

# TEST REPORT: No.45

Date: July 31st 2019

## CHILLER EFFICIENCY PERFORMANCE WITH INTELLIGENT ADIABATIC CHILLER BOOSTER SYSTEM “SMART COOLING™” PRO 10

### Participated in the test:

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Project name: Double Tree by Hilton Dubai Al Barsha hotel, UAE

Object address: Al Sabbat Street, 49, Dubai 00000, United Arab Emirates

**Table of Contents**

Introduction: ..... 3

Main components:..... 3

Testing procedures test Nr.1: ..... 5

Measuring instruments:..... 5

Conclusion 5 days off and 5 days on of 'Smart Cooling™' equipment: ..... 6

Summary Test Nr.1 ..... 6

Five day electrical consumption comparison 17th - 21st June 'Smart Cooling™' OFF with 3rd -7th June 'Smart Cooling™' ON ..... 7

MW/h results summary for one month (31th May - 30th June 2019) ..... 12

Test Nr.2..... 13

One month overview between 'Smart Cooling™' ON and OFF..... 13

ROI Summary: ..... 14

Annex ..... 15

TEST REPORT: NO.45

## Introduction:

Type of building: Hotel Hilton, Albarsha Dubai.

Cooling units: air cooled water chiller Carrier 30XA 1002 total 2 units.

Cooling capacity by manufacturer's data performance sheet: 1000 kw

Energy consumption by manufacturer's data performance sheet: 344 kw

Chiller booster: "Smart Cooling™" PRO 10, adiabatic technology with condenser protection.

3-unit chiller retrofits were made to reduce the energy consumption of chillers and to increase chiller COP efficiency. Chillers were equipped with intelligent adiabatic pre-cooling system "Smart Cooling™" PRO 10. Chiller booster PRO 10 is based on pre-cooling of air before it enters condensers by using water evaporation technology - spraying and vaporising a very fine water mist before entering the condenser (hot air comes into contact with the fine water mist, the temperature of the incoming air in the condenser is reduced).

Chiller booster components ensure 100% condenser protection from direct contact with water. The water must not reach the condenser.

## Main components:

The protective membranes: the membranes are installed outside before the condenser, covering 100% of the condenser surface, thus preventing the water mist from coming into direct contact with the condenser. Water filtration, water purification, water sterilisation: the system provides water purification from minerals and water sterilization to avoid the risk of bacterial occurrence.

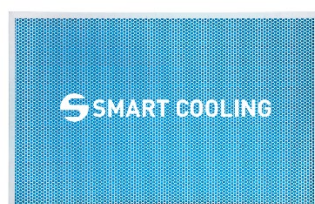
High pressure pump capable of providing water pressure up to 70 bar.

A water recirculation system that drains non-evaporated water into a water purification and pump system.

The control unit, which provides complete system control according to ambient air temperature and humidity, provides the complete operation of the system, analyses the parameters of the chiller, ambient air temperature and humidity, and provides the required amount of water in the adiabatic system according to data gathered.

A high-pressure nozzle panels that provide 5-40-micron droplet water spraying.

A set of fasteners and fixings ensuring the compatibility of the chiller booster system with the chiller.



