Where’s the Capital Investment?
by Bob Bengel, NWIRC President/CEO


Among the factors that contribute to the lag in investment spending, Duesterberg and Norman cite the following:

- Policy uncertainty and weak business confidence;
- Reduced animal spirits and entrepreneurialism;
- Lack of investment opportunities (“Secular Stagnation”);
- Corporate tax policy;
- Regulation; and
- Loss of market share to global competitors.

Although the authors admit they have no magic bullet and that a number of these factors are not easily dealt with by economic policy, they conclude their analysis with several policy recommendations designed to increase investment:

- Increasing spending for research and development and for an aging and deteriorating infrastructure;
- Negotiating additional free trade agreements, and
- Regulatory reform that pays attention to the costs that an ever-increasing number of regulations impose on companies.

The full report can be found at www.aspeninstitute.org.

Calibration is Crucial
by Richard A. Litts, Founder and President, Litts Quality Technologies, Inc.

We all have the pleasant experience of pulling into a gas station and deciding which grade to purchase for our vehicle. Sometimes our decision is based upon the manufacturer recommendation while other times it is a matter of price. Usually there is a sign outside the gas station showing the price per gallon in an attempt to entice us into believing one is better than the other. When you look at the sign and it shows: $2.459, $2.899 or $3.249, how do you know that you are getting what you pay for? The same holds true when you visit your local supermarket and purchase cold cuts in the deli. How confident are you that you actually get one pound of that Honey Oven Roasted Turkey Breast for $8.99? The answer hopefully is that the gas pump metering device and the deli weighing scale are calibrated.

Calibration is the process that determines if the monitoring or measuring equipment is being compared to a standard that is “traceable” to a known artifact. The Department of Defense defines traceability as – “The ability to relate individual measurement results to national standards or nationally accepted measurement systems through an unbroken chain of comparisons.”
Calibration (Continued)

In the United States we typically look to the National Institute of Standards and Technology (NIST) as the competent organization to provide manufacturing companies a traceable standard.

The Hierarchy of Standards may be defined by:

- **National** – NIST or designated authority (laboratory)
- **Primary** – Transferred by NIST
- **Secondary** – Performed by organizations with access to Primary
- **Working** – Used to calibrate measuring equipment in a manufacturing facility

If NIST or another national governing body doesn’t have a standard for your monitoring or measuring equipment, you create your own and define the process for determining the standard. You want confidence that the product you are producing is meeting your internal and external customer requirements. Calibration is a significant part of providing assurance that you are meeting these requirements. We know that if we aren’t meeting internal customer requirements we probably won’t meet external customer requirements. Control of monitoring and measuring equipment is part of Quality Management. ISO 9000:2005 Quality Management Systems – Fundamentals and Vocabulary defines Quality Management as the “coordinated activities to direct and control an organization with regard to quality.”

These coordinated activities of doing things up front before the request reaches the “Producing Process” typically cost manufacturing facilities less money in the long run. Many of the ISO Management System Standards have a requirement that when you calibrate monitoring or measuring equipment it is out of “tolerance” you have to assess and record the impact of how much it was out of “tolerance” on all product that was monitored or measured since the last time it was calibrated. In practical terms, this means that if you calibrate a micrometer on a yearly basis, you have to go back and assess the impact on all product that was measured using that micrometer since the last time it was calibrated. That is one-year worth of data and you must have a record of the assessment. The worst case is that you have to notify your customer that you may have shipped them nonconforming product.

Some years ago a company that publishes case studies was interested in implementing a quality management system. During the development process, I asked them how they knew all of the required documentation is included in the report binder. The owner said, “we weigh it”. The next logical step was to take a look at the weighing scale. In our discussion I asked if the scale was calibrated. The reply was - “not sure”. I then asked how confident he was that the scale would pick up a single sheet of missing documentation from the binder. The response - 100%. I took a stack of paper, turned on the scale and started adding sheets. As I added sheets, the owners’ facial expressions began showing concern. After placing the eighth (8th) sheet the scale registered the first digit. In this case there were two issues. One was having the correct equipment that would detect one missing sheet and the other is having the weighing scale calibrated. It is the responsibility of top management to make sure that the monitoring and measuring system is capable and calibrated. This includes providing resources to 1) make sure the organization has the right monitoring and measuring equipment, 2) make sure that if calibration is performed in-house that employees have the skills and can apply those skills to perform calibrations, 3) to communicate to the organization the importance of using calibrated monitoring and measuring equipment, and 4) may be most important… the impact of not using calibrated monitoring and measuring equipment. If not, the results can be very costly in terms of scrap, rework or missed customer commitments.

Photo: Recent Calibration Workshop, with instructor Richard Litts, hosted by NWIRC.

