

Economic Development Incentive Grant

2013-14 Annual Report

Institution Name(s): University of Wisconsin-Stevens Point	Project Title: Economic Development through Innovation in Specialty Paper, Packaging & Converting
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Grant Award Amount: \$1,445,336	Report Date: June 30, 2014
Grant Funding Spent (to date): \$717,353	Date project began: January 1, 2014
	Date project ends (projected): June 30, 2015

I. Status Report

Under the joint leadership of principal investigator Dr. Paul Fowler, executive director of the Wisconsin Institute for Sustainable Technology (WIST), and co-principal investigator Dr. Karyn Biasca, chair of the Paper Science & Engineering Department (PS&E), this project is on track or ahead of schedule on all activities and goals.

Project activities and goals associated with the UW-Stevens Point Pilot Paper Machine.

A pilot paper machine at UW-Stevens Point is used as an educational tool by students in the Paper Science & Engineering Department and by WIST to provide services to the papermaking industry. This is a Fourdrinier machine, identical except in size to machines in commercial paper mills. Already a valuable asset, the machine can, with strategic upgrades, become an even more vital apparatus for economic development.

Specific activities and goals under the EDI grant are to **install coating and laminating capability, install wet-end chemical additive equipment, and to develop and offer three hands-on courses for industry.**

Packaging represents the second-largest overall driver industry in Wisconsin. Specialty packaging materials, such as those designed to keep food fresh, typically comprise multiple layers of different materials to provide the specific qualities required. One layer may provide a moisture barrier while another layer provides strength and yet another layer provides a printable surface. Pilot-scale **lamination and coating equipment** for analysis as well as for small production runs will enable the reproduction of the precise working conditions available on production machinery to simulate various laminating and coating possibilities. This equipment will enable pilot-scale evaluation at UW-Stevens Point to help Wisconsin remain competitive in coated and laminated papers.

Status: Biasca, Fowler and PS&E faculty developed specifications for a request for bids for the equipment. Two bids were received from vendors in Piacenza, Italy and Germantown, Wisconsin. Faustel, of Wisconsin, was selected as the vendor for this equipment. We will install a LabMaster™ Coating Line which includes two unwinds, roll coater, dryer, laminator with chill rolls and rewind with integrated drives and controls. This unit can handle paper, film, foil and nonwovens on roll sizes up to 300mm wide and at speeds of up to 30m/min. This will enable the team to undertake gravure roll and slot die coating techniques with water-based or solvent-less formulations; and dry bond laminating. Small scale production runs, product development runs and tests with various substrates and coating materials are all within machine capability. This will enhance teaching, training, research and development for the specialty paper, packaging and converting sectors in Wisconsin. The laminating and coating equipment installation is scheduled to take place in the week of 28th July 2014.

Chemical additives are needed in the production of certain papers to provide certain qualities such as wet strength, color, printability or brightness. Until now, on the UW-Stevens Point pilot paper machine the chemicals were added at only one point in the process in the initial pulp preparation stock tank. Installation of **chemical additive equipment** at multiple points at the “wet end” of the paper machine allows more precise control and effective use of the chemicals and more closely matches industry practice. Availability of this capability on a pilot scale will help businesses that wish to test certain chemicals to do so on a smaller scale and more flexibly and efficiently saving time, money and wasted chemicals.

Status: In a senior design project of the PS&E program, students designed and installed the chemical additive equipment. Students gained valuable experience working on a real-world project. Seven ports were installed, which creates flexibility by allowing chemical addition at different points. This is important because the order in which chemicals are added may affect how they perform or interact with each other. The equipment design also allows quick change-out of chemicals so that different chemicals can be tested with the same pulp batch and/or the order of chemical addition easily changed. The system uses peristaltic pumps, allowing continuous flow of materials. The equipment has been successfully tested and used on projects.

WIST regularly offers a hands-on papermaking course and a hands-on pulping and bleaching course to paper industry professionals. In these short courses scheduled over two and three days, students split time between classroom lectures and “hands-on” experience running the university’s pilot paper machine and equipment. To further assist the paper industry in developing and retaining high-quality employees, **additional hands-on courses** will be developed.

Status: The hands-on papermaking course is being overhauled to reflect the addition of new capability on the machine. Two new courses are currently being developed: Papermaking Chemistry and Measuring and Controlling Paper Formation. Course notes, course outlines, and learning objectives are set to be complete by the end of August 2014. These three courses will be offered for the first time in 2015.

