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Coming OWIC events:

December 8-11: [How to Dry Lumber for Quality and Profit](#)
Corvallis, OR

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Understanding Innovation and Innovativeness

OWIC faculty have spent many hours thinking about innovation and innovativeness – to the extent of studying how industry members view the two concepts. In practice, many managers tend to use the words interchangeably, but they are distinct concepts. An innovation is something new (product, process, or business system) while innovativeness is a characteristic of a company (or person). In doing our research we have asked many managers what it means to be an innovative company. The following is a sample of answers to this question:

“a lot of people get confused sometimes with innovation thinking it’s the next best mousetrap or something...but it’s beyond that, it’s day-to-day stuff, could be as simple as capitalizing on some new technology, a new phone system or something, or different types of software that might be out there.”

– **Forest industry manager, Australia**

“you just have to keep moving forward, looking for new, either new products

or new ways to do things or new components or materials and combining those. So I think that’s what it means to me to be an innovative company.”

– **Forest industry manager, United States**

“innovativeness is putting small ideas in different parts of the organization together and suddenly you realize... that here is something new and this is what I want.”

– **Forestry industry manager, Finland**

“lot of them [companies] will have a research and development facility that’s a bunch of fuzzy-haired rocket scientists, you’re trying to develop a square tree or something. So they’re going to do that kind of stuff behind closed doors, and this square tree would be great for the industry, that would be a massive product innovation, and if they mastered that, and I’m not saying they never will, but they’ll continue moving down that process as best they can. But there’s a lot of other things that

are innovative. How you’re gonna actually improve the competitiveness, or improve the customer service profile, or improve a lot of things within the organization that come from processes and procedures.”

– **Forest industry manager, New Zealand**

These responses show that many views of innovativeness exist. If you ask 10 people ‘what does it mean to be innovative?’, chances are you will get 10 different answers. The definition is also debated in academic journals. However, for the purposes of the activities led by OWIC it is necessary to have an operational definition that is meaningful to managers. So we use the definition you have seen many times earlier in these pages - an innovative firm is one that creates and/or adopts new products, processes, or business systems.

Because being innovative is connected to creating and/or adopting something new, it creates a question about the definition of ‘new’. (1) what is new?, (2) how new?, and (3) new to whom? These are important

Innovation and Innovativeness cont.

questions that help frame the context for firms that want to become more innovative. Does a firm necessarily have to create new products never before seen in the market in order to be known as innovative? NO!

What is new ? – can include new products, processes, and business systems.

Product innovation is a successful change in a firm’s output and can occur in the form of either goods or services. Product innovation includes development of truly new products as well as adaptation/improvement of existing products.

Process innovation (often referred to as technical innovation) is the introduction of new elements in an organization’s production process. The forest products industry has long excelled at process innovation, improving throughput and increasing fiber recovery via technologies and improved techniques (e.g., quality & process control).

Business systems innovation (often referred to as administrative)

does not provide a new product or service, but consists of the introduction of new management systems, marketing methods, administrative processes, or staff development programs. Business systems innovations are growing in importance for the industry. E-business is an obvious example of a business systems innovation, but more traditional marketing and management techniques are equally important.

The form of innovativeness that best fits a company will depend on its culture and strategic orientation. Production-oriented companies may benefit most from process innovation, while market-oriented companies may benefit most from focusing on a combination of the three elements of innovation. Previous research has shown that a balanced level of the three elements of innovativeness is more advantageous to firm performance.

How new ? – reflects the degree of newness, i.e., incremental vs. radical, continuous vs. discontinuous.

An incremental (continuous) innovation is a small improvement to an ex-

isting product, process, or business system. Incremental innovations exploit or build on existing technology, have low uncertainty, and focus on improving features or reducing costs. A successful incremental innovation will improve competitiveness in existing markets.

A radical (discontinuous) innovation is a product, process, or business system that is the first of its kind in the world. Radical innovations explore new technology, have high uncertainty, and focus on unprecedented features or services. Radical innovations create dramatic changes which result in transformations of existing markets or industries, or the creation of new markets or industries.

Classifying innovations as incremental or radical is difficult. It is often the case that innovations do not clearly fit into one category or the other but have some characteristics that are incremental and some that are radical. Therefore we classify innovations on a continuum from incremental to radical. The figure on page 4 shows this continuum and the classifications of some forest products innovations.

	Incremental	Radical
Technical focus	Current products, processes, business systems	New products, processes, business systems
Level of uncertainty	Low	High
Features	Improving features Reducing cost	Unprecedented features
Markets	Existing	New

Ask the Expert



Have questions related to wood? The faculty of the Wood Science and Engineering Department at OSU can handle almost any question about wood. Simply submit your question using the Ask the Expert form (<http://owic.oregonstate.edu/askexpert.php>). In order to assure that your question is answered correctly, please be as specific as possible when submitting your questions.

