



Contact:  
Kevin Gallagher  
Gallagher Group Communications  
510-599-0416  
[kevin@gg-comm.com](mailto:kevin@gg-comm.com)

### **Energy Savings Never Go Out of Style at Neiman Marcus**

The Neiman Marcus Group, Inc. (Neiman Marcus) is one of the premier retail brands in the world. For over a century, Neiman Marcus has been recognized as the premier luxury retailer dedicated to providing its customers with distinctive merchandise and superior service. The corporate structure of Neiman Marcus is comprised of the Specialty Retail Stores division - which includes Neiman Marcus Stores and Bergdorf Goodman - and the Direct Marketing division, Neiman Marcus Direct. These renowned retailers offer upscale assortments of apparel, accessories, jewelry, beauty and decorative home products to the affluent consumer. Forty Neiman Marcus stores are currently operated across the United States, along with two Bergdorf Goodman stores in Manhattan. Neiman Marcus also operates 26 Last Call clearance centers. These store operations total more than six million gross square feet.

Overseeing the engineering, energy management, sustainability, environmental/regulatory compliance and system-wide maintenance for this fleet of properties is a significant challenge. This is not only due to the sheer number and size of the properties distributed across the U.S., but because Neiman Marcus maintains extremely high standards when it comes to optimizing energy efficiency, extending the lifespan of strategic electrical, mechanical and HVAC systems and instituting a “zero tolerance” stance on system outages that might disrupt the customer shopping experience and compromise customer loyalty.

Mark Boraski, Vice President of Property Management with Neiman Marcus and his staff are tasked with meeting these aggressive objectives. “Having worked in this business for over 30 years, including stints with Federated Department stores and Bloomingdale’s, I have witnessed firsthand the technical evolution of so-called energy management and control systems, dating back to the rudimentary days of time clock controls that simply turned systems on or off,” Boraski said. Neiman

Marcus has moved forward aggressively in deploying the latest in building automation and control systems at its facilities to capture critical performance data from key mechanical, electrical and HVAC systems in order to operate its properties as efficiently and error-free as possible.

### **Discovering Automated Continuous Commissioning**

What's been missing from these disparate data gathering systems, according to Boraski, is the ability to pull complex information into an easy-to-use format that detects, identifies and diagnoses system faults and anomalies in advance of major problems or outright failures. "For the past 15 years, we've been trying to integrate weather data, utility data, and control system data across our fleet of properties in order to automatically diagnose problems and tune systems to run optimally. Until recently, we've never had a comprehensive automated system that had the ability to automatically perform analysis and diagnostics. Building Automation Systems (BAS) display valuable information, but unless you have a process for this level of analysis, you just have raw numbers on a computer screen," Boraski said.

This 15-year search for a solution ended in August 2008 when Boraski and his team piloted and now deploy SCIwatch™ (pronounced "SKY-watch"), a software-as-a-service (SaaS)-based Automated Continuous Commissioning platform from [Scientific Conservation, Inc.](#) (SCI) that detects, monetizes and prioritizes system faults. To date, Neiman Marcus is deploying SCIwatch across 21 of its facilities and intends to apply the platform for every property over time. "For the first time, we have an automated process that continually checks our system assets across properties from a centralized dashboard to pinpoint which systems are performing outside of acceptable tolerances," said Boraski. "This enables us to intelligently assign technical resources to address system issues on a prioritized basis. It has proven to be an effective resource allocation tool."

### **SCIwatch in Action**

SCIwatch is an Automated Continuous Commissioning (ACC) platform that interfaces with any building energy management system for automatic data collection, warehousing, diagnostics and work order issuance and tracking. It also serves as a centralized system that consolidates up-to-the-minute views into energy usage and system-wide performance levels with reporting parameters tailored for executive-level and operational staff.

Because SCIwatch fully integrates with Neiman Marcus' building automation and control systems, it allows Boraski's staff to pull up actionable data from a centralized dashboard to understand how key

systems are performing at each facility.

