



## ROOS INSTRUMENTS, INC.

### *Corporate Social Responsibility (CSR)*

### *2013 Annual Report*

ROOS Instruments has supplied Automated Test Equipment for the world's most innovative semiconductor technology. Now ROOS continues to lead the ATE industry with a Corporate Social Responsibility (CSR) management system focused on reaching aggressive goals that reduce our impact on the environment.

This report is available online - [roos.com/green](http://roos.com/green).

#### **2013 Energy Facts**

Natural Gas: 2416 Therms

\*Electricity: 199,806 Kilowatt Hours

GHG (Scope 1&2): 16,812 kg CO<sub>2</sub> -e

\*100% of electricity offset by Renewable Energy Credits  
85% CA Solar, 15% Western Wind



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In 2013, as in previous years, Roos Instruments continued improvements in our energy reduction and material reuse plans and evaluated the impact of upgrading our lighting systems to exceed recently updated standards. Other projects, including refreshed weatherstripping and battery recycling program, reduced our environmental footprint even farther.

Purchasing 100% green energy since 2005 has helped us reach a higher standard of environmental responsibility and encouraged us to take this concept one step further. We are proud to offer our flagship product, Cassini, as one of the most energy efficient automated test platforms available.

“We see this initiative as a wise investment in our future. Meeting energy needs with clean power and reducing the energy footprint of any investment, be it our company or the products we make, is very rewarding.” -- Cathy Rossi-Roos, Roos Instruments COO.

# Accomplishments

**8 Years of 100% Renewable Electricity**

(85% CA Solar, 15% Western Wind)

Over 1.48 million kWh purchased since 2005

| Year | 2005    | 2006    | 2007    | 2008    | 2009    | 2010    | 2011    | 2012    | <b>2013</b>    |
|------|---------|---------|---------|---------|---------|---------|---------|---------|----------------|
| kWh  | 200,114 | 202,634 | 210,240 | 230,975 | 218,975 | 208,594 | 209,113 | 201,336 | <b>199,806</b> |
| Δ/yr | -1.95%  | 1.24%   | 3.62%   | 8.98%   | -5.51%  | -4.94%  | 0.25%   | -3.86%  | <b>-0.01%</b>  |

**Awarded Environmental Innovator 2010**

*Awarded 2011*

Silicon Valley Power issues the Environmental Innovation Award to organizations for “all around efforts to support energy efficiency and renewable energy.”

**"Green Team" Awards** for RI Employees after energy audit and training. *January 2013*

Employee's nominated for introducing Battery Recycling program, Junk Mail “opt-out” program, and weatherstripping upgrades.

**At Desk Recycling** - quarterly recycling, reduce waste, reuse components *Since 2009*

Each desk has a dedicated recycling container, facilities empties weekly and reports "good to great" compliance and notifies individuals of incorrectly discarding recyclable material in a waste bin. Our vendor, Waste Management, switched from taking only paper and cardboard (separated) to accepting all forms of plastic, glass, aluminum, and paper in one container, increasing individual compliance.

**Reduce Travel** - Telecommuting and Virtual/Web Conferencing *Since 2006*

**Green Projects** - Ideas to improve energy conservation collected from staff *Since 2012*

## Goals for 2013

### **2% Reduction of Electricity per Yr.<sup>1</sup>**

205,257 kWh Target

199,806 kWh Actual (Target Achieved)

### **Maintain Natural Gas at 2008 Levels<sup>2</sup>**

2179 Therms Target

2416 Therms Actual (10% Over)

Encourage corporate environmental responsibility with focused programs to increase awareness and building efficiency and increase individual employee participation with “Green Team” awards and incentives. Reduce all electricity usage by 2% year after year of “peak demand.”

### **Planned Goals for 2013 and Beyond**

- Maintain Energy Consumption at present levels, including anticipated growth
- Cascading requirements - Vendor incentives (monetary and preference) to voluntarily participate in creating a CSR of their own.
- Strive for 100% recycling with facility reviews where all recyclable material is recovered from waste bins prior to dumping.
- Increase energy efficiency of ROOS systems with software and hardware engineering related to supporting sleep and low power modes.
- Replace existing fluorescent lighting fixtures based on Silicon Valley Power's sponsored energy audit to update to modern lighting standards for brightness, install motion sensors, and replace some fixtures with LEDs, to save hazardous waste disposal fees, and reduce energy use over the fixtures' lifetime.

