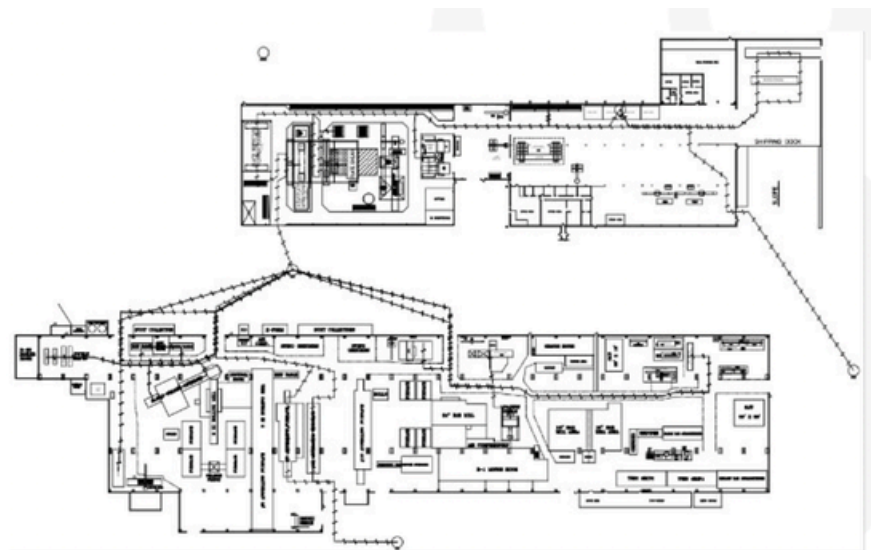
The new machines required not only floor space but overhead crane coverage, making location options extremely limited.

At the same time, the plant produced multiple product types — including plate and round products — meaning any change to one value stream could negatively impact others.

Current layout



Future layout



IE Approach: Design for Flow, Not Just Fit

Rather than forcing the new equipment into available space, Implementation Engineers conducted a comprehensive engineering analysis to design a footprint aligned to future operational requirements.

1 Data-Driven Current-State Assessment

The team analyzed the facility as an interconnected production system, not a collection of departments.

Key activities included:

- Detailed routing analysis (1,500+ product routings)
- Volume analysis across product families
- Capacity and workload balancing
- Spaghetti diagrams of material movement
- Inventory staging analysis
- Process mapping and value-chain modeling

This analysis revealed that the existing layout was sub-optimized for virtually all products and that simply inserting new equipment would worsen performance.

2 Re-Thinking the Problem: A Multi-Building Solution

Site personnel initially believed the new equipment could only be installed in one location — which would have required relocating much of the round-product operations.

IE challenged this assumption.

By analyzing available space across buildings and understanding relative process value, the team identified a superior alternative:

- Relocate the large plate shear to another building better suited to its footprint
- Install only the plate stretcher in the main manufacturing building
- Minimize disruption to existing operations
- Improve overall material flow

This solution transformed a zero-sum space conflict into a system-level optimization. Another building housing lower value-adding processes was betterable to accommodate the large equipment footprint while improving logistics.

3 Designing Flow for Multiple Product Families

After establishing the optimal placement for plate equipment, IE redesigned the remaining footprint to maintain efficiency for other products.

Analysis showed that round products consisted of distinct families driven by diameter and process requirements. Because that equipment was relatively movable, IE created dedicated manufacturing cells in the available space.

This approach:

- Reduced cross-traffic between product types
- Simplified scheduling
- Improved material flow
- Preserved operational flexibility

4 Implementation Without Production Shutdown

The most critical element of the project was execution.

IE developed a detailed relocation and installation plan sequencing dozens of moves to maintain production continuity.

The roadmap included:

- Temporary relocations of affected processes
- Removal of legacy equipment
- Installation of new foundations and infrastructure
- Utility modifications
- Crane access planning
- Progressive equipment moves
- Final commissioning of new assets

The plan specified the order of operations so that each step enabled the next without halting production.

The implementation plan defined a precise sequence of events for relocating equipment and installing the new machines.

Results: Capacity Expansion Without Operational Collapse

The new footprint significantly improved performance while enabling installation of the new equipment on schedule.

Key outcomes included:

- Major lead time reductions
- Improved logistics across product lines
- Reduced material handling
- Improved inventory turns
- Ability to perform plate stretching in-house rather than outsourcing
- Creation of cellular manufacturing opportunities
- Potential staffing reductions through more efficient operations

Material now flows directly from stretching through inspection and shearing with minimal staging, dramatically improving production velocity.

Additionally, locating processes in cleaner environments reduced quality issues and rework.

Why This Matters

Installing large capital equipment is one of the highest-risk changes a manufacturing organization can undertake. Poorly executed expansions often lead to months of instability, missed deliveries, and cost overruns.

By treating the project as a system redesign — not a space problem — Implementation Engineers enabled the organization to expand capacity while improving operational performance.

The result was not just new equipment installed, but a fundamentally stronger production system capable of supporting future growth.

Let's Turn Your Vision Into Results

At Implementation Engineers, we don't just execute projects - we transform your vision into operational reality. Our proven 3-phase approach - **Align, Design, Execute** - delivers lasting value, from aligning your team on strategic goals to optimizing operations and driving measurable outcomes. Whether you're aiming to lead your market, boost efficiency, or maximize shareholder value, we're here to make it happen, step-by-step, side-by-side.

Ready to Get Started?

Let's explore how we can bring your vision to life. Contact us today to schedule a conversation. Together, we'll chart the path to your success.

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