



CHALLENGE

To develop testing protocols and capabilities that will help determine the service lifetime of photovoltaic panels.

SOLUTION

JMP® for design of experiments and to statistically analyze data to understand the impact of different environmental variables on panels.

RESULTS

Dow is a major player in the pursuit of high-quality renewable energy sources.

MORE INFORMATION

www.dow.com

www.jmp.com

Dow Chemical Co.

Developing renewable energy sources

Where can you find complete overlap in business drivers and environmental interests? At Dow Chemical, of course. The company is building upon its rich legacy of leadership in pursuit of renewable energy sources. Researching building-integrated photovoltaics—solar energy for businesses and homes—is, in fact, an aggressive initiative at Dow, and JMP statistical discovery software from SAS is an integral tool in this research.

Ryan Gaston is the testing and reliability lead in Dow's solar cell project, and he says the primary challenge with this technology is in understanding how long photovoltaic panels will last.

"We're looking to produce roofing products that will last 20 to 30 years," Gaston says, "and we don't want to be testing a product for 20 years to understand if it's going to work or not. We need to do this research in one to three years.

"My challenge is to develop testing protocols and capabilities to determine what we call 'service lifetime.'"

Creating a reliability program

Dow has been using JMP software for a number of years in its Six Sigma projects and is now relying on it in this latest, very critical research.

"We have a design for a Six Sigma project that we're currently utilizing for the development of our reliability program," says Gaston, "and part of that is understanding the impact of different environmental variables. We utilize JMP for design of experiments and also to then statistically analyze our data.

"What I like about JMP is that it very nicely ties together the design of experiment plan. I can put in the responses I'm going to be measuring. I can then put in the factors I want to examine and vary.

"JMP automatically will give me my design of experiment plan—it'll pop that open. Once I get my data, I can start populating that, and then I can build my models, all in the same program."

**STATISTICAL
DISCOVERY.™
FROM SAS.**

“ I like the prediction profiler because it allows me to play around with my model to see what the impact would be if I changed particular things.”

Ryan Gaston

Gaston likes the ability to choose between doing a fractional factorial design or a full factorial design, for situations in which there isn't the time, equipment and/or money to do a full factorial design of experiment.

The visualization aspects of JMP also appeal to Gaston: “I really like the ability to go in and manually adjust things, to be able to determine particular impacts. I can manually adjust a factor or a response and see how that would have changed the model.”

Gaston also appreciates that once he's developed a model, he can determine whether it's a good one by looking at the summary of fit, analysis of variance and lack of fit information.

“I like the prediction profiler because it allows me to play around with my model to see what the impact would be if I changed particular things.” Also on Gaston's list of favorites are the contour profiler and the interaction profiler, for determining general operating space and the interaction of factors.

Dow is a major player in the pursuit of renewable energy sources. As its researchers uncover better, more resilient and reliable materials, the prospects for a greener world are more fully realized. JMP is a green thumb for Dow and others in attaining these objectives.



JMP WORLD HEADQUARTERS SAS INSTITUTE INC. +1 919 677 8000 U.S. & CANADA SALES 800 727 0025 www.jmp.com

SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration. Other brand and product names are trademarks of their respective companies. Copyright © 2008, SAS Institute Inc. All rights reserved. 103450_493158US.0408



PRINTED ON RECYCLED PAPER. 100% POSTCONSUMER WASTE.