WHY COMPRESSED AIR?

- Compressed air is the **most costly** source of energy usage at many of our plants.
- A ½” leak can cost a site up to **$115,000** per year if left unchecked.
- Over **48%** of our sites lack air leak tracking programs.
- **37%** of sites want a compressed air audit

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**CertainTeed Roofing Facility Compressed Air Flow Distribution**

- Production, **61%**
- Leaks, **26%**
- Artificial Demand, **4%**
- Inappropriate Uses, **9%**

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2 / SGNA Compressed Air Challenge
State of SGNA compressed air:
In a 2017 survey of 94 sites, **91%** have compressed air systems.

Conditions of SGNA Compressed Air Systems

- **40%** need to be replaced
- **48%** lack air leak tracking programs
- **37%** want a compressed air audit

The Sustainability Network recommends:

- Compressed air preferred vendor
- Leak detection and repair programs
- DOE INPLTs for compressed air
- Energy/compressed air audits
**WHEN:** October 29 – December 31

**WHO:** Open to all SGNA, with teams of up to 5

**WHAT:** A three-month, voluntary competition to see which site can identify and fix the most leaks, and make improvements to their compressed air system (both in operations and management)

**Potential Annual Savings:**
- 26 GWh of energy
- $2.5M of electricity costs
### HOW DOES IT WORK?

**SITES SUBMIT TASKS IN AN ONLINE FORM FOR POINTS**

<table>
<thead>
<tr>
<th>Points</th>
<th>Task Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Team name and photo</td>
</tr>
<tr>
<td>20</td>
<td>Compressed air audit completed in past 2 years</td>
</tr>
<tr>
<td>30</td>
<td>Form a compressed air team and/or leak detection and repair program</td>
</tr>
<tr>
<td>10</td>
<td>Monitor your compressed air system (i.e. sensors, meters)</td>
</tr>
<tr>
<td>20</td>
<td>Showcase use of at least (2) Sustainability Network compressed air resources</td>
</tr>
<tr>
<td>10 per leak</td>
<td>Find leaks (2 pts) <em>and</em> Fix leaks found (8 pts)</td>
</tr>
</tbody>
</table>

**BONUS**
- 1st place – 100
- 2nd place – 60
- 3rd place – 40

Innovative employee engagement (i.e. Smack talk video, video of team, team t-shirts, presentation, etc.)
HOW DO SITES REPORT LEAKS FOUND AND FIXED?
MULTIPLE LEAKS SUBMISSION FORM V2.0

If you are submitting multiple leaks at once and are utilizing one of Methods 1 through 3, you may upload this template to the submission form. Feel free to use this form to record information on each of your compressed air leaks and fixes throughout the challenge. There are up to 10 leaks represented in the form, but more may be added.

### Method 1: 1) Orifice Method

Use if the air is leaking out of an orifice (i.e. nozzle, hole in pipe, tube, etc.)

<table>
<thead>
<tr>
<th>Leaks</th>
<th>Maintenance Tag #</th>
<th>Date Found</th>
<th>Date Fixed</th>
<th>Diameter of air leak (in)</th>
<th>Well-Rounded or Sharp Orifice?</th>
<th>Compressed air gauge pressure (psi)</th>
<th>Compressor flow (cfm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SITE PARTICIPATION AS A RESULT OF THIS CHALLENGE...

BUSINESS INVOLVEMENT
19 SITES TOTAL

- 3 sites scheduled compressed air audits
- 4 sites formed a compressed air team and leak tracking system
- 6 sites utilized SGSN compressed air resources
- 24 sites attended the Compressed Air Challenge webinar
HOW WAS THIS COMMUNICATED?

CHALLENGE GUIDELINES DOCUMENT

The SGA Compressed Air Challenge is launching its first Compressed Air Challenge, a voluntary competition to see who can identify and fix the most compressed air leaks at their site. Compressed air systems are significant energy users and they’re found in approximately 10% of SNA plants. Another 40% of compressed air leaks are hidden, and so we created the challenge for sites to start finding these leaks and provide quick wins for energy savings.

when?
The Challenge will be held from Monday, October 29 to Monday, December 31.

Who?
The Challenge is open to all Saint-Gobain employees in North America. Register in teams, with a maximum of 8 people per team. There can be multiple teams per site, but your site is responsible for managing this.

We’re list now what do we do?
Once you have formed your team, you must submit the team name and members. Then begin completing the tasks in Table A and submit them by Friday of each week.

The Sustainability Network’s MyS3G page has a suite of resources to help you find, measure, and analyze leaks in the Compressed Air Challenge section. All updates will be posted on MyS3G, including the weekly leaderboard.

