



FICEP  
NEWS 21/2021

[www.ficepgroup.com](http://www.ficepgroup.com)

# FICEP's “Intelligent Steel Fabrication”



***FICEP invented the first automatic material handling system in 1988 and have expanded their capabilities over hundreds of worldwide installations.***

That's right; in 1988 FICEP installed the first integrated structural steel fabrication line with a fully automated material handling system. That was just the beginning as FICEP is the clear leader in automatic systems with hundreds of installations worldwide!

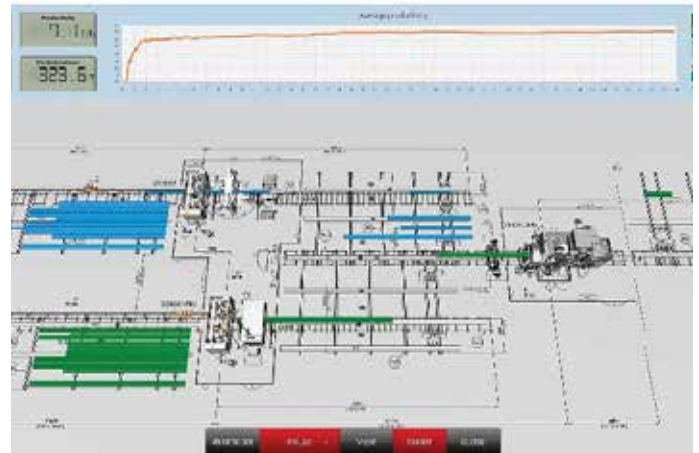
During the past 30 years FICEP has drastically expanded the productivity of this automated comprehensive technology. This is the result of FICEP's continuous devotion to industry leading developments in both software and hardware.

***The Challenge***

Since FICEP invented the first automated multi-spindle drilling line in 1965 there have been significant enhancements in drilling feed rates and positioning speeds of both the material being processed and the drill spindle axis performance.

The process to increase the drill lines efficiency and eliminate non-productive cycles has perhaps plateaued for the moment with the sub-axis spindle positioning to enhance the "chip to chip" time.

FICEP's focus, since it's first fully automated material handling system in 1988, has been to enhance the efficiency of the material flow through the line.



The challenge was to increase the percentage of time that the work centers (sawing, drilling, scribing, coping, milling, thermal cutting and shot blasting) are actively engaged in processing and not waiting to start the next section.



*FICEP Valiant Drill Saw System with sub-axis spindle positioning*

### ***How is the Optimum Layout Determined?***

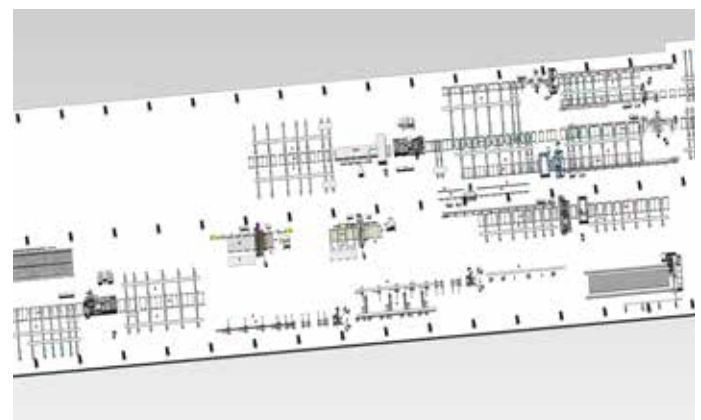
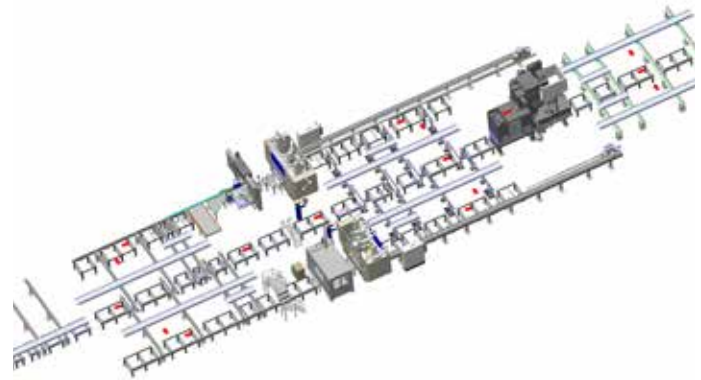
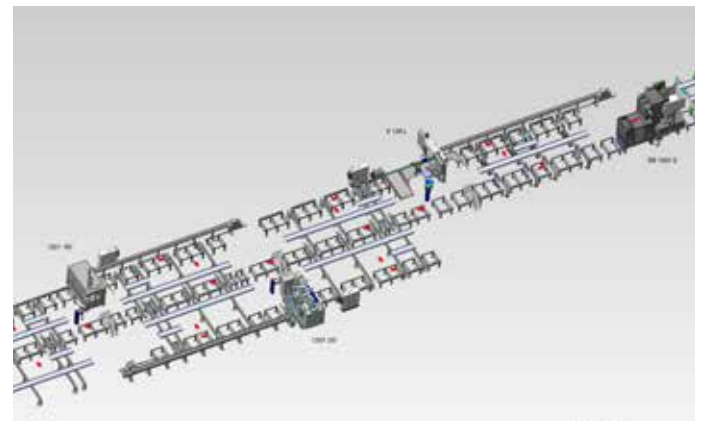
There are no two structural steel fabrications firm’s facilities that are identical.