The following are examples of recent 'Ask the Expert' questions:

Question: I'm looking for a small EMC calculator that I can keep with me in the field. I troubleshoot hardwood floors and usually need to know MC.

The simple graphs are not specific enough for me and the computer is frequently not readily available. I've seen some wheels that will show shrinkage depending on changes in MC - anything similar for EMC?

Answer: Our [wood shrink/swell program](#) runs in Excel, but since you said the computer is not readily available, that won't help. I'm not aware of a small handheld device specifically for this purpose.

Your next option might be to use a programmable calculator and input the formula from [Chapter 3 of the Wood Handbook: Wood as an Engineering Material](#). See page 3-5 of the text. The formula uses

temperature and relative humidity as the inputs along with several constants.

Lastly, you might also consider using a small thermohygrometer (usually about \$50) and a table of EMC values based on temperature and humidity - such as Table 3-4 from the Wood Handbook.

Question: What type of air velocity in feet per minute should be seen between stickers at the beginning of a 100,000 BF charge of 16/4 Douglas-fir at 100 degrees F?

Answer: If the load is 8' wide and stickers are 3/4" thick, 400-500 ft/min would be ok at that low temperature (and assuming high humidity - perhaps a wet bulb depression of <10 to 20F). This velocity is about the minimum for any commercial kiln. Sticker thickness is also important: 500 ft/min on 1" stickers provides approximately the same airflow as 1000 ft/min on 1/2" stickers.

There is no rule on air velocity. The faster one dries, the more velocity is needed. Faster drying occurs at higher temperatures, greater wet-bulb depressions, and with sapwood. Species, such as pine, with a lot of sapwood need more airflow than Douglas-fir which is mostly heartwood.

When drying at higher temperatures, airflows are typically 750 to 1500 ft/min. Otherwise you can get wet lumber in the center of

the loads. We hear of 3000 ft/min in some ultra fast kilns.

High airflow can have negative impacts if surface checking is a problem. The other negative is that airflow is expensive. Eight times as much electricity is required to provide 1000 ft/min as is required for 500 ft/min. Thus, one should only use high airflow if needed and then only after everything else is in order - the load should be baffled well and the stacking and loading should be done to promote good airflow.

This is a short answer to an important question. These topics receive two to three hours of attention during our annual [How to Dry Lumber for Quality and Profit workshop](#).

A comprehensive list of all the 'Ask the Expert' questions with corresponding answers is available at <http://owic.oregonstate.edu/askexpert.php>.

Innovation and Innovativeness cont.

New to whom ? – reflects the fact that what is new to one person or organization may not be new to another.

Innovations can be new to a variety of audiences including 'new to the world', 'new

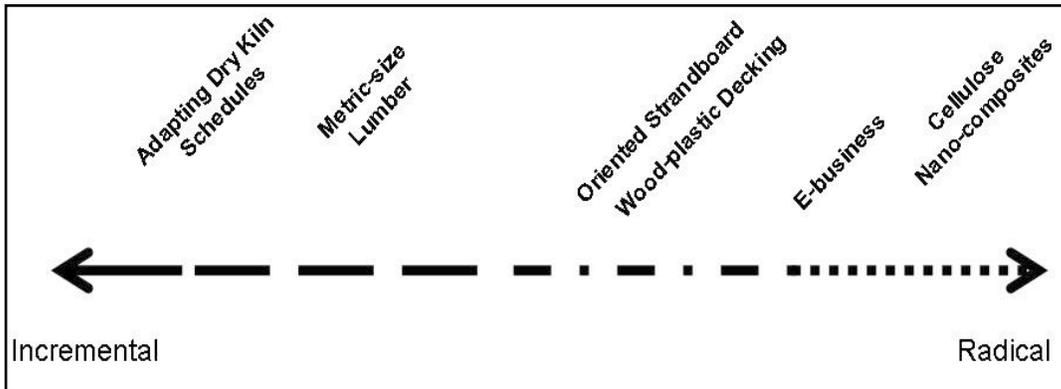
to an industry', or 'new to a specific firm'. Innovations can happen in an organization in two ways. The first method involves the innovation being created by a company. The second method involves a company adopting an innovation that was cre-

ated by another company. Of course, there is some overlap

the three different types of innovation in the context of the forest products industry.

In June, July, and August, we fill discuss examples of Product, Process, and Business Systems innovations, respectively. The September issue will

focus on the importance of organizational culture for innovation and the October issue will present recent findings regarding the relationships between quality management and innovation.



in these categories of innovation in that a radical innovation is by definition, new to the world and not merely new to one organization.

The next three issues of the OWIC newsletter will focus on examples of

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Previous issues of the OWIC newsletter are available at <http://owic.oregonstate.edu/newsletter/>

