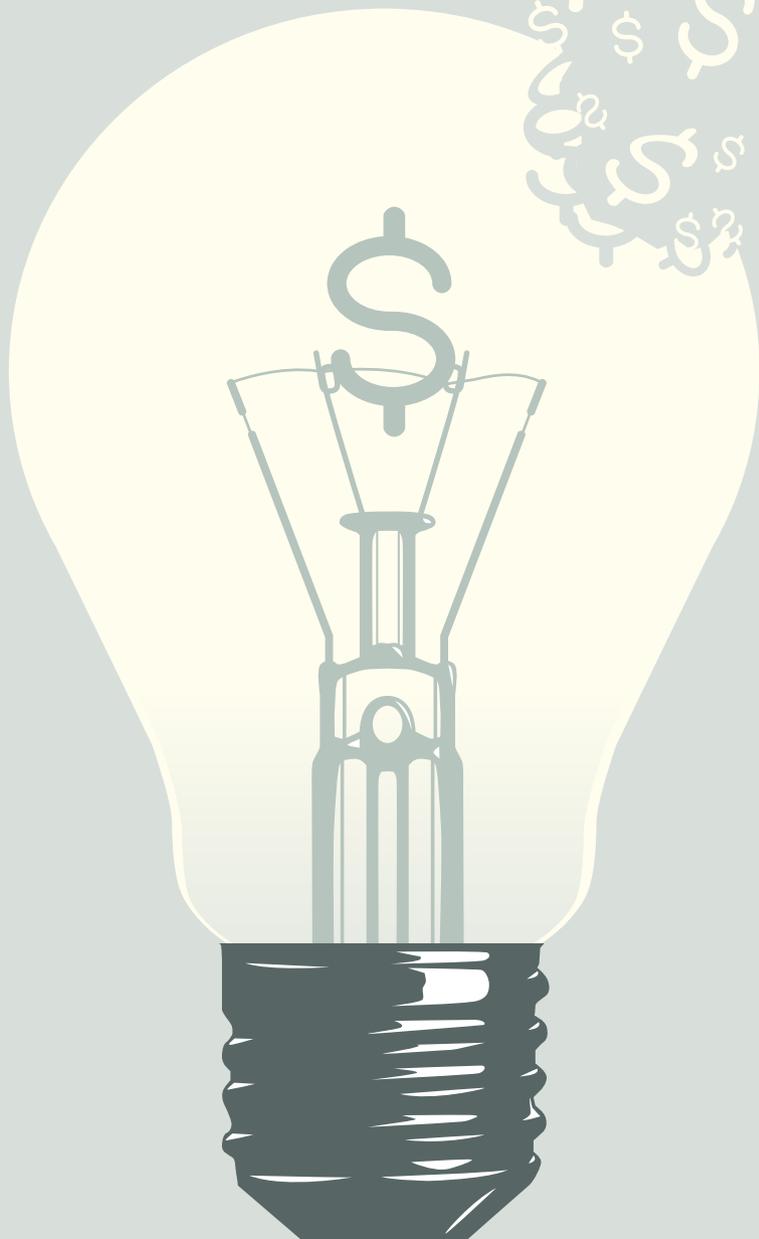


OF DOLLARS AND SENSE

*Adding financial information makes
value stream maps even more valuable*

BY CHRISTOPHER D. CHAPMAN



CONTINUOUS IMPROVEMENT TEAMS EMBARK ON VALUE stream mapping to represent a product's production path visually, including the material and information flow. The maps identify problems and inefficiencies that need to be corrected. The team can see the big picture, or all the actions, currently required to transform a product or service from its beginnings until it reaches the hands of the customer.

Lean gurus Dan Jones and Jim Womack define value stream mapping as “the simple process of directly observing the flows of information and materials as they now occur, summarizing them visually and then envisioning a future state with a much better performance.” As Jones and Womack stated, this value stream exists whether you document it or not: The challenge is in seeing it. The value stream map helps sort out what is really going on, much of which is not necessary to turn a customer's need into a delivered product or service. This is the difference between actions that add value and those that don't.