Equipment tested: **Air cooled water chillers, Carrier 30XA1002.**



Chiller without “Smart Cooling™” system



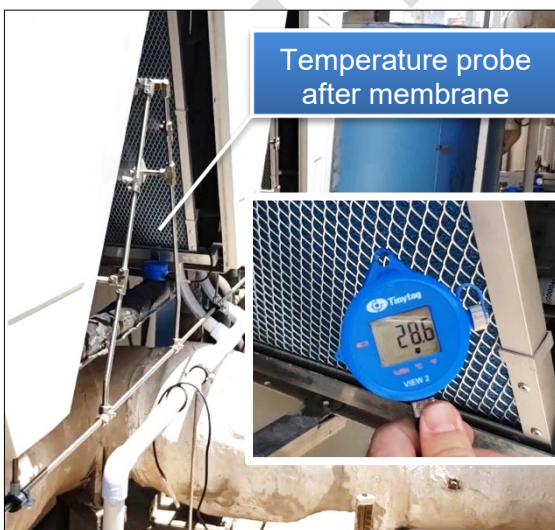
Chiller with “Smart Cooling™” system

In Picture No.2 it can be seen that the chiller condensers are fitted with protective membranes that prevent the water from entering the chiller condenser. To the right there is the chiller booster pump station, which includes 70 bar water preparation, water sterilization, purification. The equipment is equipped with a programmable Siemens controller. The right side of the chiller shows the water drain line connected to the pump station. The water that enters the drain is re-filtered and reused.



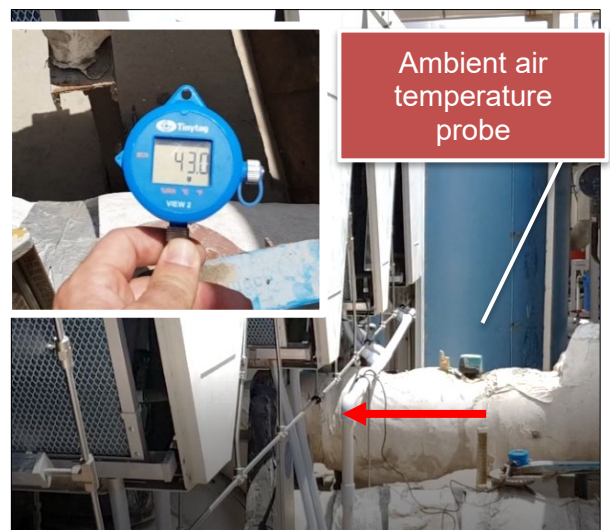
(Picture No.2 Chiller equipped with “Smart Cooling™” system)

Temperature probe Nr.1



Entering air temperature in condenser after condenser protective membrane + 28°C and 46% humidity.

Temperature probe Nr.2



Ambient air temperature +43°C

## Testing procedures test Nr.1:

### Measuring instruments:

Ultrasonic water flow meter RIF600 was used to measure the effectiveness of the chiller.

The energy monitoring equipment Enicope Enicope analytics, (BEST) was used to measure energy consumption.

The formula for calculating the COP.  $EI/kw \div \text{cooling}/kw = \text{cop}$

### Step 1

A data logger was installed on the subject HVAC equipment to collect all applicable real-time energy consumption and unit performance information. Data was collected with Eniscope analytics, energy measurement.

The first 5 days (120 hours of use) of the test measured energy used by the condenser without the "Smart Cooling™" unit. During this period the chillers consumed 70 112 KW/h (Kilowatt hours) of electricity. Water consumption 0 m3.

The average temperature and relative humidity during the period was 36° C / 34 %RH.

### Step 2

Switch ON the "Smart Cooling™" system.

