Incremental Innovation in the Milling Industry: Full Transcript

1) How does your company define innovation? What role does innovation—small or large—play in your company's strategy?

Innovation plays a large role in our strategy at Ardent Mills. It's our DNA and a key part of our vision: "Ardent Mills® is the trusted partner in nurturing our customers, consumers, and communities through innovative and nutritious grain-based solutions." Innovation is expressed in many areas at Ardent Mills, such as 1) side-by-side customer collaborations to bring new products and right solutions to the marketplace; 2) traditional breeding and genetics programs; 3) R&D and culinary explorations of new ingredients; and 4) novel operational and food safety improvements internally and with vendor partnerships.

Innovation also extends to Ardent Mills' organizational structure. A recent example is the creation of "The Annex by Ardent Mills." This is a business within Ardent Mills designed to be nimble in providing on-trend pulses and grains to our customers.

(Kent Juliot, VP Research, Quality and Technical Services, Ardent Mills)

At this time when consumer needs and demands are changing faster than ever, driven by availability of information and technology, innovation is incredibly important to Bay State Milling. We look at innovation as a means for us to stay ahead of those changing needs, while adhering to our strategic intent of powering the next generation of plant-based foods that offer healthful and affordable choices for consumers. We believe that all employees have a role in innovation at Bay State Milling, and we foster a culture where people have the freedom to bring ideas to the table.

(Jennifer Robinson, VP Corporate Quality Assurance, Bay State Milling Company)

Innovation has been at the very center of Bühler's activities for more than 150 years, from the earliest days of mechanized food production to today's ever-evolving digital world. The company invests as much as 5% of its turnover in research and development each year, and works in close collaboration with customers, suppliers, start-ups, and leading academic institutions to continually drive innovation and help meet its ambitious sustainability goals.

(Ruedi Weiss, Director of Sales – Grain Milling, Bühler)

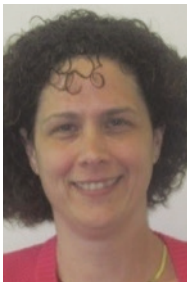
2) What mind-set or attributes tend to characterize successful innovation in the milling industry?

It is our vision, values, and day-to-day culture that foster and drive innovation.

Our values: We will make a positive impact with our employees, customers, communities and partners by: Working to earn TRUST every day, always operating with reliability and integrity. SERVING others with understanding, respect and care. Operating with SIMPLICITY, clarity and transparency, removing barriers and letting people do what they do best. Ensuring the SAFETY of our products and people; doing what's best to create the safest environment now and for the future.

Our core values help us bring our vision to life every day, enabling us to make a positive impact on our customers, communities, team members, and partners. Ardent Mills leaders believe no challenge is too big, and anything is possible. We stay relentlessly curious about people, how things work, and the environment. Ardent Mills team members are

Panel Members



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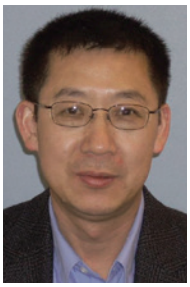

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constantly learning, reinventing, and challenging ourselves to do better.

(Kent Juliot, Ardent Mills)

The mind-set that helps drive success for us is not confining ourselves to the limits of the milling industry. We continue to enhance our plant-based portfolio with new supply chains that deliver against consumer needs, including flavor/texture, nutrition, and sustainability. We also remind ourselves that we are an agriculture-based company, and we look to the seeds that drive agriculture for sources of innovation, in addition to processing technologies. At the end of the day, everything we do is for customers and consumers, and we always consider their voices in our innovation work.

The way we approach the supply chain through our Partner Sourced Ingredients is indicative of our innovative outlook. Under this program, we work directly with our suppliers to collaborate on operating efficiencies and food safety processes to assure we are delivering on our customers' expectations. It's all about sustainable relationship building.

As another example, Bay State Milling is directly involved, literally from the ground up, in the development of new and unique products like HealthSense™ high-fiber wheat and SowNaked™ high-protein oats—from varietal development to the growing process, to milling for optimum performance.

