

Solar Air Heating Roof and Walls

**USDA/TEDCO
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Agriculture and Aquaculture
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John Archibald
American Solar, Inc.
www.americansolar.com
703.425.0923



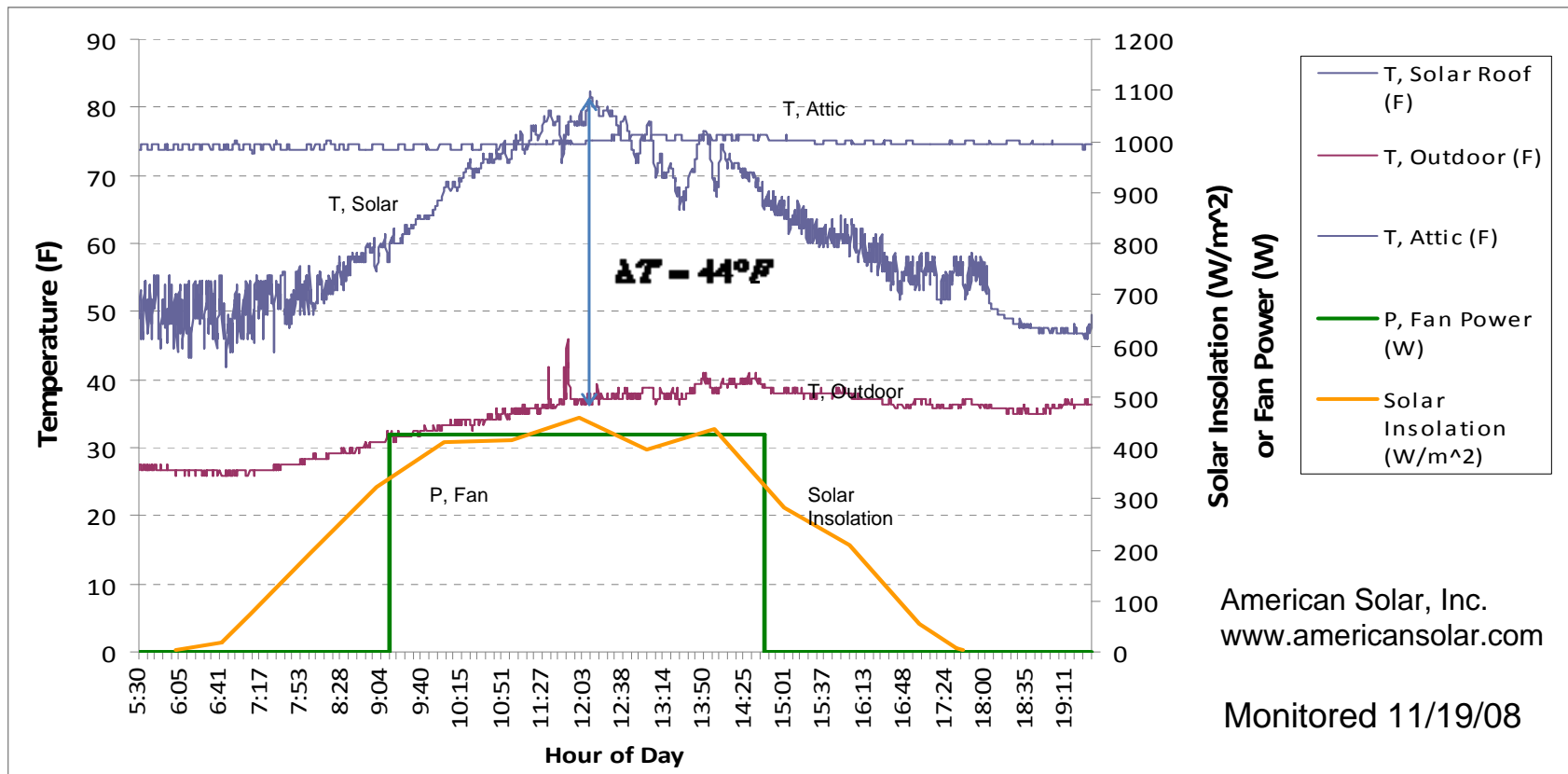
Solar Heating Animal Buildings

- 10 animal buildings re-roofed and re-sided with solar air heating metal roof and solar air heating siding
- Heats outside air for Federal Laboratory animal buildings with 100% conditioned outside air
- Over 20,000 sq feet of solar surface installed,
- Largest solar air heating roof installation in North America (at that time)
- Also installed ground mounted air heaters
 - for emergency generator heating and
 - for heat pump preheating