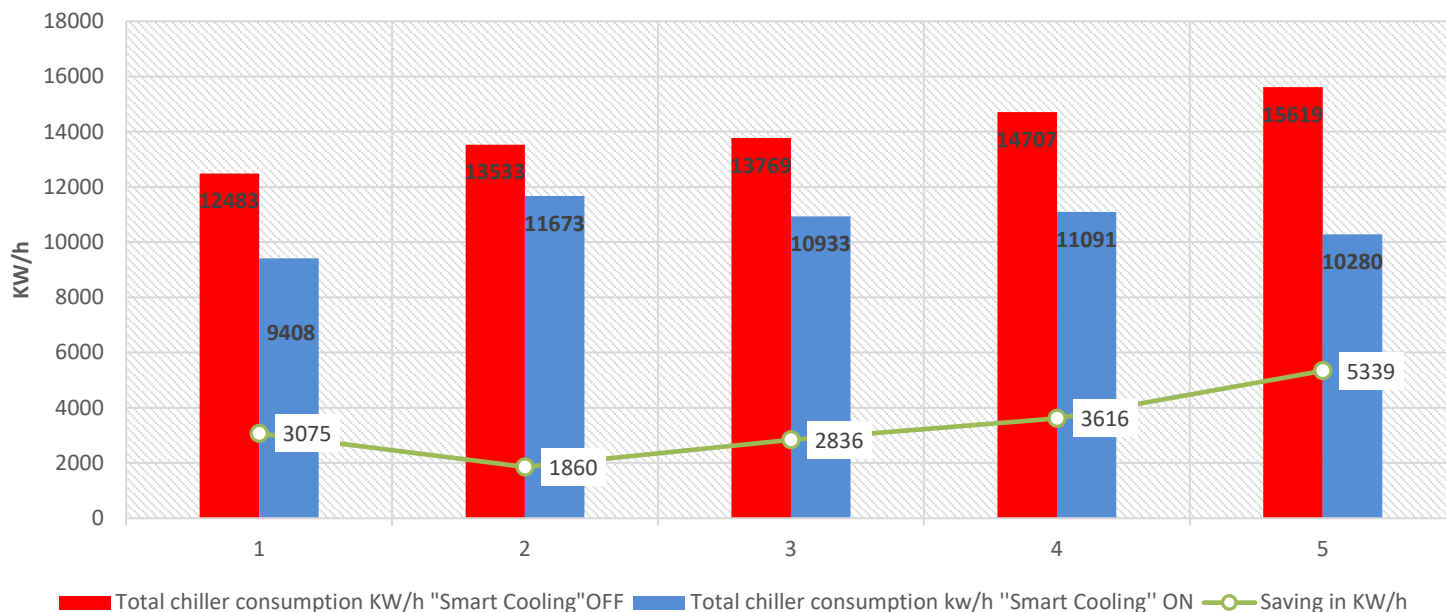
### Step 3

The next 5 days (120 hours of use) of the test measured energy used by the chiller with an Intelligent adiabatic system "Smart Cooling™". During this period the chiller consumed 53 386 KW/h (Kilowatt hours) of electricity. Water consumption 88 m3. The average temperature and relative humidity during the period was 36° C / 45 %RH. After data analysis monitoring numbers show: Difference / energy savings that provide "Smart Cooling™" system per 5 working days was 16 726 KW/h (Kilowatt hours) of electricity.

Tables below show all numbers, used energy consumption kw/h, before and after use adiabatic system, air temperature, working hours.

Compare total KWh consumed by rack «B» chiller system for 5 consecutive days with adiabatic pre-cooling system OFF – to 5 consecutive days with adiabatic system ON (with comparative temp. data).

### Test Nr.1. 5 day electrical consumption comparison 17th - 21st June 'Smart Cooling™' OFF with 3rd -7th June 'Smart Cooling™' ON



#### Conclusion 5 days off and 5 days on of 'Smart Cooling™' equipment:

Customer in 5 days saved 16 726 kw/h of electricity, electricity rate was 0.46 AED per kw/h, which brings 7 693 AED in savings.

To achieve this result 88 m<sup>3</sup> of water were used with water costs 10.5 AED per m<sup>3</sup>. In total 924 AED were spent on water.

#### Summary Test Nr.1

**Total savings after running costs were 6 769 AED per 5 days or 1353 AED per day or in average 3 345 kw/h per day with 2 operational chillers.**

"Smart Cooling™" expected 17% savings for 14h in 24h operational period, which was evaluated as 755 kw/h savings in 24h from 1 chiller based on 10 degrees temperature drop. As we can see in provided results, performance is much higher as "Smart Cooling™" equipment is working more than 14h and actual temperature drop is in average 14 degrees Celsius in condenser coils after protecting the membrane.

