

Experience

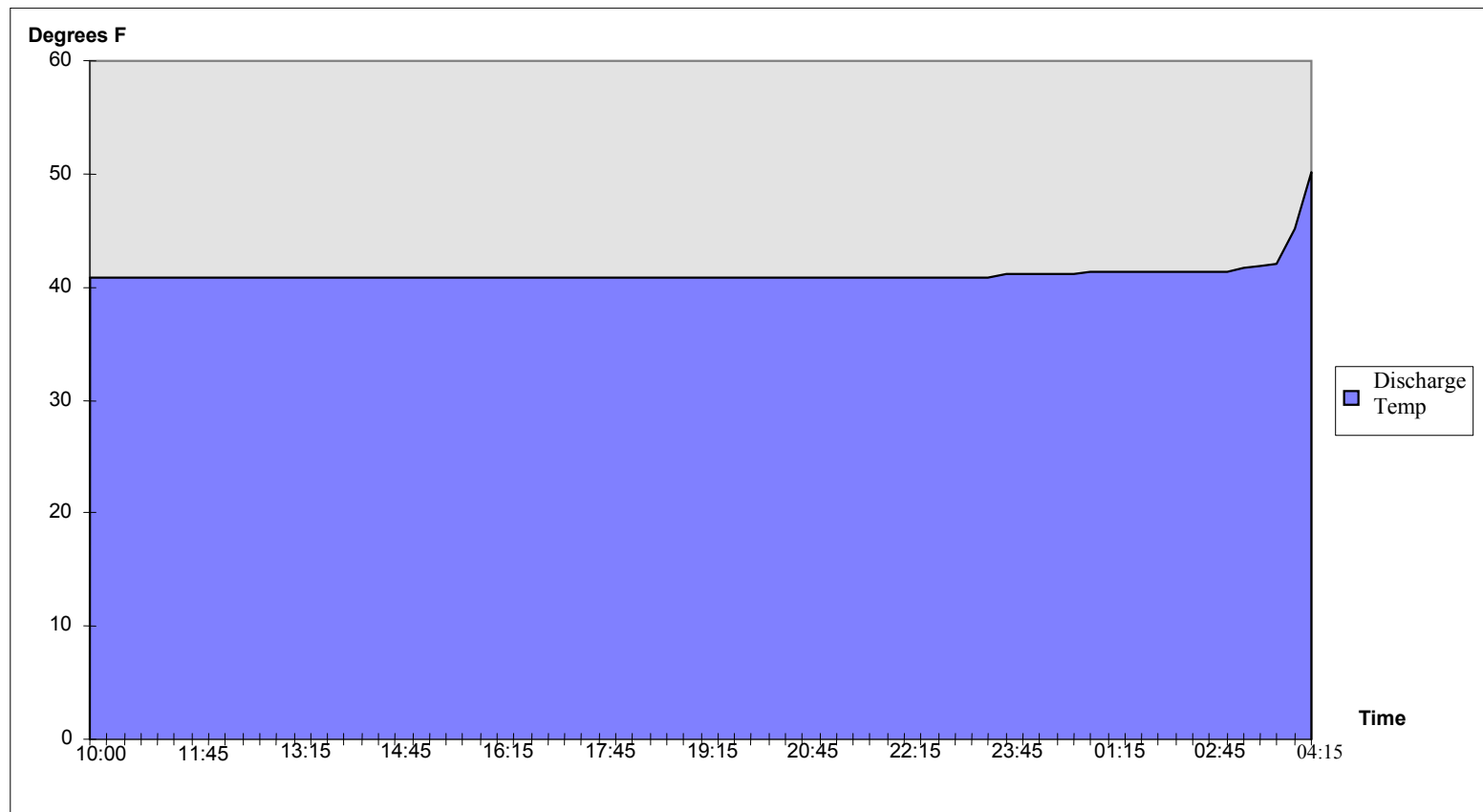
No	Year	Project Name	Type	RTH
1.	1980	Pioneer Federal Bank	Stratified Water	3,200
2.	1983	A.C. Neilsen Inc	Stratified Water	7,000
3.	1986	Volusia County Ja	Stratified Water	6,300
4.	1987	Tampa Palms Elementary	Stratified Water	1,400
5.	1987	Alafia Elementary	Empty Tank	1,650
6.	1987	Lopez Elementary	Empty Tank	1,600
7.	1988	Maniscalco Elementary	Empty Tank	1,600
8.	1988	Essrig Elementary	Empty Tank	1,800
9.	1988	Lewis Elementary	Empty Tank	1,650
10.	1988	Hill Elementary	Empty Tank	2,500
11.	1988	Brandon Elementary	Empty Tank	3,000
12.	1989	Northwest Elementary	Empty Tank	1,600
13.	1990	Polk Community College	Empty Tank	1,800
14.	1992	Jenkins High School	Stratified Water	5,000
15.	1993	Lee High School	Stratified Water	5,500
16.	1993	Brazo sport High School	Stratified Water	4,000
17.	1993	Lehigh High School	Stratified Water	5,000
18.	1994	Brazo sport School 5	Stratified Water	3,000
19.	1994	Brazo sport School 6	Stratified Water	3,500
20.	1994	Vanston Middle School	Stratified Water	3,200
21.	1995	Channel View High School	Stratified Water	5,200
22.	1995	Brevard Community College	Stratified Water	4,800
23.	1995	Mountain View College	Stratified Water	7,200
24.	1995	Harris Corporation	Stratified Water	5,000
25.	1996	Julius Blum Inc	Stratified Water	2,200
26.	1996	GTE Switching Facility	Stratified Water	400