Activities and goals associated with RiverPoint® fine art paper

Three years ago, in a unique, collaborative project at UW-Stevens Point, a new fine art paper was developed between personnel in the Department of Art & Design, Paper Science & Engineering and WIST. The original goal of the collaboration was to create an affordable printmaking paper comparable in quality to expensive papers made in Europe, for use by students and faculty in the university’s Department of Art & Design. The paper is made from 100% cotton fiber and exhibits performance qualities that are highly desirable to both printmaking professionals and hobbyists. The paper development was so successful that we decided to make it more widely available and made a “soft launch” of the paper to the public at a printmaking conference in Milwaukee in 2013. WIST and the Department of Art & Design created marketing materials, including naming the product as RiverPoint, for the launch. RiverPoint was well-received and we saw an economic development opportunity through its commercialization.

Specific goals under the EDI grant are to **trademark the RiverPoint name and word mark, develop two additional grades of RiverPoint fine art paper, and commercialize RiverPoint.**

With assistance of the UW-System Office of General Counsel, **trademark protection** for both the RiverPoint name and the stylized logo was granted effective March 25, 2014.

In early 2014, the project team began the development of a new color of RiverPoint paper in part fulfillment of the new grade development outcomes for this project. Up till that point, the only color available was dictated by the color of the cotton fibers. Work was undertaken to develop a sand/beige colored paper that would be desirable to the printmaking community with the intention of launching the new color at the Southern Graphics Council International Conference and Exhibition in San Francisco.

Also, in early 2014 the project team began working with an Appleton, Wisconsin-based art paper supplier, Strathmore Artist Papers™, a division of Pacon Corporation, on **grade development and commercialization** of RiverPoint paper. Strathmore markets art paper for a wide range of uses including water color, sketching and mixed media. However, at that time it had no printmaking grade paper in its portfolio. The company's market researchers had identified a need for a line of printmaking papers and believed that RiverPoint had the potential to meet some of this unmet market need. Pacon markets its portfolio of art paper grades as Strathmore Artist Papers® 300 Series, 400 Series and 500 Series, where each higher series represents a step up in quality with 500 being a premium quality product.

Pacon determined that the original RiverPoint paper, a heavy weight, 100 percent cotton paper, would meet the demand for a premium quality printmaking paper and is marketing the paper as 500 Series. However, Pacon also desired to offer 300 and 400 Series printmaking papers to complete their printmaking range. These were intended to be, respectively, low-cost, excellent value, entry level printmaking papers and expert, day-to-day use, high quality papers for professionals and hobbyists. WIST and PS&E undertook to develop two additional grades of paper to meet the needs of a 300 Series and 400 Series paper.

Status: Trademark protection has been achieved; a new color of RiverPoint, 'Sand', has been developed and introduced to the printmaking community at the Southern Graphics Council International Conference in San Francisco; two new grades of RiverPoint fine art paper have been developed. Students in the Paper Science and Engineering department, under the guidance of former department chair, Prof Gerry Ring, played an integral role in grade development making several paper machine trials and undertaking physical testing of the trial samples to assess key properties described by Pacon. Students in the department of Art and Design along with printmaking Prof Bob Erickson, provided invaluable in-use feedback to enable grade development to occur in line with the aggressive timetable we had set. Commercialization of a complete new range of RiverPoint fine art paper through a licensing agreement has been achieved. The range is co-branded as Strathmore Artist Paper and RiverPoint Printmaking. Cover art for the retail sale pads of the 300 Series printmaking paper was done by a UWSP printmaking student chosen from a competition amongst peers and judged by members of the Pacon project management team. The original RiverPoint paper will be manufactured at UW-Stevens Point on the university's pilot paper machine. In the case of the 300 and 400 series printmaking papers, UW-Stevens Point does not have the capacity on its machine to meet the forecast demand for these products. Hence, Pacon Corporation will have the paper manufactured to UW-Stevens Point's specification at a Wisconsin paper mill. Commercialization of this product will generate increased economic activity in Wisconsin, supporting the paper industry and two Wisconsin companies. In an initial five-year agreement, royalties will flow to UW-Stevens Point as the papers are commercialized. Printmaking paper will still be made available free of charge to students of the UWSP Art and Design department, reflective of the initial intent of the early development work.

Activity and Goal: Automate compostability testing procedures

WIST in 2012 purchased equipment and developed a protocol to provide an industry-facing testing service for bioplastics and coated papers to determine if the materials are compostable in accordance with appropriate ASTM standards. As packaging materials' suppliers work to meet increasing demand for compostable products, independent, third-party testing such as that provided by WIST will assist in product development. Although the WIST system was operational before the award of this grant, its design required time-intensive system monitoring and recording of data and limited the amount of samples that could be evaluated simultaneously.