**Test Nr.1**

**Five day electrical consumption comparison 17th - 21st June 'Smart Cooling™' OFF with 3rd -7th June 'Smart Cooling™' ON**

date	Total chiller consumption in KW/h "Smart Cooling" Off 17 <sup>th</sup> of June	Total chiller consumption kw/h "Smart Cooling" ON 3 <sup>th</sup> of June	Savings in kw/h	Savings in %	Hotel load "Smart Cooling" Off	Hotel Load "Smart Cooling" on	Temperature "Smart Cooling" Off 17 <sup>th</sup> of June	Temperature "Smart Cooling" on 3 <sup>th</sup> of June
17/06/2019								
00:00	528	292	236	45%			33.49	31.00
17/06/2019								
01:00	504	347	157	31%			33.24	30.44
17/06/2019								
02:00	496	302	193	39%			32.79	30.01
17/06/2019								
03:00	480	304	176	37%			32.59	29.87
17/06/2019								
04:00	480	368	112	23%			32.51	30.02
17/06/2019								
05:00	468	302	166	35%			32.26	29.87
17/06/2019								
06:00	443	304	139	31%			31.21	29.79
17/06/2019								
07:00	412	336	76	18%			32.13	30.99
17/06/2019								
08:00	469	365	104	22%			34.63	34.04
17/06/2019								
09:00	497	391	105	21%			36.81	34.78
17/06/2019								
10:00	499	394	104	21%			38.01	35.96
17/06/2019								
11:00	519	397	122	24%			41.79	38.24
17/06/2019					84%	57%		
12:00	572	379	193	34%			42.82	38.82
17/06/2019								
13:00	581	400	182	31%			39.74	36.75
17/06/2019								
14:00	569	427	142	25%			38.05	36.26
17/06/2019								
15:00	564	506	59	10%			37.39	35.12
17/06/2019								
16:00	565	470	95	17%			36.11	34.56
17/06/2019								
17:00	595	493	102	17%			35.42	34.00
17/06/2019								
18:00	606	483	123	20%			34.10	33.02
17/06/2019								
19:00	565	454	111	20%			33.54	32.48
17/06/2019								
20:00	543	440	103	19%			33.17	32.38
17/06/2019								
21:00	566	413	153	27%			32.79	32.29
17/06/2019								
22:00	495	451	45	9%			32.25	32.17
17/06/2019								
23:00	467	391	76	16%			32.05	32.36
<b>Total of day</b>	<b>12483</b>	<b>9408</b>	<b>3075</b>	<b>25%</b>				



**Test Nr.1**

date	Total chiller consumption in KW/h "Smart Cooling" Off 18 <sup>th</sup> of June	Total chiller consumption kw/h "Smart Cooling" ON 4 <sup>th</sup> of June	Savings in kw/h	savings in %	Hotel load "Smart Cooling" Off	Hotel Load "Smart Cooling" on	Temperature "Smart Cooling" Off 18 <sup>th</sup> of June	Temperature "Smart Cooling" on 4 <sup>th</sup> of June
18/06/2019 00:00	526	429	97	18%	86%	77%	32.28	32.62
18/06/2019 01:00	512	447	65	13%			32.13	31.53
18/06/2019 02:00	508	394	113	22%			31.88	30.42
18/06/2019 03:00	500	418	82	16%			31.40	30.72
18/06/2019 04:00	491	456	35	7%			30.63	31.32
18/06/2019 05:00	481	447	35	7%			30.00	31.04
18/06/2019 06:00	486	450	36	7%			29.70	31.46
18/06/2019 07:00	512	462	50	10%			30.87	32.40
18/06/2019 08:00	516	470	46	9%			31.97	34.87
18/06/2019 09:00	540	477	62	12%			33.81	37.52
18/06/2019 10:00	587	466	121	21%			36.98	41.48
18/06/2019 11:00	596	492	103	17%			39.52	46.57
18/06/2019 12:00	584	473	111	19%			42.07	45.03
18/06/2019 13:00	590	470	120	20%			39.12	40.57
18/06/2019 14:00	610	475	135	22%			37.86	37.73
18/06/2019 15:00	654	614	40	6%			36.57	37.77
18/06/2019 16:00	655	614	41	6%			35.74	37.29
18/06/2019 17:00	653	568	85	13%			35.22	36.56
18/06/2019 18:00	636	539	97	15%			34.18	36.03
18/06/2019 19:00	624	523	101	16%			33.73	36.63
18/06/2019 20:00	632	524	108	17%			34.29	36.89
18/06/2019 21:00	610	511	99	16%			34.25	37.63
18/06/2019 22:00	521	479	42	8%			33.83	37.69
18/06/2019 23:00	509	475	34	7%			33.60	37.61
<b>Total of day</b>	<b>13533</b>	<b>11673</b>	<b>1860</b>	<b>14%</b>				