The combination of a plant’s layout, product mix, required processes and the needed throughput makes the challenge of designing the optimum layout unique.

Actual past jobs of different types are downloaded to generate a specific productivity report based upon the type of contract.

Today, FICEP uses proprietary software to evaluate how different job types and plant layouts can be simulated for a detailed productivity analysis.

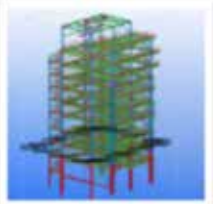
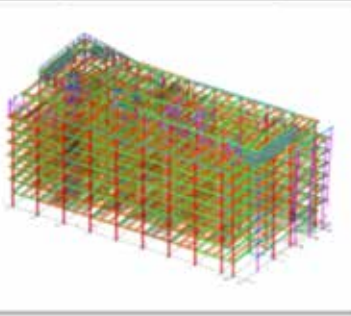
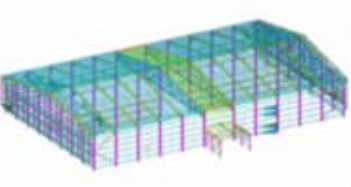
Five different layout solutions:



#### **SIMULATION REPORT**

**CUSTOMER** | NASCC 2015

#### **THREE DIFFERENT CONTRACTS**

<b>industrial</b>	Chemical plant building	
<b>multi</b>	Multi-storey, offices building	
<b>single</b>	Single storey, commercial building	

Until FICEP developed “System Simulation” the engineering of a plant layout was typically based upon an interview process with the client. The goal was to try to achieve a layout that was the result of some educated guesses and assumptions.

Split work cells versus tandem systems, transfer tables capabilities/features and the material buffer zones sizes are just some of the variables that require evaluation.

“System Simulation” is a process where potential layouts are evaluated based upon the manpower requirements, capabilities, throughput and bottlenecks.

Actual jobs and or sequences are imported into the PLM software that starts with material nesting and uses powerful algorithms to sequence the production in the most efficient fashion.

Once the optimized workload is downloaded, the “System Simulator” shows the processing of the mults and finished parts in a 3D video mode to reflect the actual process times required to fabricate this production release.

The “System Simulator” shows where bottlenecks develop and identifies work centers that can be underutilized waiting for material to fabricate.

This innovative process enables different layout designs to be compared and further modified to determine which design achieves the maximum flexibility and productivity.

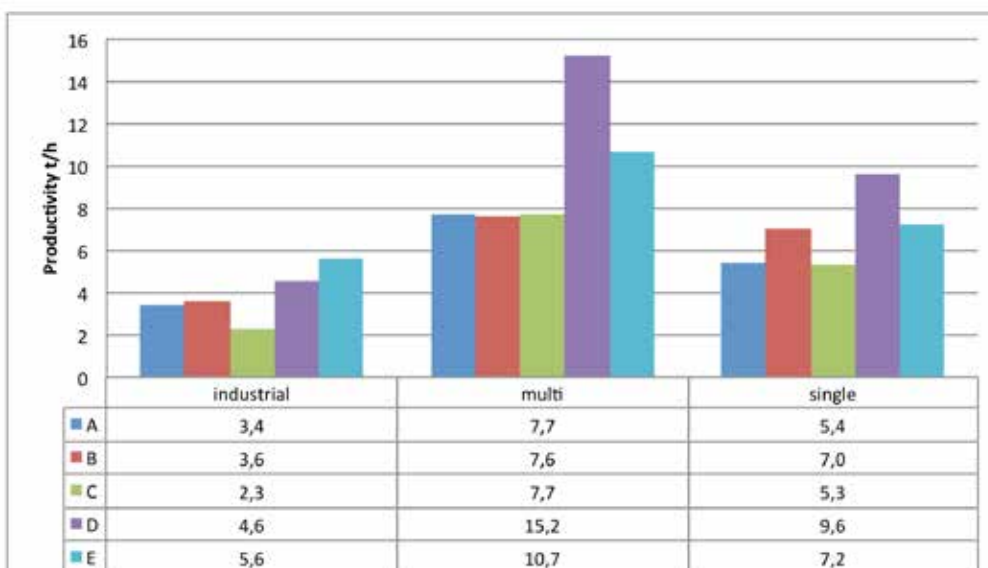
**How Does “System Simulation” Enhance Your Daily Productivity?**

Once the preliminary shop loading for the structural steel fabricating line is determined, the software’s algorithms develop the optimum sequences of the selected production release.