Status: Funding under this grant has enabled automation of the biodegradation testing protocols. Briefly, that method involves the monitoring of the evolution of carbon dioxide from the test sample. Previously an arduous, manual monitoring and recording process was in place which has now been superseded by a continuous, automated process. This results in test method measurement efficiency and reduces the chances for operator error. In addition, we are working to achieve independent approval of our laboratory and methods by the Biodegradable Products Institute (BPI), a nonprofit association that uses and licenses a 'compostable' logo to brand owners and end-users to certify that their packages are compostable. This is the only organization in the

United States that provides this service. The organization also serves to educate consumers, lawmakers and manufacturers about the benefits of scientifically based standards for compostability. WIST Laboratory approval by BPI will allow companies whose material successfully passes the WIST testing protocol to use the BPI certification in marketing materials for their products. Currently only four laboratories in the U.S. are BPI-approved for compostability certification.

Activity and Goal: Provide three new networking opportunities for the specialty paper, packaging and converting industries

In 2013, WIST's Focal Point event, a one-day conference targeting industry professionals in some sphere of sustainability practices developed as a theme, 'frontiers in packaging', cognizant of the importance of the fiber and film based packaging industry supply chain to Wisconsin's economy. The event was very successful attracting delegates from across the nation. As an outcome of this grant, we will build on last years success and host a similar event as well as augment with other networking opportunities in the packaging and packaging waste management arenas.

Status: A conference, Focal Point 2014: Packaging at the Leading Edge, is scheduled for October 14. The event will target the latest challenges and solutions in packaging and converting right across the value chain. Industry experts will discuss efforts to evidence sustainable sourcing of feedstocks, advances in production techniques, developments in specialty packaging materials, and end-of-life management challenges and choices. The conference provides networking opportunities throughout the day. Confirmed to speak are representatives of leading companies in the packaging space including Ocean Spray, MA, Braskem, Brazil, Avery Dennison, CA, Placon, WI, Gass Weber Mullins, WI, Cedar Grove Composting, WA, and Sealed Air, NJ.

In addition to Focal Point 2014, we are working with the President of Associate Recyclers of Wisconsin to develop an end-of-life management session for packaging at next year's Wisconsin Integrated Resource Management conference. The third networking event has yet to be developed..

Activity and Goal: Attract 10 repeat customers as a measure of customer satisfaction and continuous improvement

Status: We have contracted to provide services for seven repeat customers. This is ahead of forecast position at this stage of the project and this project deliverable is 70 percent complete.

Activity and Goal: Generate \$825,000 in revenue

The project team has generated \$222,750 revenue through June 30, 2014. This is 27 percent of the project goal while we are at 33 percent of the 18-month project time frame. Forecast revenue generation at this point in the project is \$250,000. The 10% variance is being monitored and the volume of revenue generating projects in discussion remains high.

II. Updated Goals/Performance Metrics and Assessment Plans

The attached Excel spreadsheet and the following narrative reports the current status of project goals/performance metrics, anticipated completion date(s), actual completion date(s), and assessment plans

Number of Jobs Created

Two jobs were forecast to be created in the first full project year. Two jobs have been created: both a full time Compostability Laboratory Manager and a full time Paper Making & Laboratory Specialist have been appointed to the project. This outcome is in line with the project goals and performance metrics.

Number of Jobs Retained

Six jobs were forecast to be retained in the first full project year and six jobs have been retained as follows: WIST Finance Manager, WIST Communications Manager, WIST Program Development Coordinator, Assistant Professor in Soil and Waste Resources Discipline, Assistant Professor in Fisheries and Water Resources Discipline and Assistant Professor in Paper Science & Engineering. This outcome is in line with the project goals and performance metrics.

Number of Businesses Assisted

Twenty businesses were forecast to be assisted in the first full project year and 14 have been assisted to date. At this point in the project, the number of businesses assisted is ahead of target by 140%.

Number of NDAs signed

Ten NDAs were forecast to be signed in the first full project year and 5 have been signed to date. At this point in the project, the number of NDAs signed is on target and is in line with the expected project goals and performance metrics.

Number of Invention disclosures

Two invention disclosures were forecast to be made in the first full project year and two have been made to date.

Number of internships created (paid)

Two internships were forecasted to be created in the first full project year and two equivalents have been created based on the 10 hours student working per week per semester. This outcome is in line with the project goals and performance metrics.

General Project Outcomes/Goals

All general project outcomes/goals are in line or ahead of expected completion dates as set out in the attached spreadsheet.

III. Project/Program Budget and Expenditures

Table 1 sets out the project expenditures detailed by category. The source of all funds is the Economic Development Incentive grant.

Table 1 Expenditure report for Fiscal Year 2013-14

Budget Item	Original (\$)	Actual (\$)	Remaining (\$)
Salary	326,891	84,083	242,808
Fringe	137,311	31,301	106,010
Travel	7,600	10,853	-3,253
Supplies	160,705	48,679	112,026
Equipment	577,816	499,350	78,466
Consultant	16,798	0	16,796
Indirect Costs	218,215	43,088	175,127
TOTAL	1,445,336	717,353	727,983

Actual expenditure for the project overall is largely in line with forecast expenditures at the close of this fiscal year. The one notable exception is travel expenditure. The overspend on travel is associated with the opportunity to showcase RiverPoint art paper at the Southern Graphics Council national conference in San Francisco in March 2014. We are requesting a budget line transfer of \$10,000 from the supplies budget to the travel budget to support travel for fiscal year 2014-2015.

