



Commercial Chiller  
Evaluation – South Florida

# SOLAR THERMAL AIR CONDITIONING

Solar thermal assisted compression technologies installed at the new state of the art 34,190 Sqft Fort Myers Beach Public Library in Fort Myers, Florida.

The Fort Myers Beach Library facility consists of a 60 Ton Trane CGAM Air Cooled Scroll Chillers with 4 compressors, responsible for maintaining a temperature of a comfortable indoor temperature of 74°F. The facility has in addition an identical 60 ton system, which can to all intents and purpose be utilized as a redundant back up. The ThermX solar system was installed on only one of the above chillers, which consisted of six solar thermal systems connected in parallel, partnered with the lead compressors under master and slave control.

Dr. Hommerding, the facility manager, has a very proactive energy efficiency strategy, with the goal of taking the whole

facility off-grid, meanwhile creating a premium “show-like” facility to demonstrate cutting edge technologies in an aesthetically attractive way. The library is already utilizing many cutting edge energy savings technologies such as solar window film, power management systems & photovoltaic panels, in addition to the efficient insulated building itself. The primary aim of this installation was to reduce the buildings overall energy draw, ultimately reducing future investment in additional technologies such as solar trees and additional photovoltaic systems in order to achieve the ultimate goal of taking the building totally off-grid.

## Evaluation data - Prior

The graph below illustrates a consecutive 4 day period of the weather conditions monitored prior to the Installation period, which includes – average temperatures, sun penetration and cloud cover.

<b>20</b> Fog  Actual: <b>87°</b>   <b>69°</b>  <b>0.00</b> in Average: <b>76°</b>   <b>56°</b>  <b>0.06</b> in	<b>21</b> Partly Cloudy  Actual: <b>72°</b>   <b>61°</b>  <b>0.00</b> in Average: <b>76°</b>   <b>55°</b>  <b>0.06</b> in	<b>22</b> Partly Cloudy  Actual: <b>81°</b>   <b>62°</b>  <b>0.00</b> in Average: <b>76°</b>   <b>55°</b>  <b>0.06</b> in	<b>23</b> Partly Cloudy  Actual: <b>85°</b>   <b>61°</b>  <b>0.00</b> in Average: <b>76°</b>   <b>55°</b>  <b>0.07</b> in
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The figures below show the average daily kWh usage of the system during the Pre-testing period.

Date	kWh	Date	kWh	Date	kWh	Date	kWh	Cooldown
20-Dec	181	21-Dec	159	22-Dec	127	23-Dec	123	76 kWh

Average daily high temperature monitored prior to evaluation period **81.25°F**

Average daily temperature monitored prior to evaluation period **72°F**

Average daily energy consumption monitored prior to evaluation period **143kWh**

Total energy consumption monitored prior to evaluation period **572kWh**

## Evaluation data - Post

The graph below illustrates a consecutive 4 days of the weather conditions monitored during the evaluation period (post install), which includes – average temperatures, sun penetration and cloud cover.

<b>11</b> Partly Cloudy Actual: <b>78°</b>   <b>57°</b> <b>0.00</b> in Average: <b>72°</b>   <b>53°</b> <b>0.07</b> in	<b>12</b> Scattered Clouds Actual: <b>82°</b>   <b>60°</b> <b>0.00</b> in Average: <b>73°</b>   <b>52°</b> <b>0.06</b> in	<b>13</b> Rain Actual: <b>83°</b>   <b>60°</b> <b>0.01</b> in Average: <b>74°</b>   <b>53°</b> <b>0.06</b> in	<b>14</b> Partly Cloudy Actual: <b>80°</b>   <b>61°</b> <b>0.00</b> in Average: <b>74°</b>   <b>53°</b> <b>0.07</b> in
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The figures below show the average daily kWh usage of the system during the evaluation (post install) period.

Date	kWh	Date	kWh	Date	kWh	Date	kWh	Cooldown
11-Jan	58	12-Jan	101	13-Jan	111	14-Jan	73	36 kWh

Average daily high temperature during the evaluation period	<b>80.75°F (+.50°F)</b>
Average daily temperature during the evaluation period	<b>70.5°F (+1.5°F)</b>
Average daily energy consumption during the evaluation period	<b>94.9kWh (-62.38kWh)</b>
Total energy consumption during to evaluation period	<b>379.6 kWh (-192.4kWh)</b>

### Total energy consumption reduction – 33.6%

Covering a consecutive four day period with like weather and temperatures patterns before and after the installation, the data collected shows that the ThermX system increased efficiency and reduced kW consumption by 33.6% over a full 24-hr period. This early stage data is however considered very positive, considering the average high temperature for Fort Myers exceeds 85°F throughout the year, it is expected that the facility will see a further increase in KWh savings as the facility transitions into the considerably hotter summer months and the load requirement on the system increases significantly.

*"This facility sits in an area where the sun shines for around 8-hours per day over an average year. Therefore why let the sun be the problem, when it can actually be the solution"*

*– Chris Micallef, Technical Director, SolX Energy*

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Energy earns, or simply burns  
 ...the choice is yours