As lean practitioners walk the work flow to map and see the process firsthand, quantifying such traditional measurements as cycle time, equipment setup times, transport distances and inventory quantities, they should broaden their scope to include unit costs (labor, material and energy) that create the product at each step. This additional information makes it easier for lean teams to calculate cost savings associated with the improvement opportunities identified on the map – and also makes it easier for senior management to understand.

Adding to tradition

While the traditional value stream map is a great tool to analyze your value stream in terms of inefficient cycle times, excessive inventory amounts, time delays and equipment downtime that is the root cause of the non-value-added waste you are trying to eliminate, it does not break down the unit cost at each step. Such a breakdown could be used to calculate cost savings quickly as improvements are made or contemplated.

The advanced value stream map shown in Figure 1 addresses this problem. The unit cost includes but is not limited to labor, materials and energy. With this information, you can better determine and track cost savings from your continuous improvement activities.

Value stream mapping teams should contact the financial officer of their company to get the unit cost information that will be added to the VSM. Adding the cost of producing the product at each step along the value stream shows the link

between the proposed improvements (i.e., kaizens) and the overall cost savings. As proposed solutions are examined and implemented, quick cost savings calculations can be made by using the unit cost from the VSM.

An advanced VSM as displayed in Figure 1 shows the current unit cost at each process step and helps determine future cost savings from improvement actions. In addition, the numbers will help keep senior management engaged and on board. As Stephen George cautioned in the 2003 *Quality Progress* article “How to Speak the Language of Senior Management,” if you are not able to convert things you're working on into financial performance, then you will have difficulty gaining buy-in.

Finding better targets to attack

A diesel engine remanufacturer in upstate New York realized the benefits of including unit cost on value stream maps. Prior to doing the unit cost calculations as part of the VSM analysis, improvement teams would not bother to calculate cost savings during their kaizen events because they found it too difficult or did not have the time.

Adding the unit cost to the VSM not only simplified cost savings calculations at the end of the kaizens, it simplifies calculations in the future. For example, when the improvement team first reviewed its VSM without considering unit cost, team members decided to focus on the sandblasting and cleaning operation. This cleaning process was a real sore spot for this company; it was noisy, disorganized, had a high employee turnover rate and quality issues.