**Test Nr.1**

date	Total chiller consumption in KW/h "Smart Cooling" Off 19 <sup>th</sup> of June	Total chiller consumption kw/h "Smart Cooling" ON 5 <sup>th</sup> of June	Savings in kw/h	savings in %	Hotel load "Smart Cooling" Off	Hotel Load "Smart Cooling" on	Temperature "Smart Cooling" Off 19 <sup>th</sup> of June	Temperature "Smart Cooling" on 5 <sup>th</sup> of June
19/06/2019 00:00	561	428	133	24%	85%	85%	33.86	37.42
19/06/2019 01:00	586	425	161	27%			34.43	36.78
19/06/2019 02:00	558	427	131	24%			34.69	36.12
19/06/2019 03:00	528	434	95	18%			34.52	35.29
19/06/2019 04:00	510	468	42	8%			34.24	34.85
19/06/2019 05:00	500	446	54	11%			33.93	34.53
19/06/2019 06:00	500	448	52	10%			33.65	34.61
19/06/2019 07:00	519	457	62	12%			33.84	35.68
19/06/2019 08:00	575	472	104	18%			34.27	36.73
19/06/2019 09:00	558	474	83	15%			35.35	38.78
19/06/2019 10:00	577	467	110	19%			37.23	41.86
19/06/2019 11:00	597	482	115	19%			41.03	46.33
19/06/2019 12:00	635	388	247	39%			42.99	45.59
19/06/2019 13:00	644	414	230	36%			40.22	40.39
19/06/2019 14:00	621	429	193	31%			37.99	39.16
19/06/2019 15:00	634	560	74	12%			36.52	37.80
19/06/2019 16:00	635	528	107	17%			35.46	36.60
19/06/2019 17:00	637	525	112	18%			34.55	36.05
19/06/2019 18:00	636	531	106	17%			33.70	35.35
19/06/2019 19:00	589	517	72	12%			32.99	34.74
19/06/2019 20:00	578	451	128	22%			32.92	34.95
19/06/2019 21:00	571	383	189	33%			32.89	35.40
19/06/2019 22:00	524	377	148	28%			32.51	35.69
19/06/2019 23:00	493	405	89	18%			32.25	35.43
<b>Total of day</b>	<b>13769</b>	<b>10933</b>	<b>2836</b>	<b>21%</b>				



**Test Nr.1**

date	Total chiller consumption in KW/h "Smart Cooling" Off 20st June	Total chiller consumption kw/h "Smart Cooling" ON 6 <sup>th</sup> of June	Savings in kw/h	savings in %	Hotel load "Smart Cooling" Off	Hotel Load "Smart Cooling" on	Temperature "Smart Cooling" Off 20st June	Temperature "Smart Cooling" on 6 <sup>th</sup> of June
20/06/2019 00:00	537	377	160	30%	88%	79%	32.44	35.13
20/06/2019 01:00	527	353	173	33%			32.29	34.91
20/06/2019 02:00	516	347	169	33%			32.04	34.61
20/06/2019 03:00	504	337	167	33%			31.63	33.84
20/06/2019 04:00	490	424	67	14%			30.97	33.77
20/06/2019 05:00	495	400	95	19%			30.49	33.79
20/06/2019 06:00	497	399	98	20%			30.58	32.43
20/06/2019 07:00	486	411	74	15%			31.85	33.89
20/06/2019 08:00	530	451	79	15%			33.56	35.83
20/06/2019 09:00	613	516	97	16%			35.50	38.44
20/06/2019 10:00	613	508	105	17%			38.41	41.69
20/06/2019 11:00	647	507	141	22%			43.42	47.04
20/06/2019 12:00	712	509	203	29%			45.52	45.52
20/06/2019 13:00	731	512	219	30%			43.53	39.53
20/06/2019 14:00	709	501	209	29%			38.16	38.01
20/06/2019 15:00	693	556	137	20%			36.75	36.37
20/06/2019 16:00	690	568	122	18%			35.89	35.29
20/06/2019 17:00	686	554	132	19%			35.57	34.63
20/06/2019 18:00	674	527	148	22%			34.91	33.86
20/06/2019 19:00	691	510	181	26%			34.15	33.71
20/06/2019 20:00	733	517	216	30%			33.65	33.71
20/06/2019 21:00	728	475	253	35%			33.71	33.97
20/06/2019 22:00	625	423	202	32%			33.65	34.26
20/06/2019 23:00	580	410	170	29%			33.21	34.15
<b>Total of day</b>	<b>14707</b>	<b>11091</b>	<b>3616</b>	<b>25%</b>				