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<sup>1</sup>88% of 2008 levels (Peak demand) or 205,257 kWhs/yr (2008 Annual Usage = 233,247 kWh)

<sup>2</sup>100% of 2008 levels or 2179 Therms/yr

## Green Power Partners

### Silicon Valley Power



100% renewable energy from  
Silicon Valley  
Power/3Degrees°. Verifiable  
RECs available upon  
request.<sup>1</sup>

### EPA



ROOS Instruments participates with the EPA Green Power  
partnership.

RI has purchased 100% renewable energy for every year  
since 2005.<sup>2</sup>

The following suppliers and customers have implemented a similar Corporate Responsibility and Environmental Management System. Thank you for helping ROOS Instruments promote good environmental stewardship in the semiconductor industry.



<sup>1</sup> Send an email to "[admin@roos.com](mailto:admin@roos.com)" to request RECs from Silicon Valley Power

<sup>2</sup> EPA: <http://www.epa.gov/greenpower/partners/partners/roosinstrumentsinc.htm>

# Green Projects

## RI Santa Clara, CA

Building Area: ~19,600 feet<sup>2</sup> , Constructed 1978

5000 feet<sup>2</sup> redeveloped 2007 with modern HVAC, high efficiency motion sensing lights

The projects listed below contributed to achieving the 2013 targets.

Total Expected Annual Impact for All Projects in 2013: **3,000 kWh**  
3.8% of 2013 Target kWh

*Name of Project* \_\_\_\_\_ *Potential Impact*<sup>1</sup>

**Power conservation:** **1,000 kWh**

Turn off lights when not in use. Use motion sensors for lights frequently left on.

**Sleep profiles on workstations:** **1,000 kWh**

Less than 5% of the workstations did not have an acceptable sleep profile enabled.

**Workstation Upgrades:** **1,000 kWh**

Recommissioned 8 PCs with new/high efficiency models.

**HVAC maintenance:** **100 Therms**

Assure optimum performance. (managed by Environmental Systems)

### Other CSR Goals:

- Reclaim Used Equipment: Any ROOS equipment can be returned to Santa Clara factory for recycling. Incentives like free shipping may be available. Publicized online [roos.com/contact](http://roos.com/contact), and on printed material like docs & service/training manuals.
- Increase recycling compliance with “unified” recycling bins located throughout the building that is used for plastic, aluminum and paper instead of separate bins.
- Supply “Green certified” office cleaner and post consumer recycled paper products in restrooms and kitchens and environmentally friendly cleaning chemicals.

<sup>1</sup> Potential Impacts were computed with the following calculators:  
EPA's [www.epa.gov/cleanenergy/energy-resources/calculator.html](http://www.epa.gov/cleanenergy/energy-resources/calculator.html)  
CO2 Footprint Calculator: [www.carbonify.com/carbon-calculator.htm](http://www.carbonify.com/carbon-calculator.htm)

## Future Green Projects

| <i>Name of Project</i>  | <i>Potential Impact</i>                            |
|---|--|
| <b>"Leave Off" Stickers:</b><br>Light switch plates to clearly identify where lighting can be reduced.  | <b>1,000 kWh</b>                                   |
| <b>Virtual Trade Shows vs Real Trade Shows:</b><br><b>Cloud Infrastructure:</b><br>Hosted computing vs Onsite Server power consumption  | <b>Saving 0.23 Tons of CO2</b><br><b>5,000 kWh</b> |
| <b>Clean Living</b><br>Replacing all non-biodegradable products used in the break rooms like foam cups and plates to more biodegradable ones.   | <b>Waste Reclaim</b>                               |
| <b>Sweater &amp; Shorts Days:</b><br>Wear warm clothing and leave temp down to 68 two days a week in Winter<br>Wear cool clothing and leave temp up to 76 two days a week in Summer                     | <b>500 Therms</b>                                  |
| <b>Lighting Reduction:</b><br>Reduce lighting by removing bulbs from 4x fixtures to 2x. Perform recommendations from Energy Audit including retrofitting some light fixtures and adding motion sensors. | <b>1,000 kWh</b>                                   |
| <b>Land Care:</b><br>Mulching and using non-toxic chemicals for lawn maintenance.   | <b>Hazardous Material Reduction</b>                |
| <b>Purchase RECs to offset 100% GHG Emissions:</b>  | <b>100% GHG Offsets</b>                            |