Experience (Continue)

No	Year	Project Name	Type	RTH
27.	1996	Bathesda Medical Center	Stratified Water	9,500
28.	1996	Mesquite High School	Stratified Water	5,200
29.	1996	West Mesquite High School	Stratified Water	5,600
30.	1996	Tampa Ice Palace	Stratified Water	6,000
31.	1997	Neese High School	Stratified Water	4,500
32.	1997	Alcon Surgical	Stratified Water	2,000
33.	1997	North Shore High School	Stratified Water	5,000
34.	1997	South West Bell	Stratified Water	2,200
35.	1998	DCRC, Jeddah	Stratified Water	4,800
36.	1998	San Jacinto College	Stratified Water	7,000
37.	1998	San Jacinto South College	Stratified Water	5,600
38.	1998	Space City High School	Stratified Water	5,500
39.	1998	FPL Offices	Stratified Water	9,200
40.	1998	Harris Corp	Stratified Water	3,500
41.	1998	Baker County High	Stratified Water	4,200
42.	1998	Union County High	Stratified Water	3,900
43.	2000	The Kingdom Center	Stratified Water	28,000
44.	2001	Sarasota City	Stratified Water	1,200
45.	2001	Chico's Head Quarters	Stratified Water	5,200
46.	2002	Charlotte County Jail	Stratified Water	3,700
47.	2002	Chico's Distribution Ctr	Stratified Water	4,000
48.	2002	Wilson-Miller Bldg	Stratified Water	1,100
49.	2002	Naples News	Stratified Water	2,750
50.	2003	IACP, Cape Kennedy	Stratified Water	45,000
51.	2003	Criminal Justice Ctr	Stratified Water	22,000
52.	2003	Museum and Arts Ctr	Stratified Water	10,500

**Expected Performance:**

The DTSi system has been used in a wide variety TES Systems. The discharge water temperature from the tank during the depletion mode is the value that needs to maintain. The temperature stability of the DTSi System is unparalleled in the industry and is exemplified below. The “Time Vs Temperature” plot of the tank discharge water temperature (deg F) of the TES System installed at the Tampa Ice Palace, Tampa Florida. The time increments are 15 minutes each; flow rate is 2200 Usgpm (140 L/s).



**Case Study**  
**Bathesda Memorial Hospital**

**Project Description:**

Location: ..... West Palm Beach, Florida  
 Conditioned Space..... 430,000 SF  
 Cooling System..... Refrigerated Water  
 Peak Cooling Load..... 1,150 TR

**Plant System:**

Chillers..... Two (2) 500 TR Water Cooled Centrifugal.  
 Two (2) 450 TR Water Cooled Centrifugal.  
 Pumps..... Three Zone Dispatch Pumps, One zone Tertiary Pump.  
 Four (4) Dedicated Chiller Pumps.  
 Four Dedicated Condenser Water Pumps.  
 One (1) Chilled Water Blend Pump.  
 One (1) Chilled Water Reset Pump.  
 Controls..... DDC/Pneumatic.