**Test Nr.1**

date	Total chiller consumption in KW/h "Smart Cooling" Off 21st June	Total chiller consumption kw/h "Smart Cooling" ON 7 <sup>th</sup> of June	Savings in kw/h	Savings in %	Hotel load "Smart Cooling" Off	Hotel Load "Smart Cooling" on	Temperature "Smart Cooling" Off 21st June	Temperature "Smart Cooling" on 7 <sup>th</sup> of June
21/06/2019								
00:00	658	433	224	34%			33.22	33.76
21/06/2019								
01:00	609	400	209	34%			33.27	33.29
21/06/2019								
02:00	607	405	201	33%			33.36	32.99
21/06/2019								
03:00	602	351	251	42%			32.96	32.49
21/06/2019								
04:00	670	424	245	37%			33.03	32.77
21/06/2019								
05:00	599	380	218	36%			33.61	32.12
21/06/2019								
06:00	568	391	178	31%			33.76	31.66
21/06/2019								
07:00	578	378	200	35%			34.51	33.10
21/06/2019								
08:00	601	449	152	25%			35.73	35.08
21/06/2019								
09:00	628	492	135	22%			37.63	38.14
21/06/2019								
10:00	729	423	307	42%			40.30	39.04
21/06/2019								
11:00	722	464	258	36%	74%	66%	41.61	41.30
21/06/2019								
12:00	783	467	316	40%			41.64	41.52
21/06/2019								
13:00	780	459	321	41%			38.43	38.99
21/06/2019								
14:00	768	494	275	36%			36.87	38.35
21/06/2019								
15:00	716	482	233	33%			35.55	36.88
21/06/2019								
16:00	758	475	283	37%			34.98	35.90
21/06/2019								
17:00	626	490	136	22%			34.57	35.29
21/06/2019								
18:00	632	444	188	30%			34.27	34.26
21/06/2019								
19:00	635	432	203	32%			34.02	34.30
21/06/2019								
20:00	730	426	304	42%			34.05	35.04
21/06/2019								
21:00	620	419	201	32%			33.98	35.29
21/06/2019								
22:00	502	347	155	31%			33.81	35.01
21/06/2019								
23:00	499	354	145	29%			33.69	34.89
<b>Total of day</b>	<b>15619</b>	<b>10280</b>	<b>5339</b>	<b>34%</b>				
<b>TOTAL PER PERIOD</b>	<b>70112</b>	<b>53386</b>	<b>16726</b>	<b>24%</b>				

## Test Nr.2

Test No.2 was done for 30 days, from 31th May - 30th June, 2019

Chiller energy consumption calculations, "Smart Cooling™" ON

The average power consumption was calculated as follows:

The Carrier 30XA 1002 chillers worked with the "Smart Cooling™" unit ON for 20 days, where the total energy consumption of the chiller's MW / h was measured.

