EXCLUSIVE SUMMARY
Many enterprises are struggling to expand — and even survive — following the tepid growth after the 2008 Great Recession. In the case of one nearly down and out manufacturing construction company, applying industrial engineering and management techniques transformed the enterprise. Such techniques can resurrect your enterprise and springboard your career.
How industrial engineering saved a company

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In 2012, GENESYS Technology Enabler was up against the ropes and fighting for its future. The company had a shortage of work from customers. Cash flow was a major constraint. And the line of credit was nearly maxed out. The efforts of many had kept the company going, but if GENESYS was going to pull through this tight spot, systemic change was needed.

It’s clear that with more than 120 people and close to $50 million in revenue in 2012, the company that started in its CEO’s basement 15 years previously had outgrown its management processes. The only long-term solution had to come from changing the company’s processes and systems. Without such a change, the company faced the threat of misalignment between intention and processes, causing job dissatisfaction and leaving a healthy culture to erode rapidly.

Diagram your base
To create a sustainable tomorrow, a baseline understanding of the present was needed. With the help of a newly hired industrial engineer, the first person to bring industrial engineering principles to the organization, GENESYS started mapping the current state process flow through the company. This process flow diagram set the stage for reorganizing internal resources, establishing a new work measurement system, clarifying financial metrics, making metrics-based communication consistent throughout the organization and developing forecasting resource allocation methods. These improvements helped drive the company from its worst year to, in the three years since, three of the four best years in company history.

The current state process flow diagram was something senior management had not seen before. The tool quickly became a basis to communicate expectations and a means to show each department and individual how they fit into the bigger picture of delivering a successful project. Although employees had an inherent understanding of their responsibilities, as the organization grew each functional area became increasingly disconnected from its internal customers.

Separating the individual from overall project success unintentionally drove focus toward localized departmental responsibilities. The current state process flow diagram illuminated the larger picture, providing the context needed to shift the focus back to organizational needs at a system level.

The current state diagram also sparked an evaluation of internal processes that led to the restructuring of internal resources. Prior to the development of the process flow diagram, domain knowledge experts were assigned to projects on an ad hoc basis, where the project team was based on whoever was available in a functional area at the time of need. This led to inconsistency in team chemistries and did not allow for a deep expertise to be gained in any one industry area GENESYS serves.

Using the workflow process map as a guide and consulting with the IE for additional applications of industrial engineering principles that could be applied to forming dynamic and cohesive teams, senior management created position descriptions to support creating business units segmented by industry focus.

A key goal of creating the business units was to create accountability and make sure that support was focused on executing projects within a targeted knowledge base.

Increased visibility of upcoming work by aggregating sales forecasts by the accountable parties closest to the information created greater ownership and collaboration both within and between teams. Individuals in the business units reported on and conveyed how proposed work affected the larger company picture, leading to better team performance, which further enforced the importance of communication and clarity amongst and between teams and team members. The increase in clarity, communication and accountability helped GENESYS increase its ability to achieve key measurable consistently at a level beyond the company’s previous experience.

The industrial engineer’s early suggestions led to more profit, mitigated risk and increased morale, which led to even higher profile assignments within the organization. As the IE continued to work closer with senior management and the newly appointed president, the need to identify the measurable that would lead to the company’s success began to emerge.

Prior to the application of industrial engineering principles, the goals and success of the company had been measured by the amount of revenue sold, size of projects managed and how successfully safety infractions were avoided.

The company president intuitively recognized pain points not addressed and worked with the IE to turn intuition into definitive and quantifiable problem-solving approaches. This understanding was translated into a work measurement system using cost accounting and engineering economy principles. Beginning with identification and aggregation of cost codes, the IE gathered the data to distribute overhead expenses across cost codes on an annual basis. Then the IE paired overhead costs with sales forecasts to determine a standard overhead absorption percentage for each job.