It should also be noted that actual equipment expenditure is ahead of forecast expenditure at this point in the project because the coater/laminator pilot line installation is running ahead of schedule and will likely complete some three months early. Total expenditure on the coater/laminator will remain in budget.

IV. Changes

We request a minor change to the budget line items for travel and supplies, transferring \$10k from the supplies line to the travel line.

**UW System Incentive Grant
General Outcomes/Goals Reporting Matrix
2013-14**

Incentive Grant Program Name: Economic Development through Innovation in Specialty Paper, Packaging and Converting
Funding Allocation: \$1,445,336

#	Performance Outcomes Descriptions	Assessment Plan Description	Projected Goals 2013-14	Actual 2013-14 Outcomes	Projected Goals 2014-15
1	Install coating and laminating capability	Commissioning of equipment undertaken	Complete by project month 10	On track to complete by project month 8	
2	Install wet-end chemical additive equipment	Commissioning of equipment undertaken	Complete by project month 7	Completed by project month 5	
3	Automate compostability testing procedures	Commission and test equipment	Complete by project month 6	Completed by project month 3	
4	Develop and offer three hands-on courses for paper industry professionals	(a) # of workers attending training	0	0	
5		(b) # of workers with improved job performance	0	0	
6	Trademark River Point fine art paper	Trademark granted	Complete by project month 6	Completed by project month 3	
7	Commercialize RiverPoint fine art paper	Marketing, distribution or license agreement signed	-		Complete by project month 18
8	Develop 2 new grades of RiverPoint fine art paper	New grades evaluated by artists and printmakers	-	Completed by project month 5	Complete by project month 15
9	Provide 3 new networking opportunities for the specialty paper, packaging and converting industries	Assess feedback provided by attendees through evaluation forms	-		Complete by project month 18
10	Attract 10 repeat customers as a measure of customer satisfaction and continuous improvement	More than one invoiced project per customer raised and paid	5	7	3
11	Generate \$825k revenue	Invoiced income	\$500k (by project month 12), \$250k by end fiscal year 2013-14	\$222,750	\$575k

UW System Incentive Grant Program

Required Program Goals/Outcomes Reporting Matrix

2013-14

Economic Development Goals and Results

Economic development program" means a program or activity having the primary purpose of encouraging the establishment and growth of business in this state, including the creation and retention of jobs, and that satisfies all of the following:

1. The program receives funding from the state or federal government that is allocated through an appropriation under ch. 20
2. The program provides financial assistance, tax benefits, or direct services to specific industries, businesses, local governments, or organizations.

Performance Categories	Goals		Actual Outcomes 2013-14	Accomplished Goal? Yes or No	Notes
	Projected 2013-14	2014-15			
# of Jobs Created	1	1	2	Yes	
# of Jobs Retained	3	11	6	Yes	
# of Businesses Assisted	10	25	14	Yes	

Additional Goals/Outcomes	Goals		Actual Outcomes 2013-14	Accomplished Goal? Yes or No	Notes
	Projected 2013-14	2014-15			
# of NDAs signed	5	15	5	Yes	
# of invention disclosures	1	3	2	Yes	

2013-14

c. Increasing or enhancing research and development.

# of Bachelor's degrees awarded in high-demand fields					
# of Master's degrees awarded in high-demand fields					
# of Doctoral degrees awarded in high-demand fields					
# of internships created (paid)	1	5	2	Yes	Opportunities for students to work on projects associated with this grant in our labs, based on 10 hours per student per week
# of internships created (unpaid)					
# of cooperative work experiences (paid)					
# of cooperative work experiences (unpaid)					

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UW System Incentive Grant Program

Required Program Goals/Outcomes Reporting Matrix

2013-14

Improve the Affordability of Higher Education

Programs that Improve the Affordability of Higher Education for Resident Undergraduates, including:

- a. Reducing the time required to obtain a degree
- b. Increasing the opportunities available for high school pupils to earn credit toward a postsecondary degree; and
- c. Improving the transfer of credit between institutions of higher education.

Reducing the Time required to obtain a Degree

Goals	Anticipated Completion Dates	Actual Completion Dates	Accomplished Goal? Yes or No	Notes

Increasing the Opportunities available for High School Pupils to earn Credit toward a Postsecondary Degree

Goals	Anticipated Completion Dates	Actual Completion Dates	Accomplished Goal? Yes or No	Notes

Improving the transfer of Credit between Institutions of Higher Education

Goals	Anticipated Completion Dates	Actual Completion Dates	Accomplished Goal? Yes or No	Notes
			NA	