**TES System:**

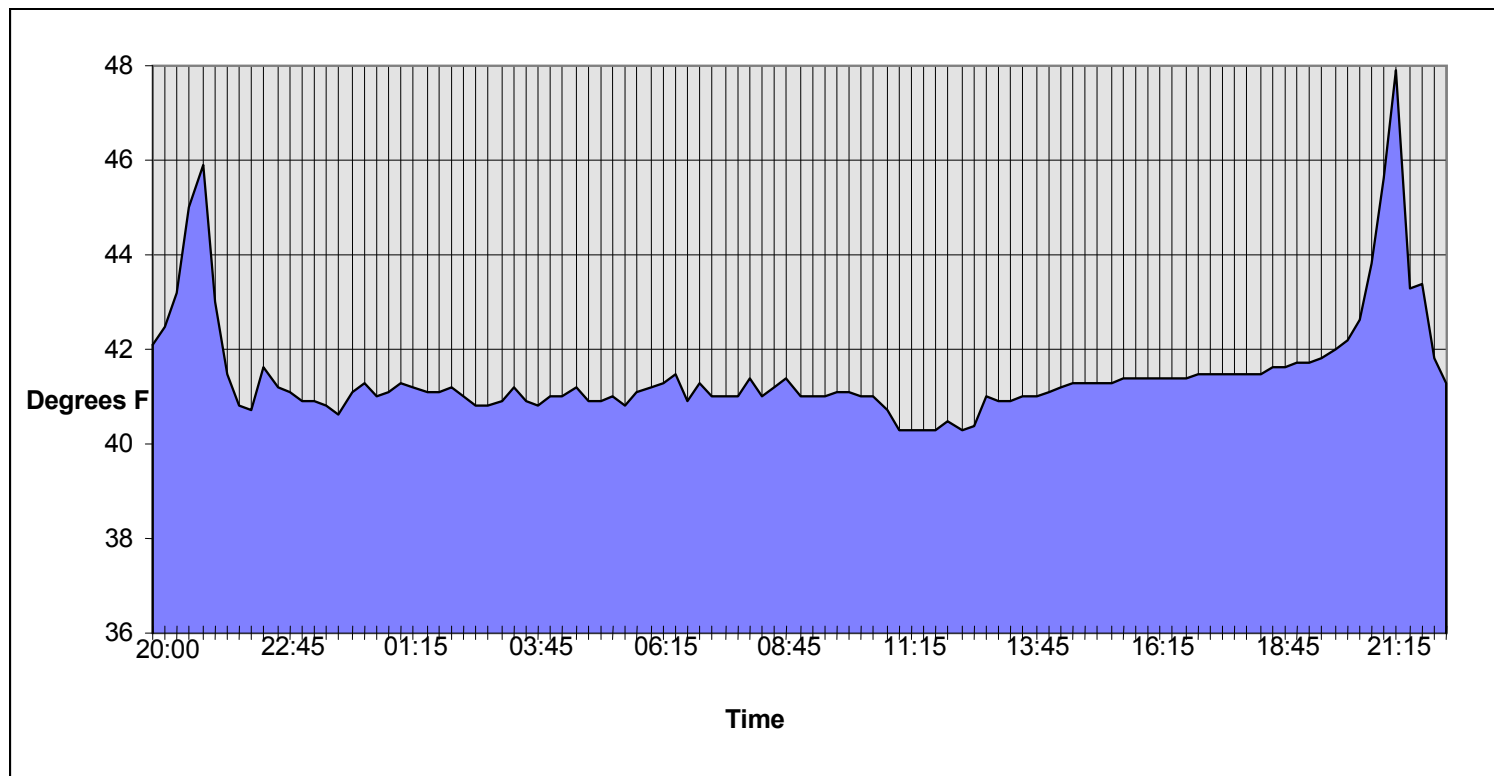
Type..... Stratified Refrigerated Water, Atmospheric  
 Physical Size..... 65 Feet Diameter x 40 Feet High.  
 Total Water Volume..... 129,500 CF (968,000 Usg)  
 Working Water Volume..... 121,100 CF (906,000 Usg)  
 Operating Temperatures..... Charge & Discharge Water Temperature 41F & 42F  
 Spent Water Temperature 56F  
 Charging Flow Rate..... 1,125 Usgpm.  
 Discharging Flow Rate (Maximum)..... 1,950 Usgpm  
 Total Storage Capacity..... 10,100 TRH (41 F)  
 Available Storage Capacity..... 9,125 TRH (42 F)  
 Maximum Usable Water Temperature..... 46 F  
 Maximum Usable Storage Capacity..... 9,480 TRH

Case Study Analysis

The below trend log graphs, established the performance of a 10,100 TRH, DTSi Stratified Refrigerated Water Thermal Energy Storage System. The TES system charging and load servicing is accomplished using two (2) each 450TR & 500 TR nominal capacity chillers, operating at a 95 percent loaded condition.