## Employee Activities

|   |                                |
|---|--------------------------------|
| <b>Recycle Program:</b> 100% of recyclable material is collected in dedicated bins.   |                                |
| <b>Green Waste:</b> recycle all electronics that are not in use. ( <a href="#">GreenMouse</a> )   |                                |
| Annual Employee Training and Audits (Carpool, how to reduce paper, proper tire inflation, etc...)   |                                |
| <b>Enabling mobile workforce:</b>   | <b>2,000 kWh</b>               |
| Provide smart phones, laptops and other materials for mobile and remote offices.  |                                |
| <b>Web conference</b>   | <b>Saving 2.91 Tons of CO2</b> |
| Instead of face to face meetings, use remote presence (video chat) for sales/support  |                                |
| <b>Cascading CSR Notice</b>   | <b>Reduce Scope 3 GHG</b>      |
| Top 10 vendor CSR Questionnaire - Cascading requirement letter and questionnaire  |                                |
| <b>Earth Hour</b>   |                                |
| Turn off lights for an hour on March 26th at 8:30pm and encourage people to join. Send email to City of Santa Clara, Employees, Suppliers, Customers to encourage participation.  |                                |
| <b>Vendor Letter and qualification:</b>   |                                |
| Promote vendors who have their own Green programs on our roos.com/green page. Prefer "green" vendors by clearly marking them in our vendor contact databases to enable increased purchasing of equipment and services from preferred sources. |                                |

# Compliance Enforcement

All local and national environmental laws, regulations and contractual requirements are followed by ensuring appropriate signs and labeling are posted. Employees are notified of changes to requirements via email and are required to attend annual safety training programs appropriate to their tasks. All vendors are certified and approved legal operations, only verified if suspected of violations.

Projects are reviewed by assigned personnel and milestones used to show progress.  
OSHA - Computer Workstations & Material Safety Data Sheets (MSDS)

Employees are asked to complete the [Green Audit & Survey](#)  
All locations (RI Headquarters in Santa Clara and remote offices) are included in this program.

## **Safety Program**

All Employees should complete formal training including: workstation ergonomics, lifting, emergency plans, and distracted driving. Employees working on the production of RI systems should complete electronics safety, soldering iron, lighting, ventilation, lead exposure training courses. Employees who regularly ship equipment must learn about back safety, maintaining a safe working environment (i.e. no cluttered floors) and proper lighting.

**"Green Team" awards** given to RI employees annually to encourage innovation and participation.

Innovator - finds new and effective ways to meet or define goals

Grind - the person recognized for doing the most to lower consumption, increase reuse or do the most recycling @ RI Santa Clara

Guru - the person who proves the most aware of RI's current programs (answers most questions right, random drawing if tie)

Example "Green Team" Guru survey questions:

How many kWhs did ROOS consume last year?

How many Watts does a typical Cassini (8 TIMs) use in an hour?

What is the Thermostat set at right now?

How many Therms (Natural Gas) has RI used last year?

How many average total miles do RI employees collectively commute per day?  
(excluding visits from employees not located near Santa Clara)