(Jennifer Robinson, Bay State Milling Company)

For Bühler, the main attributes to characterize successful innovations are

- Cutting waste, downtime, operating costs, and energy use
- Improving quality, safety, and productivity
- Boosting the bottom line

(Ruedi Weiss, Bühler)

3) Do you have any examples of how incremental improvements or operational enhancements at your company have led to improved business performance?

Wheat flour is our core product. We have also been in the specialty grain business for many years. At Ardent Mills, we are passionate about bringing people the goodness of plants and grains through innovative and unique ways. That's why we created The Annex by Ardent Mills, a dedicated team committed to exploring what's next in whole grains, pulses, mixes, custom multigrain blends, organic, and finished goods.

It is our goal at Ardent Mills to have an Innovation Culture, where innovation would come from any level of the organization. To have employees looking for incremental improvements and enhancements in our everyday tasks. This has resulted in improved Overall Equipment Effectiveness (OEE) at each of our community mills.

(Angela Ichwan, Senior Director, Technical Lead, The Annex by Ardent Mills)

Our Cultivating Excellence program is focused on driving continuous improvement processes across all aspects of our business to power enhanced business performance.

We recently conducted our second Cultivating Excellence Awards celebration. Annually, the various Cultivating Excellence teams from across the organization submit their completed projects for award consideration in four categories.

We have seen the projects progress in sophistication and delivered results as our associates apply more of the Lean/Six Sigma philosophy. Some examples of incremental improvements and operations enhancements that have led to improved business performance include

- Year-over-year reduction in packing costs across the company.
- Significant improvements in yield in one facility where the team linked Six Sigma techniques with the art of milling.
- One team used Six Sigma tools to reinvent our commercialization process to significantly improve the speed of delivering a new product to the customer.
- The sales organization reinvented the sales funnel to decrease the amount of time from potential customer status to purchase order.
- One facility used the tools to accomplish "Zero Landfill Waste" and achieved community recognition.

We now have a number of corporate projects sponsored by Executive Leadership Team members for enhanced team support and visibility. These cross-functional teams are usually composed of members from most of the organization's functional areas and have the potential to deliver substantial cost reductions across the company over the next 12 to 18 months. Through these projects the company continues to develop our associates' skill sets and enhance our innovative culture.

(Jennifer Robinson, Bay State Milling Company)

We have two examples of improvements and enhancements:

- Smart Chocolate Factory, a self-optimizing digital service for dosing, mixing, refining, and conching lines. This "digital factory" is able to boost a line's quality and performance, giving customers both a 10% reduction in operating costs and a 10% increase in performance.
- Bühler is center stage in the rapidly growing e-mobility marketplace and its drive to cut emissions and improve air quality. The sector is experiencing phenomenal growth, and Bühler's unique mixing process for electrode slurries is dramatically boosting the quality of lithium-ion batteries and allowing vehicles to travel up to a third farther than those with conventional batteries.

(Ruedi Weiss, Bühler)

4) How do you measure the input, workflow, and output of innovation in your company? What does the process of innovation look like in your company? What are some of the key indicators that you have utilized and found successful for measuring innovation?

A key indicator of success is based on our customer's success. If our customers succeed with innovation, and we are able to bring our customers innovative grain-based solutions, then we succeed.

Internally, we prioritize projects and frequently reevaluate to meet our customer needs.

An area that is tied closely with innovation is our capital expenditures. This has a linear path of scoping, approval, installation, and measured outcomes compared to the initial expectations. This process requires each part of the supply chain to work together to get the expected results.

(Laurie Scanlin, R&D Culinary Manager, Ardent Mills)

We use metrics and scorecards to measure success against innovation projects. The final metric is not always revenue based—it may be learning, or staff development, or incremental product improvements.

(Jennifer Robinson, Bay State Milling Company)

Key elements of Bühler's innovation activities are the company's Innovation Challenges and Networking Days, which allow extensive collaboration with institutions, scientists, staff, industry partners, students, and start-ups, all of whom are able to bring fresh perspectives to help turn today's challenges into tomorrow's opportunities.

