Technological Innovation in Legacy Sectors
by Bob Bengel, NWIRC President/CEO

A new book, *Technological Innovation in Legacy Sectors*, is a must-read for anyone who cares about the future of the American economy and American manufacturing. The authors, William B. Bonvillian and Charles Weiss, make the case that two of the American economy’s problems — expanding innovation and raising the rate of quality job creation — both have roots in the resistance of its legacy economic sectors to innovation.

Historically, the U.S. has focused its policies on breakthrough innovations to create new economic frontiers like information technology and biotechnology. However, most of the U.S. economy resides in legacy sectors — such as energy, air and auto transport, the electric power grid, buildings, manufacturing, agriculture, health care delivery, and higher education — that are defended by technological, economic, political, and social paradigms that block competition from disruptive innovations that challenge their existing structures.

Manufacturing, the authors argue, presents a particular challenge because it is also a critical stage in the innovation process. By increasingly offshoring production, the U.S. is losing important parts of its innovation capacity. “Innovate here, produce here,” where the U.S. took all the gains of its strong innovation system at every stage, is being replaced by “innovate here, produce there,” which creates the threat of leading to “produce there, innovate there.”

To bring innovation to legacy sectors, the authors recommend that policymakers focus on all stages of innovation — from research through implementation — and take measures to fill institutional gaps and address structural obstacles to needed disruptive innovations. In the specific case of advanced manufacturing, the authors describe how the U.S. production ecosystem can be recreated to reverse “jobless innovation” and add manufacturing-led innovation to the U.S.’s still-strong, research-oriented innovation system.

*Technological Innovation in Legacy Sectors* was published in September 2015 by Oxford University Press.

Benefits of Open Innovation
by Michael Griffith, NWIRC Manufacturing Technology Engineer

Small- and medium-sized manufacturers outsource support functions as an integral part of their cost-cutting and business growth initiatives. Legal, payroll, tax preparation, web design, and information systems management are examples of a manufacturer’s ancillary business activities that require specialized knowledge and skill to operate a manufacturing business but not required in the detailed process of manufacturing products. Experts of these tasks have also developed efficient processes that make the outputs of their efforts very accurate and effective.

Research and development is another manufacturing support function that can be outsourced. Innovation, R&D and technology acceleration experts often possess knowledge, skills, comprehensive and systematic processes, and resources that are not intrinsic of in-house manufacturing engineers and scientists. Similar to outsourcing other support functions, a manufacturer can capitalize on these innovation capabilities to conduct or improve research and development projects that develop or implement new products and processes to advance operations and/or grow their business.

This collective and collaborative research and development process between a manufacturer and innovation / technology acceleration expert is part of the much broader idea commonly called, Open Innovation. In this narrowed definition of Open Innovation, an innovation / technology acceleration expert can utilize vast resources to explore existing and proven technology to solve complex business problems or

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improves operational processes, or evaluate a manufacturer’s technology based asset for potential application and market viability.

The Pennsylvania state-wide Industrial Resource Center Network (IRC) is developing an Open Innovation framework that will enhance our state’s small and medium sized manufacturer’s ability to develop and implement new technology and products utilizing the most effective and efficient processes along with a comprehensive list of subject matter expert resources.

Consider Lehigh Valley Plastics (LVP), a Bethlehem, Pennsylvania-based state-of-the-art machine shop, fabricator and distributor of advanced plastic components and materials. The production process for one of LVP’s plastic parts called for turning utilizing centers designed for machining metal, not plastic. As a result, the turning centers were frequently shut down to remove plastic stringers that wrapped around the turning center’s chucks. A Pennsylvania IRC Network Center partnered with Research Triangle Institute (RTI) International to research potential solution spaces and identify the best solution for LVP. The implemented solution reduced operating costs by thousands of dollars per year, significantly increased machine capacity and reduced safety risks in removing stringers.

The benefits of engaging in Open Innovation are numerous:

• Researched and detailed solutions by specialized, out-of-the-box thinking experts that solve process issues or support product development
• Detailed insight and evaluation of potential markets, including trends and opportunities
• Competitive intelligence to enhance planning and growth
• Potential new partners and/or customers
• Internal engineering staff remain focused on their manufacturing engineering projects

Contact your NWIRC Strategic Business Advisor to learn more about how the Open Innovation support function can impact your operation. You can also watch the IRC’s Invitation to Open Innovation video at www.nwirc.org.

Michael Griffith has a Bachelors Degree in Chemical Engineering and Masters of Business Administration from Penn State University, and fifteen years’ experience in manufacturing.

Food Manufacturer Compliance of New Food Safety Laws
by Alan McConnell, MS
Food Safety & Quality Management LLC
The Food Safety Modernization Act (FSMA) represents the first major overhaul of our nation’s food safety laws since the 1938 Food, Drug and Cosmetic Act. As such, it’s important that food processors begin work now to ensure full compliance by the implementation deadlines: September 10, 2016 for large businesses with greater than 500 employees; September 2017 for small businesses with less than 500 employees; and September 2018 for very small businesses averaging less than $1 million per year (adjusted for inflation) in both annual sales of human food plus the market value of human food manufactured, processed, packed, or held without sale.

Covered facilities must establish and implement a food safety system that includes an analysis of hazards and risk-based preventive controls. An effectively developed and implemented HACCP plan (Hazard Analysis and Critical Control Points plan) meets this requirement. The rule says that the food safety plan must include several components, all of which are found in a complete HACCP plan and supporting Pre-Requisite Programs (PRPs):

Hazard analysis: The first step is hazard identification, which must consider known or reasonably foreseeable biological, chemical, and physical hazards. These hazards could be present because they occur naturally, are unintentionally introduced, or are intentionally introduced for economic gain (if they affect the safety of the food).