Clearly identifying these costs and clearly separating profit into a separate line item gave sales members greater clarity on which jobs benefited the company. The sales teams also gained firmer footing for negotiations when customers sought to pressure price deductions. The added clarity allowed sales teams the option of consciously abandoning pursuit of a sale when it could not be executed profitably. Communicating that rationale to internal stakeholders helped increase focus on projects with the greatest potential relative to the other opportunities.
One of the first benchmarking steps was separating gross margin line item into two separate accounts: gross profits for one, sales, administrative and general expenses for the other. These numbers were made visible to the execution and sales teams. Separating the accounts enabled project managers to track profitability on a per project basis. This shortened the feedback loop to a biweekly update and allowed managers to take corrective action in a timely manner.

The variables of success
The overhead and profitability numbers set the basis for future planning and are a cornerstone of the eight metrics GENESYS tracks to measure company success. Each employee has the same eight job elements, which are a part of their evaluations and have clearly outlined descriptions and metrics that support companywide goals:

1. I am a safe organization.
2. I am profitable.
3. I operate with controlled risk.
4. I am self-financed.
5. Clients love me.
6. I am a great employer.
7. My employee base gets better every year.
8. I have residual income.

The pie chart in Figure 1 shows each metric’s relative weight as part of the GENESYS work measurement system. All individuals at GENESYS have their responsibilities categorized in a similar fashion to drive alignment toward company goals.

Status on key metrics and their associated indicators are reviewed each week in team meetings and quarterly in a town hall companywide gathering. This approach to open book management generates positive results, aligns teams and keeps individuals focused on taking the right next step. Aligned and armed with regularly updated status reports, the teams move the company in the right direction.

Once the work measurement system was implemented, seasonal and market cycle workloads still caused fluctuating demands, leaving management uncertain of what resources were required when. The industrial engineer recognized that the information needed to develop more accurate forecasts already existed inside the organization. However, this data needed to be converted into a format that internal stakeholders could interpret and understand.

Before every project is sold, the GENESYS sales team develops an execution plan to outline scope, schedule and budget. By going to the source to collect data from the people with the most accurate information (and through close collaboration with the systems department) the industrial engineer constructed a load on resources dashboard, as shown in Figure 2, as well as supporting breakouts by department.

Figure 3 shows an example of such a breakout for the engineering department. As you can see, the “3088” for 2015-04 in the ME (mechanical engineering) column in Figure 2 matches the height of the first bar in the Figure 3 bar chart. The “2427” under the ME column in Figure 2 matches the height of the bar for 2015-05 in Figure 3, etc.

The system works by allocating demand on a department across the months that the department will be executing that project. It then stacks up the demand for all the projects in the given month (all in Figure 3), comparing that stacked load against the departments’ capacity (Figure 2). This system gives GENESYS managers an in-depth understanding of when and how proposed projects would affect resources.

This dashboard also was capable of adding resource projections for projects still in the sales pipeline to give managers clearer insight about how
potential work would match up with the enterprise’s available and committed resources. Although there is always error in forecasting the future, given the lack of dependency between projects, these errors cancel out.

This added foresight gave managers time to plan for fluctuations, which minimized the occurrence of reactive, last-minute firefights. The adage an ounce of prevention is worth a pound of cure has remained true as managers have been able to gain time to focus on improvements for their departments and across the organization.

A natural extension of forecasting the load on resources was including the forecasted effect on companywide cash flow. Aggregating project payment schedules into the business unit and organization levels provided information about when investments for company improvements or new ventures were most appropriate. Managing cash flow has helped the company be self-sufficient in cash-flowing operations, maintaining its line of credit account as a strategic reserve instead of an operational necessity.

A last addition to the forecasting tools was a focus on maximizing profitability with finite resources during peaks in project cycles. After the man-hour resource and cash-flow forecasting dashboards had become familiar management tools, the industrial engineer applied theory of constraint principles to identify bottlenecks on department resources.

Once identified, a separate calculation that divided profitability per project by required hours per department was completed. The calculation highlighted the most profitable projects that could be completed with the resources available. The throughput dashboard moves projects that can be completed without the bottleneck to the top of the list. The GENESYS sales team can then quickly determine which projects to prioritize to maximize profits with available resources.