Relocating or expanding your business? Introducing a new product? Consider using a 3P Approach

by Craig Corsi, NWIRC LEAN Specialist

The Lean methodology for plant layout and process design is formally known as the Production Preparations Process (3P). It is a powerful means of taking a big-picture look at how a product is designed and manufactured. It guides companies through the creative process of generating ideas, and then whittles the ideas down to one that will be implemented. A 3P project can focus on either the process or the product design. The goal is to finish with a good idea (Continued on page 3)
of how the design should look and understanding of how it will be built. A 3P project is traditionally done with a facility expansion or relocation, but may also be used for a new product release. The purpose of a 3P event is to create products that are designed to be built in a flow operation. This is very similar to design for manufacturability.

**Phases of 3P:**

1. **Define the problem.** Every project should start with an understanding of the need.
2. **Set goals and objectives.** Production preparation process often has significant profit and loss ramifications. Projects should have clear goals and objectives, as they are often closely tied to corporate strategies.
3. **Analysis and diagramming.** This step will involve gathering a significant amount of information about the processes and assembly of the product. It will often involve product layouts.
4. **Screen and vet the ideas.** This is a prioritization step that whittles down the best ideas. Most refined production preparation processes will have a decision matrix specifically designed to compare ideas.
5. **Select the best ideas.** This step changes the options from concepts on paper to more developed designs, complete with process flow. It can be a mock-up of the new product or process, but it must prove that the concept works.
6. **Choose the best process/design.** The ideas are compared and often merged into a final result that will act as a blueprint for how the product should be built.

These steps are very high level. Most formal processes will have supporting processes and documents to streamline the event, and provide clear structure to the projects. A solid 3P project can significantly reduce the amount of production problems a poor design or process will have down the road, as well as greatly streamline the production processes.

**When to use 3P:**

- Rolling out a new product
- When experiencing a significant change in demand that requires an overhaul of a production line
- Moving production to a new location or expanding upon your current facility
- When needing a major design change due to external competition
- When you need to free up a significant amount of production space

A lean specialist can assist with your 3P project. Contact one of the NWIRC Business Advisors for more information or visit NWIRC.org.

Craig Corsi is NWIRC’s Senior Lean Manufacturing & Continuous Improvement consultant and trainer. With over 12 years of manufacturing experience, Corsi worked within GE’s material management and demand flow technology groups, is certified in Six Sigma, and earned an MBA from Gannon University.

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**Manufacturing Day Outreach Mini-Grants**

NWIRC has announced a Manufacturing Day Outreach (MDO) Mini-Grant Program to encourage vocational, technical and trade high school student participation in Manufacturing Day activities on Friday, October 2, 2015. Funding of up to $1000 is available to offset expenses for visiting a manufacturer for the day. Schools from Cameron, Clarion, Clearfield, Crawford, Elk, Erie, Forest, Jefferson, McKean, Mercer, Potter, Venango, and Warren counties are eligible to participate. If your company is interested in opening its doors to students in celebration of Manufacturing Day, contact your regional school or the NWIRC can assist in making a connection. All manufacturers offering student tours on this day are encouraged to register their event at www.mfgday.com. Schools will be instructed to access this website to see which companies in their county are opening their doors to students.

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**LEAN 5S TRAINING**

**June 25th - Erie**

**1 Day Classroom Training**

Optional package includes 3-day onsite training & project implementation at your company.

Grant funding may be available for up to 50% of the cost.

For all the details and to register: NWIRC.org
YOUR STRATEGIC BUSINESS ADVISORS

If you have questions, or would like to speak with someone from NWIRC about services, please contact your Strategic Business Advisor:

Tom Weible
814.590.5202
Cameron, Clarion, Clearfield, Elk
Jefferson, McKean & Potter Counties

Susan Hileman
814.572.2077
Crawford, Forest, Mercer & Venango Counties

Ed Barthelmes
814.923.3084
Erie & Warren Counties

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764 BESSEMER ST, #105
MEADVILLE, PA 16335

ERIE OFFICE
5340 FRYLING ROAD, # 202
ERIE, PA 16510

UPCOMING EVENTS

Lean 5S Training
June 25
Location: Erie
Learn 5S concepts in a classroom setting. Optional package available to continue for 3 more days at your facility to gain first-hand experience of transforming a cluttered, disorganized production area into a clean, organized, and orderly workplace. Grant funding may be available for up to 50% of the cost. Call one of our Business Advisors for details.

Detailed Scheduling & Planning
August 7, 14, & 21
Location: Meadville
Focuses on various techniques for material and capacity scheduling. Includes descriptions of material requirements planning (MRP), capacity requirements planning (CRP), inventory management practices, and procurement and supplier planning.

Execution & Control of Operations
October 2, 9, 16
Location: Meadville
Targets areas of prioritizing and sequencing work, executing work plans and implementing controls, reporting activity results, and providing evaluating feedback on performance. Includes techniques for scheduling and controlling production processes, the execution of quality initiatives, continuous improvement plans, and the control and handling of inventories.

Lean Champion Certification
October 27, Nov 3, 10, 17
Location: Corry
Hands-on training and one-on-one assignments specific to your manufacturing business. Program is presented once a week for 4 weeks. Principles of Lean and Value Stream Mapping (taught on the first and second day) can be taken as separate training.

For more information or to register for training, visit www.nwirc.org