Preventive controls: These measures are required to ensure that hazards requiring a preventive control will be minimized or prevented. They include process, food allergen, and sanitation controls, as well as supply-chain controls and a recall plan.

Monitoring: These procedures are designed to provide assurance that preventive controls are consistently performed. Monitoring is conducted as appropriate to the preventive control.

Corrective actions and corrections: Corrections are steps taken to timely identify and correct a minor,

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isolation problem that occurs during food production. Corrective actions include actions to identify a problem with preventive control implementation, to reduce the likelihood the problem will recur, evaluate affected food for safety, and prevent it from entering commerce. Corrective actions must be documented.

Verification: These activities are required to ensure that preventive controls are consistently implemented and effective. They include validating with scientific evidence that a preventive control is capable of effectively controlling an identified hazard; calibration (or accuracy checks) of process monitoring and verification instruments such as thermometers, and reviewing records to verify that monitoring and corrective actions (if necessary) are being conducted.

Product testing and environmental monitoring are possible verification activities but are only required as appropriate to the food, facility, nature of the preventive control, and the role of that control in the facility’s food safety system. Environmental monitoring generally would be required if contamination of a ready-to-eat food with an environmental pathogen is a hazard requiring a preventive control.

Source: http://www.fda.gov/Food/GuidanceRegulation

McConnell is the Technical Director and Principal Consultant with Food Safety & Quality Management LLC. He provides technical support to food processing companies across the U.S. and the world. He has over 22 years experience serving the food processing industry as a consultant, trainer, laboratory director, and quality control manager.

Special Note: A HACCP training course will be held in Erie on March 23 & 25. Participants receive NSF International Certification for HACCP Training if they successfully complete the course exam. See www.nwirc.org for more information.

Dangelo’s Custom Built: Website Gets a Kickstart

Derek Dangelo knew his company’s website needed some attention. “We wanted to increase sales and market share,” said Dangelo, Owner and President of Dangelo’s Custom Built in Kane, PA. “We thought we might be missing a significant number of opportunities due to our outdated website and we needed a professional upgrade.”

Dangelo’s Custom Built began as a sideline business to Dangelo’s Auto Body that was started in 1978, a business relying much on the local marketplace. By 1980, they entered the towing business and built their first wrecker. They eventually expanded into the heavy towing market. After gaining a better understanding of the market for their new niche, they decided to make it their sole focus in 2012 and currently have 20 employees. “Now our market is the entire U.S. and the boundaries are endless,” said Dangelo. “For the most part, we have only captured the eastern third of the U.S., we still have the West Coast and the global market to tackle.” As they continued to grow, it became vital for them to have a professional website to present the company image and generate leads within this very specialized industry. Dangelo began discussions with a website development firm, Protocol 80, who introduced him to the Northwest Industrial Resource Center (NWIRC) for potential assistance.

Tom Weible, NWIRC Strategic Business Advisor, confirmed that the website upgrade project would qualify for their IT KickStart Program based on the criteria of 1) being a small manufacturing in Northwest PA, 2) use of a third-party provider, and 3) potential for positive impact growth of the company. A new and modern website was created on the C80 CMS (content management system) platform, simultaneously deploying an inbound marketing strategy to include search engine optimization. This created more traffic to the site and ability to convert subsequent leads into sales. The NWIRC provided an IT KickStart grant to offset the cost of the design and implementation. The website was launched in April 2015 after 3 months of planning, design, and execution. Successful completion of this project has strengthened Dangelo’s ability to have an online presence and increase customer base. Since launching the site, their organic traffic has increased 145% in 6 months and they have a handful of leads they otherwise may not have received.

Dangelo said the NWIRC’s connections have also enabled them to begin work with an affiliate consultant on a risk management project which will ultimately help them reduce expenses for various insurances. He has plenty of ideas for opportunities in the future too. Next he hopes to improve production, expand their shop, and gain workflow efficiency. “The NWIRC has been a great partner and has given us more information than other agencies in Western Pennsylvania. They supported our efforts to establish a greater web presence and increase our customer count. They are true professionals with very fast response times and get it right the first time by truly listening to their clients,” said Dangelo.
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

UPCOMING EVENTS

AS9100 Internal Audit
February 24-25
Location: Meadville
AS9100 is a widely adopted and
standardized quality manage-
ment system for the aerospace
industry. The course will provide
you with a detailed overview
of the AS 9100 (Rev C.) require-
ments and prepare you to
conduct internal audits to
the AS 9100 standard.

ISO 9001:2015
Management Transition
March 1
Location: Erie
This 3-hour course reviews
how ISO 9001:2015 will impact
your current Quality Manage-
ment System (QMS). It will
stress the requirements of ISO
9001:2015 and what chang-
es to make as a result of the
transition. Geared for organiza-
tional management, including
owners; executive leadership;
department management;
and process owners.

ISO 9001:2015
Internal Audit
March 8-10
Location: St Marys
(Spring sessions also scheduled
for Erie and Meadville)
The revised ISO 9001:2015
was recently published, so this
course will provide a detailed
review of the quality standard
and all the changes. Participants
will learn how to conduct an
audit, write the audit report,
take corrective actions, and
more.

Lean Six Sigma
Green Belt
March 29-May 20
Location: St Marys
The program will include
10 sessions spanning over
3 months. Apply lean tools
and the DMAIC methodology
(define, measure, analyze, im-
prove, control) to improve your
bottom-line. You will receive
coaching specific to the pro-
cess improvement project you
bring to the course. (Also, check
out the Lean Champion Certifi-
cation Series as an alternative.)

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