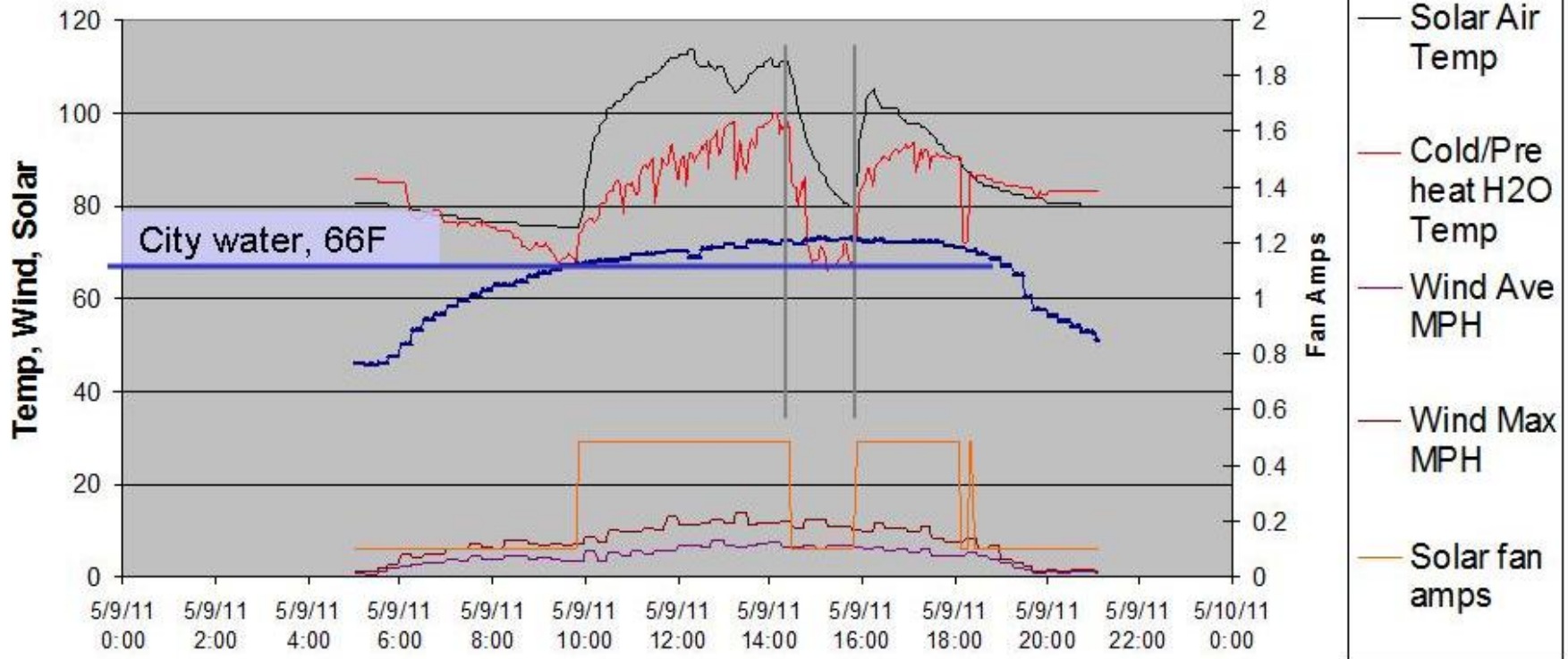


Laboratory Animal Building Outside Air Preheat

Solar roofing and siding preheating
100% outside air for 10 buildings



Solar Air to Water Heating Army Research Lab Domestic Hot Water



Solar air ~40F hotter than outside air
 Solar air heats water from 66 to 100F
 93% electricity savings vs. electric hot water heater
 Clouds at 14:30 cool roof, stops fan - Re-starts at 15:45



Why Solar Air Heat Recovery From Walls and Roofs?



- Solar heated air is easy to collect
 - Gathered from existing walls and roofs
 - Or from new or retrofit weathertight walls or roofs
 - Using fans and ducts, no water plumbing
 - Using conventional metal roof and wall panels
- Solar air is freeze proof, leak proof, boil proof
- Solar air can heat many other things
 - water, heat pump preheat, drying houses, greenhouses, combustion air preheat.....
- Compatible with existing heating systems
- Solar air can substitute for other fresh air sources
- Solar air fans can move hot air from ceiling to floor
- Often the lowest cost source of heat