

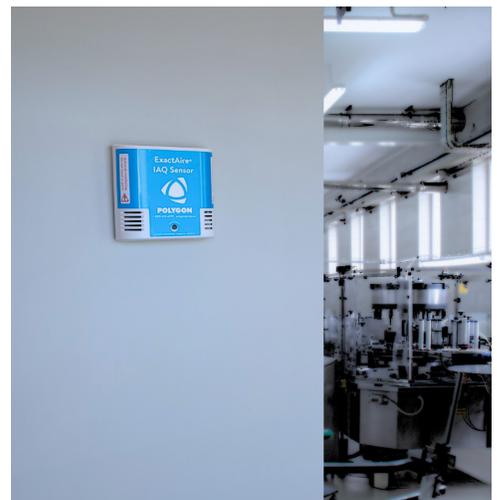


POLYGON CASE STUDY – CHOCOLATE MANUFACTURER, NEW ENGLAND

# Diagnosing and controlling humidity issues in chocolate production

The US premium chocolate industry is growing and is expected to reach \$17.65 billion in 2027. Demand is rising but so are the stakes. Higher-quality chocolate requires not only better ingredients but also tighter production lines to consistently yield premium results. So, when a New England Chocolate Manufacturer started noticing excessive moisture loads affecting production in their factory, they recruited a team to solve it quickly.

Controlling excessive humidity is critical to avoiding quality issues like chocolate blooming. Chocolate blooms, specifically sugar bloom happens when humidity starts to dissolve sugar crystals on the surface of the chocolate and leaves behind a white powdery-looking film. The side effect is relatively innocuous but doesn't meet quality or consumer expectations.



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## PROBLEM

The New England Chocolate Manufacturer was concerned and struggled to understand why their production area was so humid. Summer months were always a challenge, but the facility house system was not keeping up... so what changed?

To find out, they enlisted an Independent Engineering Firm that assessed the spaces and made a recommendation to invest in dehumidification equipment. Together they approached Model Climate, an independent seller of Munters dehumidification and climate control equipment. An investment to purchase new equipment was estimated between \$750,000 and \$1 million and many months to deliver. That is when Model Climate introduced them to Polygon who they had been working with for over 20 years at that point.

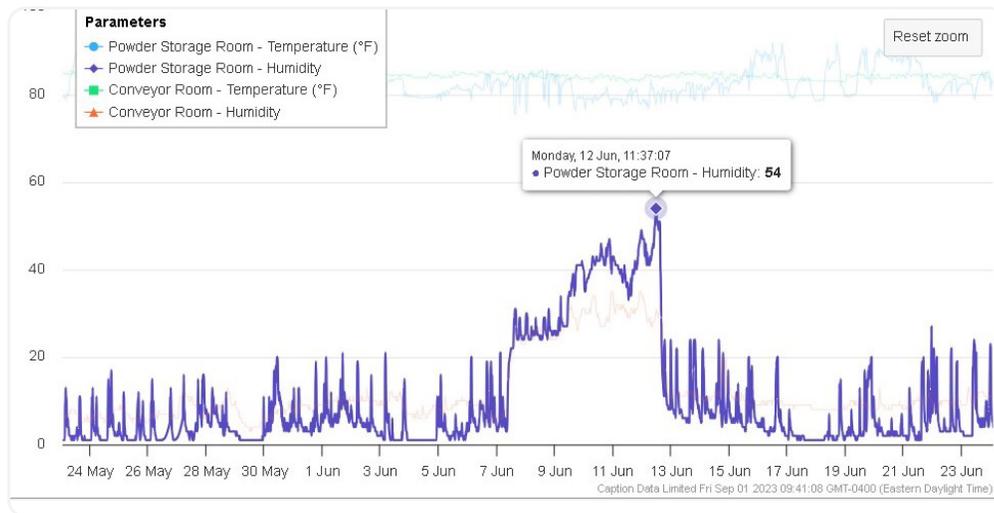
## SOLUTION

The Polygon team worked with all the players to best understand the issues and the information up to that point. They recommended monitoring the spaces before configuring an equipment solution. ExactAire remote monitoring technology was installed in key areas of the production facility to collect 24/7 readings on temperature, humidity, and other parameters. The idea was to develop a picture of what happened where and when.

“The facility mechanical systems were designed to supply conditioned air to all three production areas operating off return air conditions. Because the three rooms had different uses and therefore loads, our ExactAire system helped identify problem areas,” explained David Simkins, Director of Engineering and Technology at Polygon.

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Rich Gedies, Senior Sales Consultant for Model Climate

“We put two sensors in each space so the consulting engineers could see changes in facility performance in real time. With more data captured over a longer period, they would be able to adjust the design conditions appropriately.”

Three months of continuous ExactAire data was collected and analyzed. The Independent Engineer poured over data coming from each space to track and understand moisture loads and sources. This discovery period was important to better understand how the permanent house system was functioning and where the fugitive air might be entering the rooms.

“The data and insights coming from ExactAire was very valuable in giving our Engineer the information they needed to develop real recommendations for controlling the humidity,” said Rich Gedies, Senior Sales Consultant for Model Climate. “We were able to see how con-

ditions were changing in different spaces and when they were changing. This just wouldn’t have been possible with hand-held devices. It really accelerated the discovery process for everyone.”

The ExactAire monitoring remained installed to continue providing data and visibility on conditions, validate the proof-of-concept for the greater capex investment, and offer alerts and reports for all stakeholders. In June of 2023, the factory required a roof replacement. Fumes were being drawn into the facility posing a threat to employees. Facility managers decided to turn off Polygon equipment for about 1 week accepting that humidity levels would rise. You can see in the data below how conditions changed that week and then regain control once the equipment was brought back online. This short but dramatic result is a testament to the effectiveness of the system.

## RESULTS

### Real-time Building Diagnostics

Using a diagnostic tool like ExactAire provides a more comprehensive picture of the problem giving everyone more information and the ability to develop better solutions. It also provided real-time alerts to help the teams keep the solution and building on track.

### Affordable Proof-of-Concept

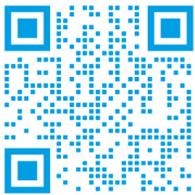
Using Polygon's temporary equipment gave the client an economical way to validate the solution and mitigate any possible issues before investing in capex.

### Immediate Quality Control

Combining information and temporary equipment improved product quality and production right away avoiding product loss and protecting revenues.



For more information on ExactAire Remote Monitoring, visit [www.polygongroup.us/exactaire](http://www.polygongroup.us/exactaire)



## SOURCES

- Premium chocolate market size to grow by USD 1765 billion from 2022 to 2027, Increasing market indulgence to drive growth - Technavio ([prnewswire.com](https://prnewswire.com))
- Understanding American premium chocolate consumer perception of craft chocolate and desirable product attributes using focus groups and projective mapping - PMC ([nih.gov](https://nih.gov))
- Here's Why Your Chocolate Turns White (P.S. Don't Throw it Out!) ([mypanier.com](https://mypanier.com))

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