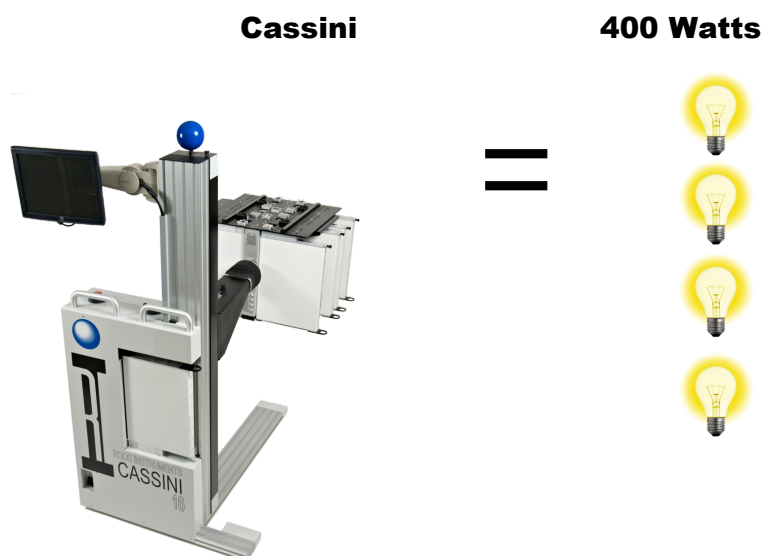
## Employee Training Resources

The ROOS training presentation includes an introduction “What is our CSR?”, an Employee Survey/Audit, mandatory minimum training of 2hrs/year. Prize incentive to come up with a project that saves the most kWh or CO<sub>2</sub>. Employees are instructed to “turn off” all lights (except where indicated) when you leave the room, including: bathrooms, office, and when locking up for the day. Carpooling is highly encouraged. The thermostat is not 72 °F all year round; 74 °F in warm months and 68 °F in cold months. Employees sent newsletter including links to “[More Energy Saving Tips](#)” online. Posters from “[Recyclestuff.org](#)” remind employees where to recycle various items. Occasionally “Bike to Work” incentives like free lunch is used to get hooked on cycling as normal transportation. [Local Government Programs](#) are used to educate and engage. Email newsletter includes topics like “[How to Reduce paper at work](#)” and “Dangers of distracted driving” OSHA's new distracted driving brochure explains to employers and supervisors the importance of preventing texting by their workers while driving. Texting while driving dramatically increases the risk of motor vehicle crashes, the leading cause of worker fatalities.

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## Disclosing Results

The Green Annual Report (this document) published online at [roos.com/green](http://roos.com/green) includes ROOS Instruments' annual usage, goals, projects, analysis and refinements needed to the Corporate Social Responsibility program.



# Greenhouse Gas (GHG) Emissions

Greenhouse Gas Emissions and Carbon Dioxide Equivalent (CO<sub>2</sub> -e) are calculated using the GHG Corporate Protocol standard<sup>1</sup>. Zero percent (0%) of Scope 1 and hundred percent (100%) of Scope 2 GHG Emissions are offset by Renewable Energy Credits.

## **Total Scope 1 & 2**

**16,812 kg CO<sub>2</sub> -e**

Equivalent to 12,215 kg CO<sub>2</sub>, 2.09 kg CH<sub>4</sub>, 2.09 kg N<sub>2</sub>O

Scope1: Generated by ROOS Instruments

Includes RI vehicles, appliances (refrigerators), HVAC systems, facilities and landscaping.

|   |                                    |
|---|------------------------------------|
| 2000 Tundra 4WD, 6 cyl, 3.4 L (Petroleum - Transportation) <sup>2</sup> | <b>4,445 kg CO<sub>2</sub> -e</b>  |
| 2 Office Refrigerators (Leaking Refrigerant) <sup>3</sup>               | <b>57 kg CO<sub>2</sub> -e</b>     |
| 12 Air Conditioning Units (Leaking Refrigerant) <sup>4</sup>            | <b>100 kg CO<sub>2</sub> -e</b>    |
| Natural Gas (Heating with Natural Gas): 2416 Therms <sup>5</sup>        | <b>11,351 kg CO<sub>2</sub> -e</b> |
| Facilities (Gas Lawn Care, Blower, etc.) <sup>6</sup>                   | <b>142 kg CO<sub>2</sub> -e</b>    |

## **Scope 1 Total:**

**15,611 kg CO<sub>2</sub> -e**

Scope2: Generated by electricity producers for ROOS Instruments (Silicon Valley Power)

100% renewable sources. Natural Gas usage is included in Scope 1.