Water being withdrawn from the top of the tank is at 56 F and supplies from the tank at 41 F + 1 F during discharge cycle.

The “Temperature Vs Time” graph shows the water temperatures supplied to the tank during the charge cycle and supplied by the tank during the discharge cycle. The charging occurs at 21:15 Hours and terminates at 11:45 Hours. Discharge occurs between 11:45 Hours and 21:15 hours.

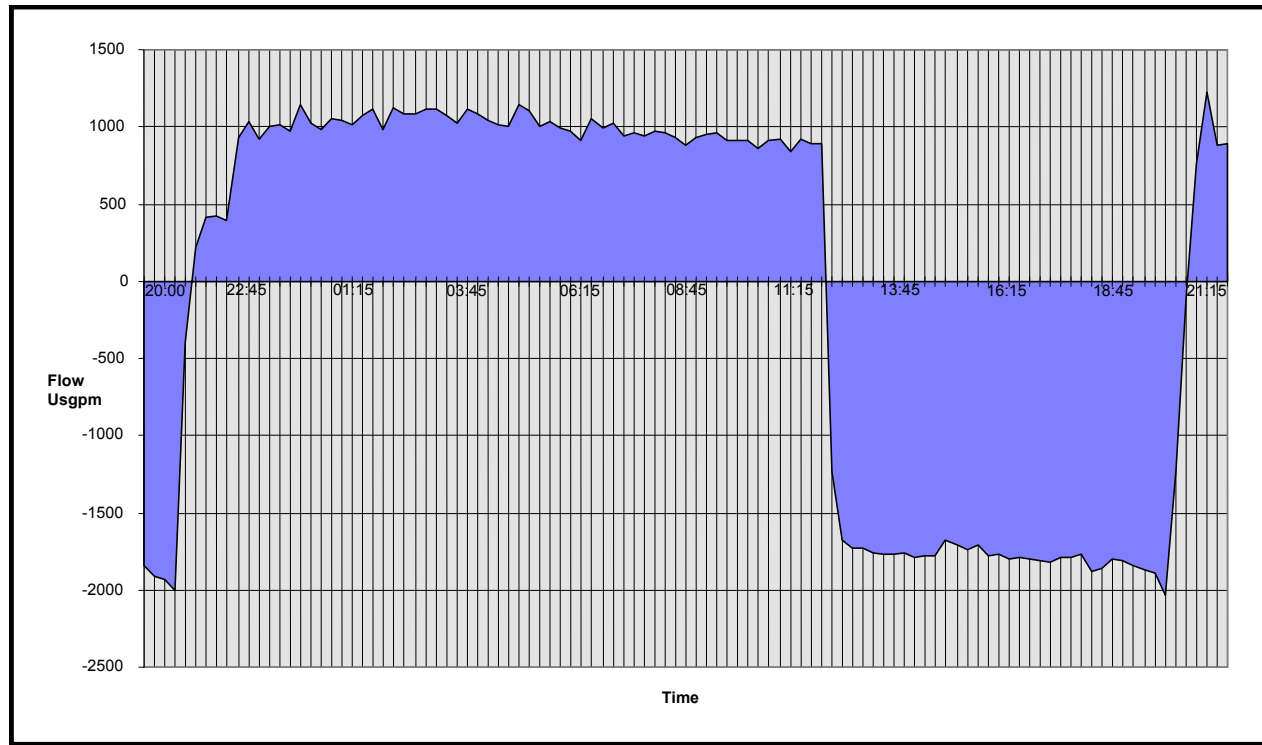


Temperature Vs Time

Case Study Analysis (Continue)

Flow to the tank during the charge cycle averages 1,000 USgpm, flow from the tank during the discharge cycle averages 1,800 Usgpm. The TES System shifts 1,150 TR during peak usage periods.

Both the “Temperature Vs Time” and “Flow Vs Time” graph was done based on the same charge & discharge time period.



Flow Rate Vs Time