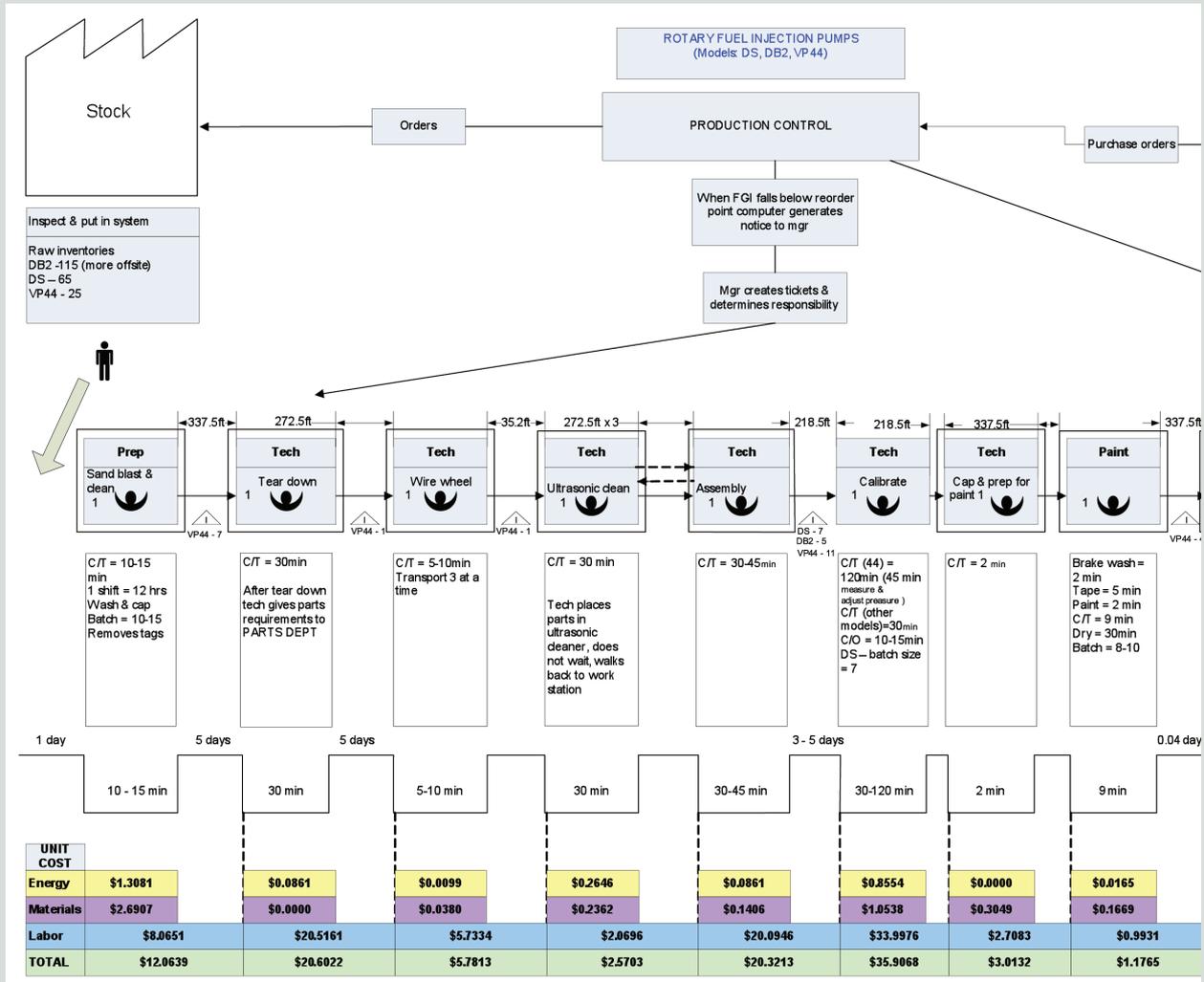
At first glance, this operation intuitively seemed like the right place to start. However, upon taking a closer look and factoring in the unit cost, more optimal cost-saving alternatives came to light. While the sandblasting and cleaning operation are problematic (with a unit cost of \$12.06), the team looked further downstream and saw several operations with higher unit costs. The tear-down operation, assembly and calibration far exceeded the unit cost of the sandblast and cleaning process, with unit costs of \$20.52, \$20.32 and \$35.91, respectively.

One should keep in mind that many of the common lean targets and solutions that reduce traditional cost such as labor and material also have energy cost implications. For example, when overprocessing and transportation wastes are reduced, then the energy (lighting, heating and cooling) needed to power the affected equipment also can be reduced.

With the unit cost included on the VSM, improvement teams will be able to calculate cost savings associated with

VSMs THAT MAKE SENSE

Figure 1. Adding unit costs to your value stream maps can help continuous improvement teams quickly calculate the dollars and cents of potential savings.



the kaizen improvements quickly. The energy, materials and labor cost that make up the total unit cost are key measures that management should track as teams continuously improve their value streams. This is especially important with rising energy costs, expanding environmental footprints and global competition. Management increasingly scrutinizes labor, material and energy unit costs at the process level to understand better how kaizen improvements affect the bottom line.

Value stream mapping always has been an excellent tool to document the flow of information and materials as they occur, summarize the activities visually, highlight sources for wastes, and envision a future state with better performance. But your VSMs can be used to make sense, both dollars and cents, of the process flow and enhance decision-making to

improve the overall financial performance of your business. By including the unit cost of every step in the value stream, improvement teams will be able to track key cost reductions and the impact of kaizen activities better.

That said, the more teams use value stream mapping, the more uses will become apparent, including planning capital expenditures, resource allocation, kaizen activities, communicating a common vision, and providing consistent focus to deliver cost savings. ~

Christopher D. Chapman is president of Chapman Lean Enterprise. He has a bachelor's degree in business administration from Fayetteville State University, a master's degree in manufacturing leadership from the Kate Gleason College of Engineering, Rochester Institute of Technology, and is a certified lean Six Sigma black belt/management.