How do you determine who wins?
The Ultimate Challenge winner will be the team with the highest energy savings from fixing compressed air leaks. While there are a few methods to analyze compressed air leaks, we have limited the submission form to three methods:

1. Air leak diameter and compressed air pressure: Assuming the compressor runs to spec, the energy savings will be calculated using Table A.

2. Bag method: Cover a suspected leak with a Ziploc bag and calculate the number of seconds it takes to fill the bag (calculated in M33U).

3. Compressed Air Leakage Rate: Use the Compressed Air Methodology in Table B.

If you want to use a different method, you may do so if you provide proof calculations for how you reach the energy savings in kWh. The Compressed Air Challenge section of MyS3G has resources with methods to calculate these values.

If you have any questions about the Challenge, you may email us at SGA3Sustainability@Saint-Gobain.com.
### HOW WE ENCOURAGED SITES TO PARTICIPATE

**WEEKLY POSTING OF LEADER SCOREBOARD**

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

2nd Week
Register Team Name and Photo

4th and 6th Week
Find and Fix 10 Leaks

8th Week
Innovative Employee Engagement

10th Week
Best Team Name

SMART PLUGS
SAINT-GOBAIN YETI TUMBLERS
ANKER POWER BANKS
SMART LIGHTS
SMART PLUGS
Join the Sustainability Network in Compress It, the SGNA Compressed Air Challenge, held from October 29 to December 31. All updates, scoreboards, and links will be posted here.

Submit your tasks here.

*Note:* You will need to create a Google account to submit files. You can create a temporary one with your Saint-Gobain email for the purposes of this challenge.

Access all of the resources here.

### MINI-CONTESTS AND SUPERLATIVES

#### BEST TEAM NAME (due 12/31)

Vote for the best team name [HERE](#)!

Winners will get Wifi-enable smart plugs for the whole team!

#### FIX MORE LEAKS (due 12/7)

Reach at least 10 leaks fixed to be entered into the drawing for portable power banks. For those teams who already have 10 fixed leaks, fix 20. Remember for the contest I will accept a maintenance request!
Weeki Leaks was a fierce contender, closely trailing behind Leak Stoppers for all but one week, with dramatic improvements in the last couple weeks bringing them to the top. Their site worked hard, took the Challenge seriously, and were rewarded.

**Weeki Leaks**
CT Roofing – Oxford, NC

146 leaks found
82% of leaks fixed

**1st PLACE PRIZE**
Solar-Charging Backpacks
Also a fierce contender, Leak Stoppers led the pack almost every week, finding and fixing many leaks both fast and early. How? Leak Stoppers held an internal competition for employees to find leaks with the Slogan "Help us find our leaks and we will help you fix yours." The winners were given a gift certificate to an auto repair shop.
BONUS POINTS FOR INNOVATIVE EMPLOYEE ENGAGEMENT

1ST PLACE PRIZE

Full of Hot Air created a participant video of the site finding air leaks. Almost all departments got involved! Please enjoy this suspenseful, epic film depicting air leaks at the CertainTeed Ennis plant!

Full of Hot Air
CT Roofing – Ennis, TX

19 leaks found
5% of leaks fixed

1ST PLACE PRIZE

Smart Lights
The Team Name competition was administered on a Google Form, and the night of the deadline prompted a fierce competition between VolunTold and Weeki Leaks, with the winner changing every hour! The sites got all employees to participate.

1st PLACE PRIZE
Smart Plugs
POSITIVE IMPACTS

- Promotes the development of a continuous compressed air management and operations team
- Highlights best practices at different sites and provides the opportunity for sharing
- Sites found 824 leaks of varying sizes, and repaired 47% of them
- The collective fixed leaks resulted in potential energy savings of 26 GWh of electricity, or $2.5 million (assuming leaks found persisted for a year and are fixed). This is 5% of the 2018 energy spend for all 19 sites.

**ELECTRICITY CONSUMPTION**

- 5.8 GWh
- 26.1 GWh
- electricity use reduction from leaks fixed

**ELECTRICITY COSTS**

- $0.47
- $2.49 M
- electricity cost savings
SUSTAINABILITY NORTH AMERICA

CHALLENGE GOALS SUCCEEDED

- Provide a fun, low-cost way for sites to tackle the compressed air issue
- Empower sites to create their own solutions while still utilizing the resources provided by the Sustainability Network
- Help each site to develop or enhance a continuous and sustainable compressed air operations and management system in order to keep down compressed air costs
- Spur quick energy savings that could make an impact on the next year’s environmental reporting goals
Thank You