UNH Industrial Research Center

UNH Chemical Engineering Expertise Helps Jaffrey Match Maker

By Janet Lathrop
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DURHAM, N.H. , The largest manufacturer of paper bookmatches in the world, the D.D. Bean & Sons Co. of Jaffrey, last year identified a production-line drying problem that was creating a bottleneck, preventing the company from increasing efficiency by adding high-speed presses.

But through a little match-making engineered by Henry Mullaney, executive director of the Industrial Research Center (IRC) at the University of New Hampshire, the company now is testing two new materials -- compounds worked out in UNH's chemical engineering department -- which hold the promise of solving the problem.

The IRC provides technical assistance from UNH, Dartmouth College and other educational institutions to the business community, helping companies to generate more than $72 million in new sales over the past several years. When D.D. Bean & Sons ran into the roadblock over the drying time of friction -- the striking surface on its match books -- Mullaney saw an opportunity for a UNH-business partnership which would benefit both.

"What we have to offer is the knowledge and creativity of our faculty and students," he explains. "New Hampshire businesses appreciate that, and our educational institutions are enriched by the connections."

For D.D. Bean & Sons, the IRC's interest in partnering worked like a charm, according to vice president Allen Leach. Through IRC, UNH professor of chemical engineering P. T. Vasudevan visited the company and

agreed to take on the challenge to cut friction drying time. Mullaney helped the company apply for an IRC technical assistance grant to support laboratory research.

"Henry also visited us and kept in touch all through the process," Leach recalled. "He was very helpful and made it easy to apply." An agreement for sharing costs between IRC and D.D. Bean was drawn up.

Back in his UNH laboratory, Vasudevan designed a number of polymer chemistry experiments -- carried out by chemical engineering student Alison DuPont of Whitefield, N.H. -- to address the drying problem. The UNH team came up with two promising new materials, says Vasudevan, to improve the striking surface and dry it much faster than the old mixture. "They are not in use yet, but they perform well in the laboratory and we expect to be able to work the kinks out when we test it on a larger scale," he adds. Production-line tests are underway this winter.

Most important for D.D. Bean & Sons, the new techniques should reduce drying time from two minutes to about 30 seconds. Leach is extremely pleased with this result and very impressed with IRC's process. "We don't have a full-time chemist on staff, and even if we did, he or she might not have been able to accomplish the things that P.T. and Alison did for us," Leach says. "We could also have spent a whole lot more money," he adds. "But IRC and UNH offered an affordable, economical solution. It's a very good program."

Vasudevan, noting that most universities do not offer such rich research opportunities to undergraduates, says that "it is really wonderful for UNH students to get this great experience, to be exposed to a practical research problem this way."

Since its creation in 1992, the IRC has had an estimated $200 million impact on the state's economy in just this way -- one company at a time. "We seldom produce overnight fixes," Mullaney says, adding that sometimes three years may pass before IRC and its business partners can point to real results. "But we get very good results when they do come in. We average one new job for every $2,300 spent by IRC."

Mullaney points out that research and development, and technology transfer are highly leveraged investments. "A Rand study showed a typical return of more than 20 times for companies who invest in research and development," he says. To date, state and company investment in the IRC Technical Assistance Grants -- which provide companies with matching funds for R & D projects and assistance from UNH faculty -- exceed $7.8 million. For more information on the IRC program, contact Mullaney at 862-0123.

Back to UNH News Bureau