Prior to starting the actual production, the “System Simulation” can identify possible bottlenecks and any under utilized work centers.

Once determined this innovative software can show how the systems total productivity can be increased by modifying or adding to the pending production release.

**RESULTS**



## **How Does Intelligent Steel Fabrication Function?**

As the nested sections are loaded onto the line the material handler scans into the system the corresponding bar code from the cut list.



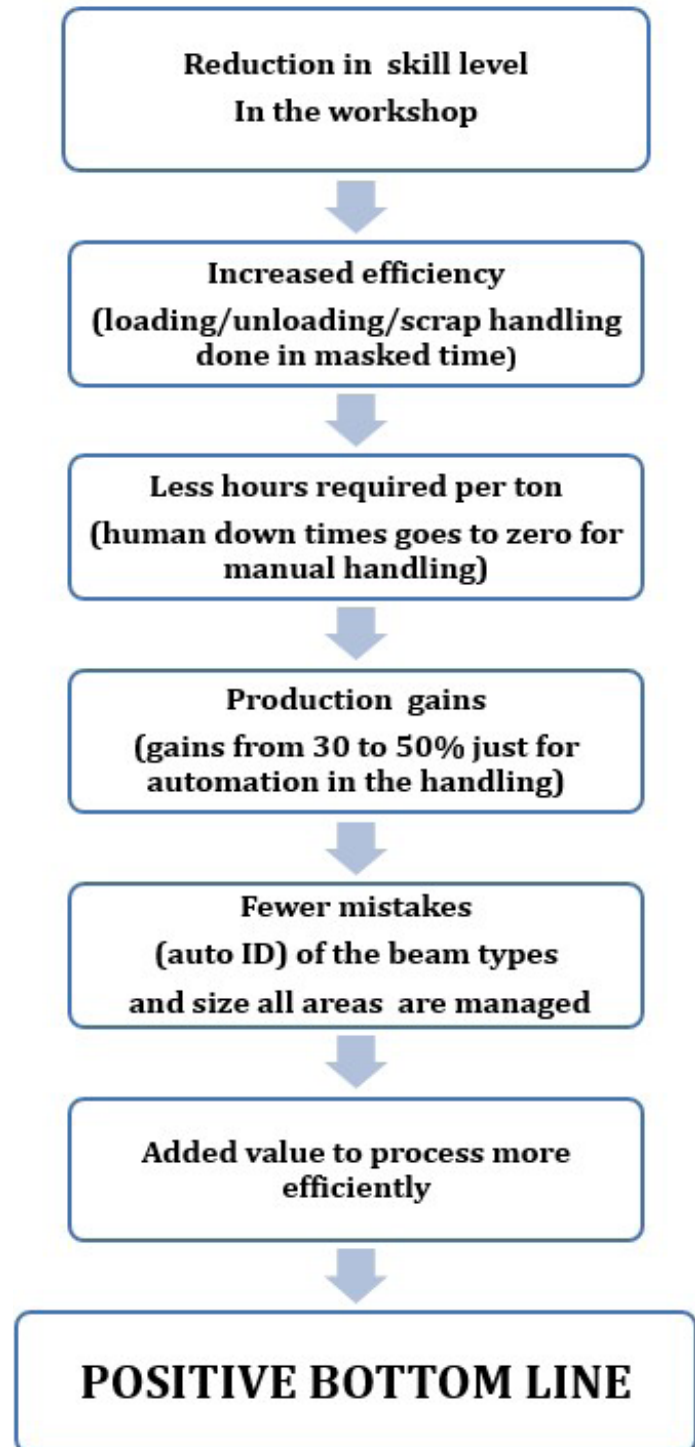
The sections are automatically positioned without an operator or attendant through the system. The path through the line or routing to the appropriate work cells is based upon the required processes and the optimum utilization of the systems capabilities.

As the cut part enters each work cell the stock length is verified and the appropriate CNC program is automatically selected to process the required objectives.

