



## SAINT-GOBAIN CORPORATION: COMPRESSED AIR CHALLENGE

### SOLUTION OVERVIEW



**BETTER PRACTICE WINNER 2019** Saint-Gobain North America (SGNA) established a "compressed air challenge" to tackle compressed air leakages. This challenge, accepted by 19 SGNA facilities, employed a point system to incentivize teams to find and fix compressed air leaks. The end goal was to provide a fun, low cost way for each site to address compressed air leaks by empowering them to create their own solutions, utilizing resources from the company's Sustainability Network (an internal networking site that includes tools, calculators, and general information on compressed air best practices).

Launched in 2018, *Compress It* was Saint-Gobain's first ever compressed air challenge. Because it was the first year, the company took guidance from fellow Better Plants Challenge partner Legrand's Energy Marathon and a similar challenge undertaken a month prior by CertainTeed Gypsum, a subsidiary business.

### ORGANIZATION TYPE

Building materials manufacturer

### BARRIER

A compressed air leak-tracking program was needed to better detect energy waste at facilities

### SOLUTION

A "compressed air challenge" to encourage teams to identify air leakages and develop solutions

### OUTCOME

Compressed air repairs resulted in companywide savings of 26 Gigawatt-hours and \$2.5 million in electricity costs

## **POLICIES**

With a focus on sustainability and conservation, Saint-Gobain has a public commitment to reduce company-wide energy consumption by 15% by 2025. Additionally, the company is committed to reducing total carbon emissions by 20% by 2025 with a 2010 baseline.

## **PROCESS**

Prior to the establishment of the challenge, Saint-Gobain administered an internal sustainability survey in 2017 with the intent of discovering what services would benefit the company portfolio. Evaluation of survey results yielded a theme of compressed air and their inefficiencies. Given that 91% of Saint-Gobain facilities have compressed air systems, it was particularly worrisome that the survey revealed 40% of the compressed air systems were seen as nearing the end of life and potentially needed to be replaced in the near future. Further, 48% of the sites lacked air leak tracking systems and 37% of the sites requested a compressed air audit. After taking inventory of the situation, the company saw a significant opportunity for energy savings via a multi-step challenge.

## **Challenge Structure**

With participation from 19 facilities, each site formed teams of up to 5 employees. Incentivized by a point system, each team was tasked with designing a plan to improve compressed air system operations and management. Points were updated weekly and followed the following structure:

- Team name and photo (5 points)
- Compressed air audit completed in past two years (20 points)
- Form a compressed air team and/or leak detection and repair program (30 points)
- Presence of compressed air system monitoring (i.e., sensors, meters) (10 points)
- Showcase use of at least two Sustainability Network compressed air resources
- Find leaks (2 points) and Fix leaks found (8 points)
- Develop an innovative way to engage employees to participate in the Challenge (40-100 points)

Underlying this was an emphasis on employee engagement and forming a lasting team or program for managing compressed air leaks. To further encourage fixing leaks over identifying leaks, 8 of the 10 points from the “Find leaks and fix leaks found” portion go to fixing leaks. In this way, the team that fixed the most leaks would be rewarded rather than the team that simply identified the most leaks.

## **Employee Engagement**

To foster an engaged and active competition community, the company held biweekly mini-contests with small sustainability-related prizes. For example, the company has awarded solar backpacks, reusable mugs, Amazon Echo Dots, smart plugs, smart lights, reusable Yeti tumblers, and power

banks. Prizes were awarded for superlatives such as “Best Team Name” and “Most Innovative Employee Engagement.”

Teams further developed their own challenge logo and flyer design with the marketing department, and 5 points were awarded for team name and team photo.

As a part of Saint-Gobain’s Sustainability Network, the company also sent out a monthly newsletter which flaunted the success of the program and encouraged other sites to participate. This also led to increased engagement with the Sustainability Network; more than 10 new members have joined the internal networking site since the Challenge’s inception. The resources provided on the network give each site the tools to develop their own compressed air leak program catered to their site conditions, and quantify the energy savings.

