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Jeff Brain
CEO / President
Ciralight Global, Inc.
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Jeff,

Life Cycle Testing of the Ciralight Smart Skylight mechanical and circuitry systems including the GPS Controller were conducted from April 13th through May 15th at Suntron Corporation in Sugar Land, Texas.

In the Life Cycle Testing the product performed very well, meeting or surpassing 'longevity before failure' goals of the accelerated 30 year life cycle test for both mechanical and circuitry functions.

This method of highly accelerated life cycle testing is customarily utilized to determine the expected useful life of a product and uncover latent defects in product design, component selection and/or manufacturing that would not otherwise be found through conventional qualification methods. Long term issues that would normally show up under normal operating conditions in months or years can be revealed in days. Moreover, opportunities for improvement of product robustness become apparent as progressive stress levels (at or above intended operation) are achieved.

As prescribed, the life cycle test consisted of 10 units running 24 hours a day in an environmental chamber completing a 'rotation' and returning 'home' to complete a daily cycle approximately every 3 minutes. 3,650 cycles simulated 10 years of product life. 7,300 cycles simulated 20 years of product life. 10,950 cycles simulated 30 years of product life. Temperature was cycled from minus 20 degrees Fahrenheit to 200 degrees Fahrenheit at the following simulated rate for each year – 3 months at the cold extreme then 2 months at the hot extreme and 7 months at room ambient temperature. At completion of each 10 year interval the units were removed from the environmental chamber and comprehensive functional testing and physical inspections were conducted on each of the tested GPS controllers and the individual components, i.e. solar panel, gear case, super capacitor and the circuit board components to evaluate their functionality. This functional testing occurred at the completion of 10 years, 20 years and 30 years. At the conclusion of the functional testing and inspection, the units were placed back into the environmental chamber and the life cycle testing was continued.

Test Results: All ten units passed the electrical functional testing and physical inspection for the full 30 years. One unit experienced a malfunction involving the final reduction pinion gear during year 22. Nine of the units successfully completed the full 30 year life cycle test.

As a result of the life cycle test an area for improvement was identified:

- At the time of the test, the gears in the GPS Controller were made of plastic and brass. In the one unit that experienced Mechanical failure during year 22, the brass final reduction pinion gear seized to the stainless steel shaft. One unit also exhibited this symptom during year 32.

As a result of the test the following change in design has been implemented by Ciralight:

- All gears within the Ciralight GPS unit will be made of stainless steel and the use of plastic and brass gears will be discontinued. This will make the gears more robust.

This action is seen as an effective enhancement to further product integrity and longevity.

Conclusion: The Ciralight Smart Skylight successfully completed the prescribed 30 year life cycle test and from this testing it is reasonable to expect that the product will have a 30 year expected life.

Detailed testing reports and data have been made available for your review..

Testing Performed by:

Bill Skuchko
Test Engineer, Suntron Corporation
281-243-5673

Testing Approved By:

Keith Garrison, CQE
Director of Engineering, Suntron Corporation
281-243-5194

Sincerely,

A handwritten signature in cursive script, appearing to read "Keith Garrison".

Keith Garrison, CQE
Director of Engineering, Suntron Corporation
281-243-5194

Ciralight GPS ESS Testing – 4/13/10 to 5/15/10

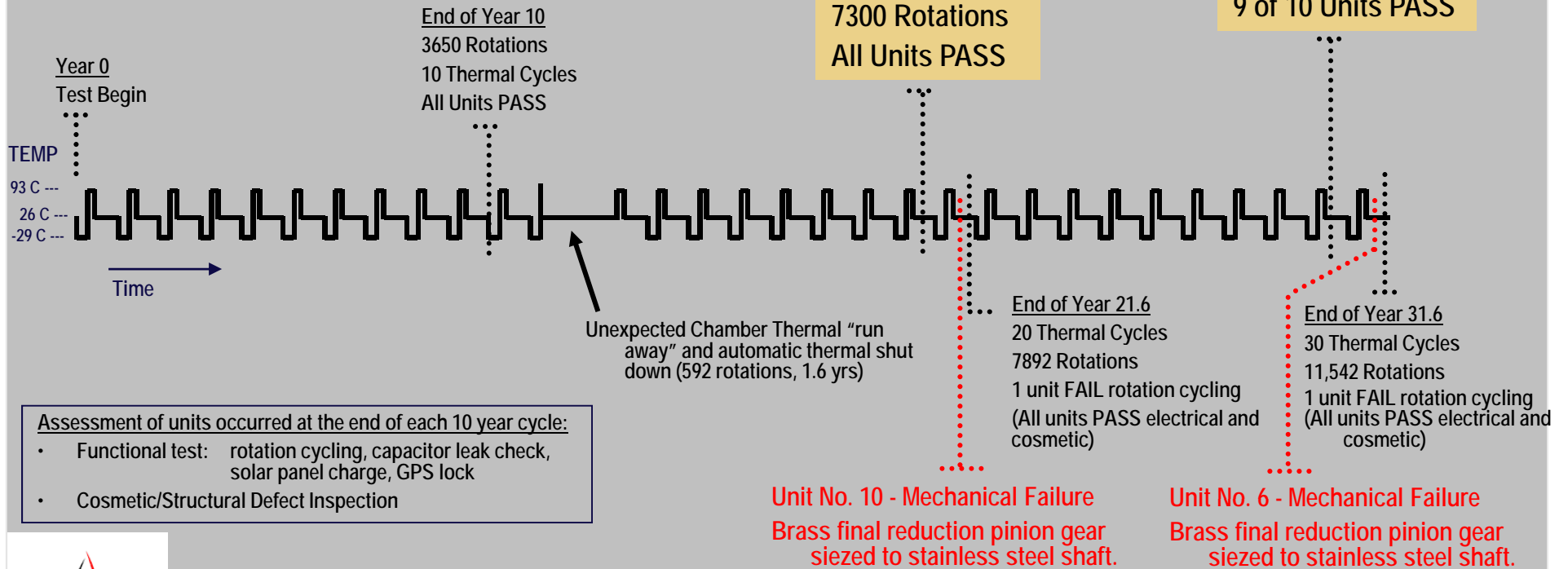
Profile Details:

1 day (1 rotation) → 3.80 minutes

Profile - Simulation of 1 year				
Simulated Months	Temp	Deg. C	Hrs	Simulated Days (No. of rotations)
3	cold	-28.88	5.78	91
2	hot	93.33	3.85	61
7	ambient	25.55	13.48	213
Total:			23.12	365

Test Timeline & Results

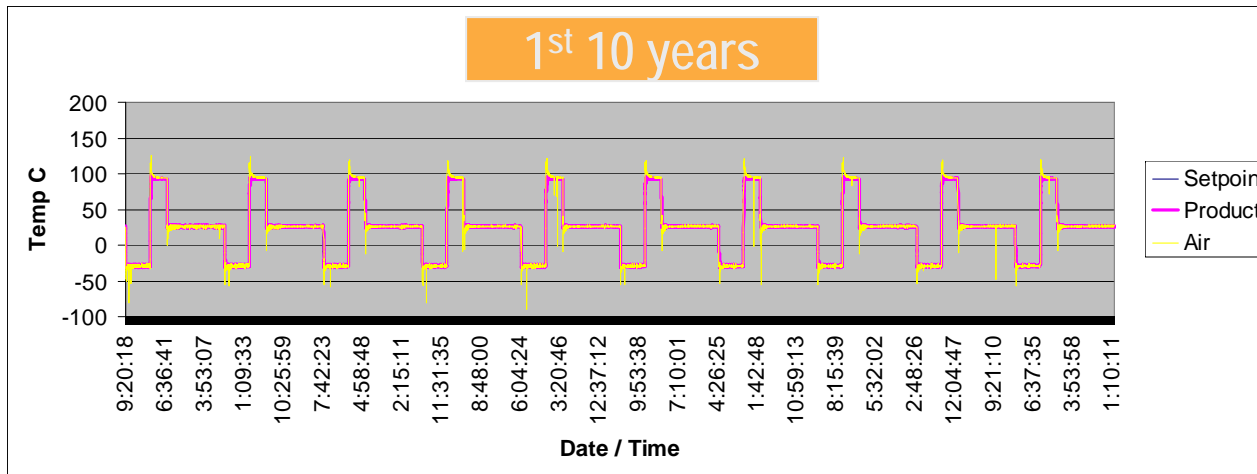
Qty of Units under test → 10



Ciralight GPS ESS – Detail of Thermal Cycles

Chamber Thermal Profile for 10yr Test

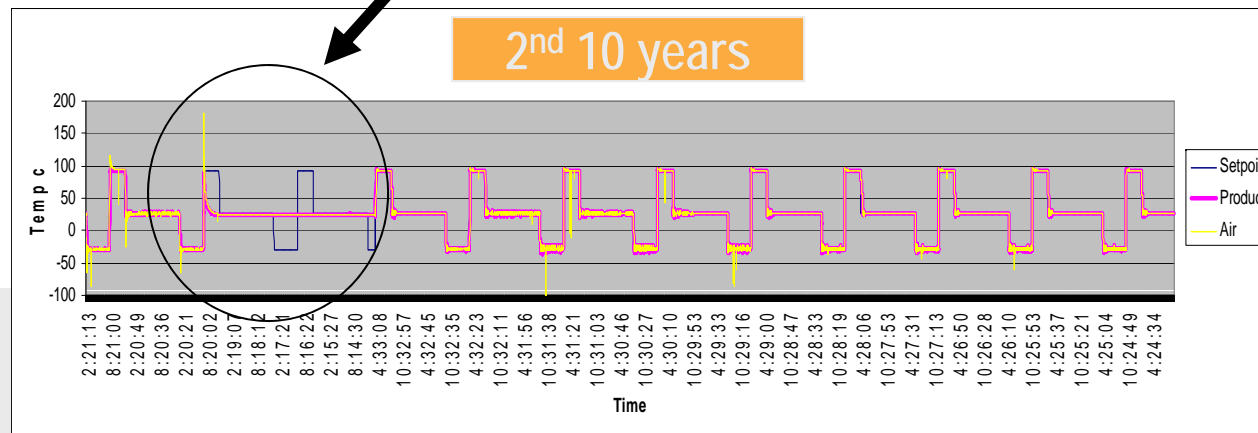
- 10 cycles over 10 days
- Low temp = -29 C
- High temp = 93 C



Chamber "run away" event occurred

Point of Malfunction	4/24/2010	7:29:36 PM
End of Danger	4/24/2010	7:36:40 PM
Duration	7:04 min	
Max Air Temp	180 C	
Max Product Temp	95.7 C	top of lid of unit
2nd re-started at	4/26/2010	4:20:31 PM

- A chamber malfunction occurred during the 2nd 10 yr test (see graph)



Ciralight GPS ESS – Detail of Thermal Cycles

Chamber Thermal Profile for 10yr Test

- 10 cycles over 10 days
- Low temp = -29 C
- High temp = 93 C