Increased clarity and continuous improvement of forecasted workloads led to a new perspective on peaks and valleys in the seasonal workload cycles at GENESYS. Before the forecasting dashboards were put in place, a slowdown often would catch the organization unprepared.

Today, managers focus on execution during the cycle peaks. When forecasts indicate a slowdown, continuous improvement projects are lined up to capitalize on extra capacities. Having a timeframe to complete improvement projects enables increased time management and focus across the organization. Managers and leaders can develop plans with a critical path that fits within the cycle’s valleys. As these rhythms are increasingly understood, greater efficiency ensues and morale improves.

Peaks and valleys in the work cycle are now valued for their own benefits and merit. While the peaks bring cash and profitability into the company, valleys serve as a low water point and highlight issues that otherwise would
have remained incognito. As the issues are revealed, they are added to the appropriate team’s list of continuous improvement projects and prioritized accordingly. Today, GENESYS manages valleys to arrive at the next peak faster and better equipped.

The industrial engineering interventions across the organization have led the company to expand its service offerings into new industries and market levels. GENESYS has branched out of its traditional automotive and building products industries into automation of meat packaging and processing, waste to energy, consumer appliance and other assorted manufacturing-related industries. The company also has supplemented its service offerings with maintenance, repair and overhaul support via parts and components and labor unbundling of its turnkey capital project delivery capabilities.

Collaboration beats competition
As GENESYS continues to reach a point of growth and resilience, its teams can look outside the internal organization to improve the quality of deals it makes. In the spirit of eliminating waste, the enterprise has gone beyond its border to work closer with the broader ecosystem of clients and suppliers, targeting waste in communication and relationships.

Where different kinds of deals are appropriate for different kinds of relationships, GENESYS is seeking to create aligned deals to generate more value. The typical quote, bid, price battle that is commonplace for simple, predictable purchases that have comparable options involves systematic wastes that are passed to the buyer in overhead. And, at the end of the line, the final customer pays the price as a cost of goods sold. Instead, GENESYS is seeking to create aligned value-based deals appropriate for creating unique, protected value.

In the quote, bid and price approach, each entity sees itself as apart and separate. Consequently, the businesses tend to suffer from higher acquisition costs per deal by including risk contingency and sales cost.

The collaborative approach, however, emphasizes that stakeholders are sitting on the same side of the table. This ecosystem enables the parties to produce a plan that reaches its objectives faster and tends to be centered on creating value for all stakeholders. The aligned deal carries distinct risks when compared to bid-based deals, but each risk can be overcome.

The right column restructures deals to maximize value by eliminating the sales, risk and loss contingency and actual losses, costs that are ultimately absorbed by clients. It is a cooperative rather than a combative approach.

The emergence of this strategy is, again, heavily reliant on the application of industrial engineering principles. These principles are the groundwork for the vision to come to fruition, and some early successes are being realized. Application examples include the development of a stage-gate approach to evaluate and develop ideas. The goal is to balance the risks of investing resources with the reward of converting opportunities and create a process map at the organizational level that continuously gets improved as new lessons are learned.

Such a process map helps the organization be clear about expectations and outcomes, allowing management and employees to understand how each potential path relies on and ties back to the enterprise’s core capabilities and values.

It is amazing how impactful industrial engineering principles and practices can be when applied diligently and systematically, especially to industries unfamiliar with industrial engineering concepts.

With massive improvement having been made in manufacturing over the last century, the more recent effort to improve healthcare systems, and the authors’ recent transformational experiences in a capital project, design-build company, one can only look to the future and wonder at the possibilities and potential that industrial engineers have to affect the next industries, improving the quality of life, productivity and the planet along the way.

As industrial engineers make an impact on more current and future industries, those who are industrial engineering pioneers in those industries can expect quick promotions. The value brought to the organizations that have not had the benefit of industrial engineering in the past is immense.