### **Benefits**

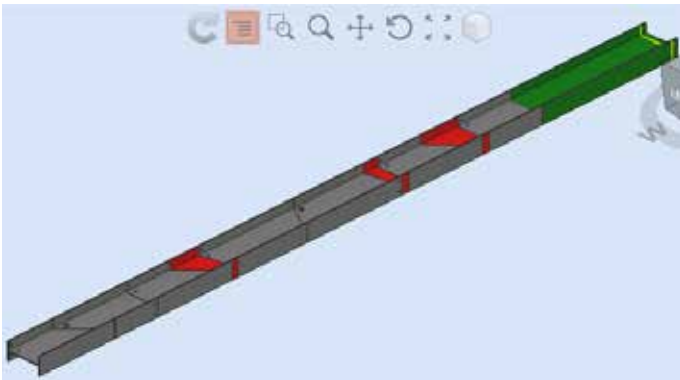
The benefits of “Intelligent Steel Fabrication” are numerous and cost effective. Most of the systems sold and installed by FICEP today feature “Intelligent Steel Fabrication” capability, as the benefits are extensive and easily justifiable as this automation cost represents a minimal investment as a percentage of the total systems cost.

## **Benefits Summary**



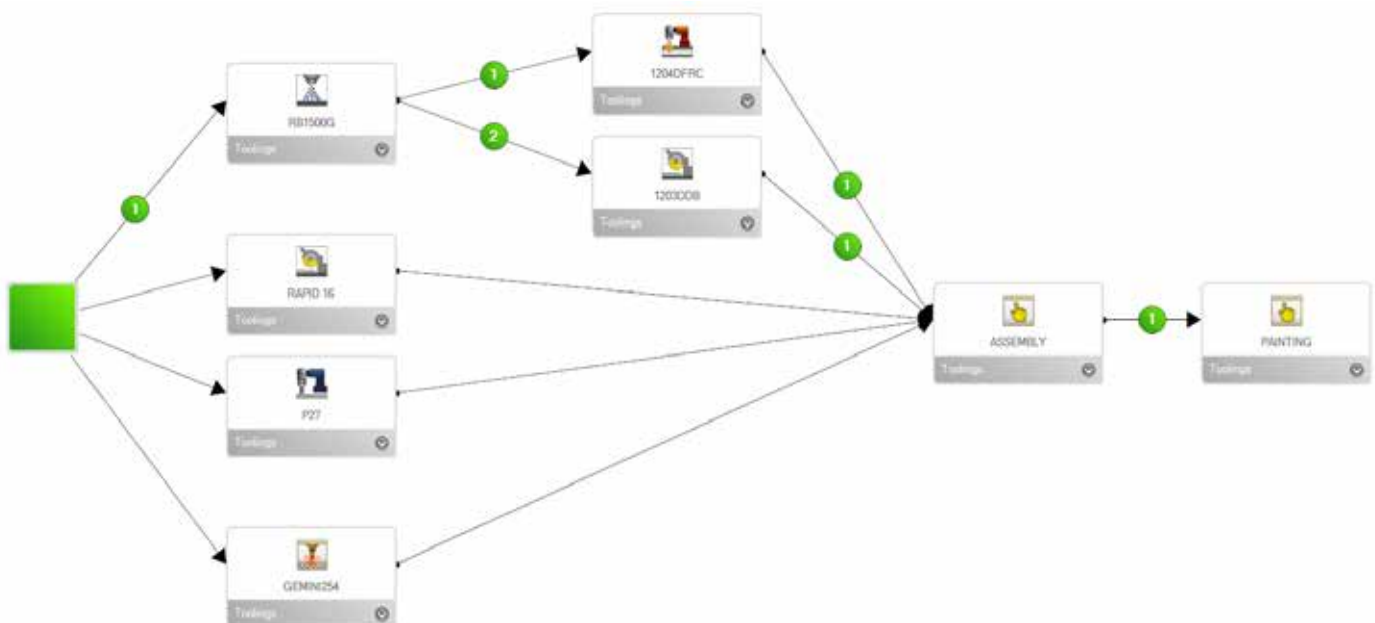
## System Sequences

- Sections are automatically nested to maximize material utilization.



- Data entry in conjunction with material loading is implemented with bar coding to eliminate possible mistakes.
- There is no need for an operator to select the proper program to process the part loaded into the in feed conveyor.

- The stock length is automatically verified.
- Material routing is performed in the most efficient manner and without any human involvement.
- Loss of time for an operator to organize and move material through the system is eliminated. All material functions occur in masked time while the work centers are performing the required processes.
- Efficiency and productivity is paramount with the system. For example, multiple parts are automatically loaded onto the in feed conveyor of the blaster with the proper spacing between sections to take full advantage of the shot blast pattern.
- Multiple operators that are required to drive a manual material handling system's productivity are eliminated and replaced with a single attendant.



Typically the attendant has time to perform the loading and unloading on and off of the system.

Take the opportunity to view the attached video and learn more about today's features and benefits of FICEP's Intelligent Steel Fabrication!

- As the process proceeds, Intelligent Steel Fabrication has 4-D capability to upload the production process back to the 3-D model to graphically show the real time status of the individual sections in the model.
- Production data can also be viewed on a Smart Phone in real time.