At the core of SClwatch is a pattern recognition technology that distinguishes the solution in the energy management market. Because system degradation can be extremely hard to detect — especially if the tools being used are not sensitive enough to pick up the slightest of anomalies that impact energy efficiencies — SClwatch employs neural networks, a commercially proven form of artificial intelligence. This form of advanced mathematics applies a scientific model that increases the accuracy and predictability of detecting system faults that can cost organizations significant money from unnecessary energy consumption and productivity erosion due to system downtime. By employing neural networks, SClwatch can accept a virtually unlimited number of independent variables and produce a very accurate pattern of the way energy is consumed, managed and wasted.

“When we started applying SClwatch in our first 21 facilities, we found a number of sensor errors,” explained Boraski. “More importantly, SClwatch identified sensors we thought were reading correctly that were actually misleading.”

Even with Neiman Marcus’s rigorous system maintenance programs and state-of-the-art building automation and control systems firmly in place, SClwatch discovered hard-to-detect anomalies affecting strategic equipment such as short cycling and equipment sequencing problems. The platform also discovered abnormal pressures in some refrigeration circuits that could result in compressor failure if left unresolved.

“Without SClwatch, these problems probably would not have been caught until the next regularly scheduled maintenance cycle. This means systems would have operated in a less than ideal state for a month or more, thereby potentially jeopardizing major equipment while eating up unnecessary energy,” cautioned Boraski. “It was quite surprising how many issues SClwatch uncovered — ranging from economizer systems not working optimally to refrigeration systems with high evaporator and condenser pressures, to intermittent Chiller surging—all problems that surfaced right after these systems were just serviced.”

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*“After identifying and correcting faulty sensor readings in a number of our properties, we started to get some real valuable information from the SCWatch system. One particular find was a very high condensing pressure reading on a refrigerant circuit for one of our Rooftop DX air conditioning units. If this pressure was sustained for a long period of time it could result in a compressor failure. The obvious cause would be either a dirty condenser coil or perhaps a failed condenser fan. These issues could easily be corrected during regular preventive maintenance. However, after confirming that the coils were clean and the condenser fans were operating properly, a deeper analysis was necessary.*

*Discussion with our on-site technician revealed that this refrigeration circuit had been recently opened to repair a hole on an elbow at the condenser coil. Apparently the system had not been properly evacuated and recharged and contaminants (non-condensables) were identified in the refrigerant. Once the refrigerant was removed, the system properly pumped-down, and a new filter dryer installed, the contaminants were removed. Subsequent readings showed condensing pressures and temperatures back to normal. We truly believe that this saved a compressor from ultimate failure.”*

- *Mark Boraski*

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### **The Multiple Benefits of Automated Continuous Commissioning**

For Boraski and his team, SCWatch’s automated anomaly detection capabilities underscore the reality that there are simply never enough technical resources available to dedicate to the task of ongoing system diagnostics. “You simply must monitor systems on a round-the-clock basis, especially for an organization like ours that expects equipment to be operating perfectly once our doors are open to our customers,” Boraski said. By detecting and diagnosing system anomalies well in advance of temporary outages and/or major failures, Neiman Marcus believes that it will reap considerable savings on CAPEX and OPEX expenditures. In addition, Neiman Marcus hopes to extend the lifespan of strategic and highly expensive systems, and save significant amounts on annual energy spending by ensuring power-hungry electrical, mechanical and HVAC systems are running optimally.

To better understand the need for Automated Continuous Commissioning, Boraski offers the following analogy. “Let’s assume you build a facility and it’s designed correctly to run at optimal

efficiency. It's no different than a new car. As time passes, fuel injectors get clogged, exhaust systems degrade and oil gets dirty. It's inevitable that you move away from that ideal place that you started because of entropy. After you commission a property for optimum efficiency, it immediately starts to degrade day after day, week after week, month after month. There is drift away from the ideal. ACC allows you to always check against that base to see if there is meaningful change. And it allows you to isolate and pinpoint specific systems that have moved beyond acceptable levels so you can assign first line resources to resolve problems well ahead of outright failures."

## **Conclusion**

Boraski is particularly taken by SCIwatch's ability to not only identify anomalies, but to learn from previously captured information as a means of delivering more accurate diagnostics over time. "As a heuristic system, SCIwatch deepens its knowledge of my system environment the more I deploy it." Reflecting on 30 years in the industry, Boraski concluded: "SCIwatch is the embodiment of where building management is headed. Especially with expected equipment and energy costs going higher each year."

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