Electricity: 199,806 kWh

**59,925 kg CO<sub>2</sub> -e**

**100% Offset by Renewable Energy Credits**

## **Scope 2 Total:**

**0 kg CO<sub>2</sub> -e**

<sup>1</sup> Scope1 GHG emissions calculation. <http://www.ghgprotocol.org/calculation-tools/faq>

<sup>2</sup> Annual mileage is 7,500 miles/year @ 15 mpg = 0.0667 gallons per mile = 500 gallons of gasoline per year

<sup>3</sup> KitchenAid Model: KSF5200EWHO, 5.125 oz of R134b, 0.145291306 kg

Kenmore Model: 106.9618412, 1992, 6.25 oz R12 0.17718452 kg = 0.322 kg total

Global Warming Potential Table HFC 134a, 1300 R404a, 3260 R407b, 2285 R407c, 1526 R410A, 1725 source:

[http://www.epa.vic.gov.au/climate-change/carbon-management/Worksheet\\_1-Refrigerants.pdf](http://www.epa.vic.gov.au/climate-change/carbon-management/Worksheet_1-Refrigerants.pdf)

<sup>4</sup> GHG emissions from refrigerants (kg CO<sub>2</sub>-e) = Recharge capacity (kg) X Annual leakage rate x Global Warming Potential - 37.72 kg CO<sub>2</sub> -e = 0.322 kg x 0.09 x 1300; Air conditioners/chillers Annual leakage rate = 0.09 (9%) - [www.fueleconomy.gov](http://www.fueleconomy.gov)

<sup>5</sup> 0.005 metric tons CO<sub>2</sub>/therm - <http://www.epa.gov/cleanenergy/energy-resources/refs.html>

<sup>6</sup> According to the EPA, and one gas-powered [lawn mower emits](#) as many pollutants as 8 new vehicles driving 55mph for the same period of time. 30 min per week, for 12 months, equals 16 hours, approx 16 gallons of gas.

<http://www.epa.gov/cleanenergy/energy-resources/calculator.html>

## Energy Usage Details

### Electricity generated by Silicon Valley Power

Conservation efforts are monitored with vendor supplied meters and (where appropriate) audits at the plug with a "Kill-a-Watt" monitoring device or built-in metering device.

#### By Year

| 2005 <sup>1</sup> | 2006    | 2007    | 2008    | 2009    | 2010    | 2011    | 2012    | <b>2013</b>    |
|-------------------|---------|---------|---------|---------|---------|---------|---------|----------------|
| 200,114           | 202,634 | 210,240 | 230,975 | 218,975 | 208,594 | 209,113 | 201,336 | <b>199,806</b> |
| -1.95%            | 1.24%   | 3.62%   | 8.98%   | -5.51%  | -4.95%  | 0.25%   | -3.72%  | <b>-0.01%</b>  |

#### 2013 By Month

| Jan    | Feb    | Mar    | April  | May               | June   | July   | Aug    | Sept   | Oct    | Nov    | Dec   |
|--------|--------|--------|--------|-------------------|--------|--------|--------|--------|--------|--------|-------|
| 13,800 | 13,815 | 13,867 | 15,271 | 11,303            | 17,546 | 20,295 | 21,217 | 19,436 | 22,442 | 17,109 | 1,469 |
| -5%    | -5%    | 4%     | 4%     | 342% <sup>2</sup> | -4%    | 2%     | -10%   | -10%   | 2%     | -17%   | -14%  |

Basis for monthly over/under percent is 2012 (previous year)

### Natural Gas provided by PG&E

Conservation efforts are monitored with vendor supplied meters.

#### By Year

| 2008  | 2009  | 2010  | 2011  | 2012  | <b>2013</b>  |
|-------|-------|-------|-------|-------|--------------|
| 2,179 | 1,881 | 1,982 | 2,317 | 2,190 | <b>2,416</b> |
| N/A   | -16%  | 5%    | 14%   | -1%   | <b>37%</b>   |

#### 2013 By Month

| Jan  | Feb  | Mar  | April | May  | June  | July | Aug  | Sept | Oct  | Nov  | Dec |
|------|------|------|-------|------|-------|------|------|------|------|------|-----|
| 551  | 218  | 114  | 59    | 2    | 0     | 1    | 2    | 26   | 144  | 558  | 741 |
| -28% | -54% | -28% | -41%  | -95% | -100% | -75% | 100% | 767% | 454% | 452% | 51% |

Basis for monthly over/under percent is 2008

<sup>1</sup> Started purchasing Renewable Energy Credits in 2005

<sup>2</sup> Previous year (2012) under-reported May due to skipped meter reading.