Among the major institutions Bühler collaborates with are ETH Zurich (Swiss Federal Institute of Technology), EPFL (École Polytechnique Fédérale de Lausanne), University College London, Imperial College London, the University of St. Gallen (HSG), Kansas State University, and the UNITECH university network. Its strategic partnerships include the EIT Food Accelerator Network, Partners in Food Solutions, Africa Improved Foods, and leading start-up accelerator MassChallenge. Alumni of the latter alone have so far raised more than US$2 billion, generated more than US$900 million in revenue, and created more than 65,000 jobs. Investment needs, revenue (or savings) generation, and jobs creation are the key indicators for measuring innovation within Bühler.

(Ruedi Weiss, Bühler)

5) Are there any examples of "disruptive innovation" in milling today?

An example of "disruptive innovation" in milling is Ultragrain® High Performance (HP) [flour]. Ultragrain HP is the cutting-edge addition to our Ultragrain family of whole white wheat flours. Ultragrain HP is the first in a generation of whole grain flours with baking advantages like stronger gluten, higher absorption, and improved processing, including baking performance, resulting in lower formulation costs. Breads made with Ultragrain HP have the potential to reduce the added vital wheat gluten requirement by 50% or more compared to traditional whole wheat flour for the same loaf volume and performance. Another example is Ardent Mills SafeGuard Treatment and Delivery System. It is not just a product or a process: it's a proprietary, comprehensive, integrated solution that extends flour food safety assurance from our plant to our customers. It's the only functional flour on the market with up to a 5-log validated pathogen reduction that can be customized based on your specific product requirements.

(Gang Guo, Director of Wheat Research and Quality, Ardent Mills)

The milling process encompasses a wide array of processes and capabilities, from supply chain management to flour yields and feed deployment. We find innovation in milling by looking to the inputs or the seeds that we mill. HealthSense™ and SowNaked™ are examples of disruptive innovation in milling—delivering nutrient-dense ingredients without changing the milling process per se with HealthSense and by enabling less processing and more sustainable oat supply with SowNaked.

Outside of product development, we have experienced recent success in a collaborative technology application to Perten's doughLAB. The new application allows a customer to receive an aligned rheological value across multiple supply sources, resulting in an elevation for the entire industry. This partnership demonstrates how innovation can be the outcome of taking a fresh look at an existing solution and deploying it in a new way.

(Jennifer Robinson, Bay State Milling Company)

The key driver of innovation across all sectors is digitalization. Bühler has been at the forefront, establishing the Urs Bühler Innovation Fund three years ago to support development in key areas such as the Internet of Things (IoT). The company sees digitalization as a key enabler and genuine driver of value. When harnessed properly, the potential of digital innovations is immense, not just in dramatically cutting waste, downtime, operating costs, and energy use, but also improving quality, safety, and productivity and boosting the bottom line.

IoT pilot projects like myAssist, a cloud-based data analytics solution, have potential to streamline milling production processes and maximize productivity.

(Ruedi Weiss, Bühler)

6) How do you view "failure" as it relates to innovation? When is it part of the process, and when is it unacceptable?

Another advantage of forming The Annex is to take some risks. If we fail, we want to fail fast and on a small scale. We aim to learn from our mistakes and try not to repeat failures or to invest our resources in projects with low ROI [return on investment].

Failing is part of innovating throughout our company and acceptable early in the process. Failure is not learning from failing.

(Janice Best, Director of Product Development and Technical Services Canada, Ardent Mills)

Failure is a means by which people learn, and therefore, it is supported as part of our innovation culture—the earlier in the process, the better. It is often said, "Your first loss is your best loss." Lessons learned, pick up and move on.

Failure to try is unacceptable. As the industry has been dominated by a number of acquisitions and consolidations over the past several years, traditional millers are endeavoring to find their niche in the cereal world. At Bay State Milling, searching out new ways to do things has been an integral part of the organization for 119 years, which is a credit to the acceptance of risk and consequences through five generations of family ownership.

(Jennifer Robinson, Bay State Milling Company)

Failure is part of the innovative process, but it has to be minimized. To avoid failure, most of our Innovative Initiatives are developed in phases and pass through several control gates. Such gates serve to validate the business plan behind each innovation. Many projects are rejected, forcing the innovation teams to elaborate more consistent plans or to abandon them.

(Ruedi Weiss, Director of Sales – Grain Milling, Bühler)