The results show: "Smart Cooling™" ON

**"Smart Cooling™" equipment was ON for 20 days with an average hotel occupancy of 72%. In 20 days, the total chiller consumption was 221.41 MW / h, average 11.07 MW / h per day. Formula (221.41 MW / h, ÷ 20 days) = 11.07 MW / h. AVARAGE within 24 hours.**

Chiller energy consumption calculations "Smart Cooling™" OFF

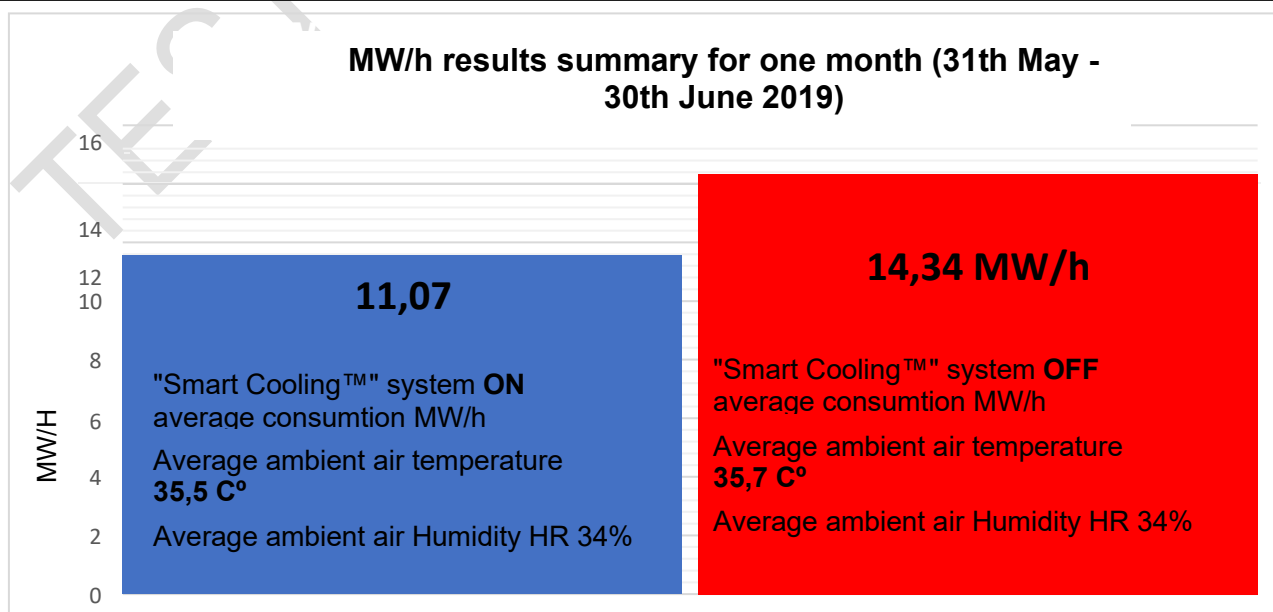
The average energy consumption was calculated as follows:

The results show: "Smart Cooling™" OFF

**"Smart Cooling™" equipment was OFF for 9 days with an average hotel occupancy of 82%. In 9 days, the total chiller consumption was 129.06 MW / h, average 14.34 MW / h per day. Formula (129.06 MW / h, ÷ 9 days) = 14.34 MW / h. AVARAGE within 24 hours.**

### Summary Test Nr.2:

**After a 30-day test comparing the average power consumption of a Carrier 30 XA 1002 24-hour chiller, we found that the average 24-hour saving was 2-3 Mw / h depending on the occupancy of the hotel. Total 30-day water consumption including 'Smart Cooling™' maintenance was 375 m3.**