## **MEASURING SUCCESS**

To properly evaluate energy savings from compressed air system upgrades, an air leak tracking program was developed for sites which did not already have one. Features included multiple leak quantification, ultrasonic leak detection, orifice method, compressor flow method, and others. All compressed air leaks found and fixed were assumed to have persisted for a full year of compressed air system operation for each site. The energy savings were mainly calculated using the discharge compressor flow from the air leak orifice size, though some sites had their own personalized tracking sheets. This proved to be somewhat time consuming as troubleshooting was required once sites gave their feedback. Similarly, point tracking was a time consuming task (2 hours per week) as the energy savings from leaks found and fixed needed to be manually calculated due to the complicated nature of determining leak flow. Once point tracking was completed, the weekly scoreboard along with prizes from mini-contests was sent to Sustainability Champions on a weekly basis.

## **OUTCOMES**

With 48% of sites lacking compressed air leak tracking programs, this 3-month challenge served as a platform to develop a program and create lasting energy savings at each site. Of the 19 participating SGNA sites, 13 finished with over 100 points, the highest being over 1,000 points. Two of these sites were from the subsidiary CertainTeed; they developed their own intra-site competition and submitted leaks found and fixed to the Challenge.

Other overall results included:

- Three sites have scheduled compressed air audits for their facilities
- Four sites have formed a compressed air team and continuous leak tracking system
- Six sites utilized Sustainability Network resources and became more familiar with our offerings
- 24 sites attended the webinar on the Compressed Air Challenge (describing the Challenge, site best practices, all resources offered, and mini-contests)

Qualitatively, the challenge has established best practices that other sites can use in their adoption of compressed air upgrades. The “Multiple Leaks Submission Form” and other resources to manage compressed air and leaks are now available in one place for sites to access.

In total, sites saved 26 Gigawatt hours and \$2.5 million of electricity savings by fixing compressed air leaks, approximately 5% of the total energy spent of all sites participating for 2018. Five of the top performing sites in the Challenge decreased their energy intensity by 0.2%. Taking into account these savings, Saint-Gobain determined that the high return on investment for a low input challenge (\$1,200 and 40 total man hours) resulted in significant payback for the sites. More than 820 leaks of varying sizes were found with more than 45% of them being repaired. The compressed air challenge served as a fun way to encourage sites to tackle a significant energy user, bringing the company closer to its 2025 energy reduction goals.

**Final Site Scoreboard**

Ranking	Site Name	Business	Team Name	Points	Leaks Found	Percent Fixed
1st	Oxford, NC	CT Roofing	Weeki Leaks	1,413	146	82%
2nd	Jackson, MI	CT Siding	Leak Stoppers	1,076	100	96%
3rd	Cody, WY	CT Gypsum	Cody	576	152	22%
4th	Ottawa, ON	CT Insulation	Whistle Breaker	368	67	25%
5th	Avery, OH	CT Roofing	The Avery Avengers	363	28.5	100%
6th	Ennis, TX	CT Roofing	Full of Hot Air	348	24	54%
7th	Moundsville, WV	CT Gypsum	VolunTold	304	32	63%
8th	Piedmont, MO	CT Roofing	Max-Air-Mizers	268	57	30%
9th	Wilmington, CA	CT Roofing	Wilmington Compressed Air factioN (Wi-CAN)	194	83	0%
10th	Nashville, AR	CT Gypsum	Mystery Clan	189	48	21%

**TOOLS AND RESOURCES**

Saint-Gobain’s Sustainability Network provides resources which enable continuous and sustainable compressed air operations and management system. The Sustainability Network offers tools, calculators, and general information on compressed air best practices. As a network, it provides each site with tools and resources catered to their site conditions, several of which are publicly available:

- Better Plants' compressed air system [cheat sheet](#)
- Better Plants' compressed air system [info card](#)
- AIRMaster+, a free online software tool that helps users analyze energy use and savings opportunities in industrial compressed air systems, which can be found in the [MEASUR tool suite](#)
- The Compressed Air & Gas Institute's [technical resources](#)



