What We Believe

*It is possible to advance science and medicine while minimizing environmental impact.*

No compressors. No compromises.
-80 °C Product Line

SU780XLE
27.5 cu. ft.
780 liter

SU105U
3.7 cu. ft.
105 liter
(shown stacked)

Shuttle™
0.9 cu. ft.
25 liter
Stirling Field-Proven Technology

Trusted by over 70 research facilities and institutions including . . .

Academic Research
- Albert Einstein College of Medicine
- Duke University
- University of California (Davis & San Francisco)
- Case Western Reserve University

Biorespositories
- Asahi Life Science Co
- National Cancer Institute
- Fred Hutchinson Cancer Center
- Masy Systems

BioPharma
- Roche Diagnostics
- GlaxoSmithKline
- Boehringer Ingelheim Pharmaceuticals
- AbbVie Bioresearch Center
- Eli Lilly & Co.
Stirling Ultracold SU780XLE EPA Final Test Method Results (independently tested)

- 7.86 kWh: 75°C – 24-hour test period
- 6.86 kWh: 75°C – steady state period

<table>
<thead>
<tr>
<th>Test Condition (°C)</th>
<th>-80</th>
<th>-70</th>
</tr>
</thead>
<tbody>
<tr>
<td>Door Test Cabinet Temperature (°C)</td>
<td>-80.2</td>
<td>-69.6</td>
</tr>
<tr>
<td>Energy Test Cabinet Temperature (°C)</td>
<td>-80.4</td>
<td>-69.6</td>
</tr>
<tr>
<td>Ambient Temperature (°C) – dry bulb (T_a, T_b)</td>
<td>(24.0, 23.7)</td>
<td>(24.2, 24.0)</td>
</tr>
<tr>
<td>Ambient Temperature (°C) – wet bulb (T_a, T_b)</td>
<td>(18.5, 17.7)</td>
<td>(18.4, 17.9)</td>
</tr>
<tr>
<td>Energy Consumption including 6 door openings (kWh/day)</td>
<td>8.72</td>
<td>6.96</td>
</tr>
<tr>
<td>Energy Consumption without door openings (kWh/day)</td>
<td>7.58</td>
<td>6.14</td>
</tr>
<tr>
<td>Weighted Average Energy Consumption</td>
<td></td>
<td></td>
</tr>
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<td></td>
</tr>
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*T_a is at a height of 85.0 inches above the ground and *T_b is at a height of 37.5 inches above the ground.
$3,000 Rebate on Stirling Freezer

Replace Your Ultra-Low Temperature Freezer

Upgrade your -80°C Freezer and get a $3000 rebate.

Facilities Services is pleased to support choosing an efficient upgrade for an aging freezer by offering a rebate for the purchase of a new Stirling Ultracold SU7900E ULT Freezer.

Benefits of the Stirling freezer:
- Lowest energy use
- High sample integrity (w/ 1°C @ 50°C)
- Low waste heat
- Seven-year warranty on Stirling engine
- Lowest cost of ownership

How to participate:
- Complete and submit the ULT Freezer Upgrade Preapproval Form. Get preapproval from Facilities Services to confirm the purchase meets program guidelines at: http://www.case.edu/planning/energymanagement.html.
- Work with your Business Manager or Buyer to create a purchase order and guarantee pricing provided by Global Cooling, manufacturer of the Stirling SU7900E.
- Complete and submit ULT Freezer Rebate Request Form. After receipt and installation of freezer is confirmed by Facilities Services, rebate will be credited.

For more info about the rebate program, contact:
Erika Weickko, Energy Manager, CWRU, 216-368-1935, emw3@case.edu

For more info about the Stirling Ultracold SU7900E, contact:
Kevin Dunleavy, Account Manager, 740-517-1544, kdunleavy@stirlingultracold.com

CWRU Scientific Instrument Repair Center:
William M. Frank, Scientific Instrument Repair Center Manager, School of Medicine Rm. R-811, 216-368-3225, wmf3@case.edu

*Documented and published results performed according to ENERGY STAR® Test Method. This Whitney Program is available on a limited basis. Obtain preapproval.
Advantages Across the Organization

Energy Manager
Facility Manager
Sustainability Director
Researcher
Architect
Service
Strategic Purchasing / Finance
Lab Manager
Longest Life
Highest Reliability
Temperature Flexibility
Best Performance
## A Reliable Answer to Compressor Failure

<table>
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<tr>
<th>Why Compressors Fail</th>
<th>Stirling Solution</th>
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<tr>
<td>Moving parts wear out</td>
<td>No wear out – gas bearings</td>
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<td>Up to 24 moving parts to fail</td>
<td>Only 2 moving parts</td>
</tr>
<tr>
<td>Oil lubrication management</td>
<td>No oil</td>
</tr>
<tr>
<td>Compressor valves</td>
<td>No valves</td>
</tr>
<tr>
<td>Stop-start operation adaptive control</td>
<td>Continuous operation with 100%</td>
</tr>
<tr>
<td>On-off operation – surge currents</td>
<td>No surge currents</td>
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**Why Compressors Fail**

- Moving parts wear out
- Up to 24 moving parts to fail
- Oil lubrication management
- Compressor valves
- Stop-start operation adaptive control
- On-off operation – surge currents

**Stirling Solution**

- No wear out – gas bearings
- Only 2 moving parts
- No oil
- No valves
- Continuous operation with 100%
- No surge currents
Best Temperature Uniformity & Stability

EPA ENERGY STAR Test Procedure & Report

Temperature (°C)

Time (HOURS)
Best Pull Down & Door Recovery

Time (HOURS)

Best Pull Down

6 door openings @ 1 hour intervals

Best Door Recovery

Time (HOURS)
Industry-Leading Warranty

- 7-Year Warranty on the Stirling engine and thermosiphon
- Factory-authorized network of service centers
Questions are guaranteed in life; Answers aren't.