## Test Nr.2

### One month overview between 'Smart Cooling™' ON and OFF

SMARTCOOLING WATER READING, ELECTRICITY READING								
DATE	Previous	Present	Total Consumed	Total Mw/h consumed	occ p %	Smart Cooling operational notes	Average ambient air Temperature	Max Ambient Temperature
31/05/2019	0	36	7918.56	8.77	47.08	On, last adjustments done	34	43
01/06/2019	36	50	3079.44	8.25	47.08	on	34	40
02/06/2019	50	60	2199.6	8.43	47.08	on	34	43
03/06/2019	60	78	3959.28	9.41	54.04	on	33	39
04/06/2019	78	95	3739.32	11.67	57.94	on	36	46
05/06/2019	95	112	3739.32	10.93	76.32	on	37	46
06/06/2019	112	130	3959.28	11.09	83.29	on	37	47
07/06/2019	130	148	3959.28	10.28	77.44	on	35	41
08/06/2019	148	162	3079.44	9.92	66.02	on	35	45
09/06/2019	162	175	2859.48	10.43	77.16	on	35	43
10/06/2019	175	184	1979.64	11.36	81.62	on, after 2pm one circuit is not operational for "Smart Cooling"	33	41
11/06/2019	184	197	2859.48	12.2	82.73	on, after 2pm one circuit is not operational for "Smart Cooling"	35	42
12/06/2019	197	212	3299.4	12.27	86.07	on	37	44
13/06/2019	212	228	3519.36	12.13	93.31	on	37	44
14/06/2019	228	241	2859.48	12.45	88.86	on	36	44
15/06/2019	241	254	2859.48	12.54	77.16	on	35	43
16/06/2019	254	265	2419.56	12.54	86.35	on	35	42
17/06/2019	265	274	1979.64	12.48	84.96	on/ 17:00 Smart Cooling turned off	34	43
18/06/2019	274	274	0	13.53	86.35	off	34	43
19/06/2019	274	274	0	13.77	85.24	off	35	43
20/06/2019	274	274	0	14.71	88.02	off	35	45
21/06/2019	274	274	0	15.62	74.37	off	35	42
22/06/2019	274	285	2419.56	16.01	74.09	Off ( cleaning process)	37	44
23/06/2019	285	294	1979.64	15.36	78.55	Off (cleaning process)	37	43
24/06/2019	294	294	0	13.58	83.84	off	36	44
25/06/2019	294	294	0	12.96	83.29	off	35	43
26/06/2019	294	294	0	13.52	86.91	off	37	42
27/06/2019	294	309	3299.4	12.82	85.79	On after 15:00	37	44
28/06/2019	309	332	5059.08	12.88	79.67	on	37	44
29/06/2019	332	355	5059.08	12.03	71.03	on	38	48
30/06/2019	355	375	4399.2	11.83	76.32	on	37	47

**ROI Summary:****Savings:**

Daily Power Savings = 2.5 Mw/h X 0.45 (Rate) = AED 1,125 electrical saving  
per day Monthly Saving = AED 1,125 X 30 days = AED 33,750

**Operation cost:**

Monthly Water Consumption = 375 m<sup>3</sup> X 10 (Rate) = AED 3,750 Monthly Biochemical and  
Maintenance costs= AED 600  
Total Operation Costs = AED 4,350

Monthly Net Saving = AED 33,750 - AED 4,350 = AED 29,400

**Costs of:**

2 Nos "Smart Cooling™" Devices = AED 210,000 (Inc. VAT)

**ROI:**

2 Nos "Smart Cooling™" Devices= 210,000 / (29,400 X 8) = 10.7 Months

**ROI Calculation Notes:**

Number of operating months are 8, considering the hot season only, 4 months when there is a minimal saving, was neglected in this ROI calculation.

As per the above readings, saving range is from 2 to 3 MW/h per day, however, we have based the ROI calculation on an average saving of 2.5 MW/h.

ROI calculation is based on occupancy and OAT (Outside Air Temperature).

Ali Soufan



July 31st 2019

Annex



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### RIF600 | Clamp-on Ultrasonic Meter Calibration Report

Pipe diameter	DN80	Date	15/12/2018
Ambient temperature	29°C	Model:	RIF600W
Standard Device before test	Normal		
Standard Device After Test	Normal		
Test result	Qualified		
Measured Medium	Water		
Accuracy	1%		
Signal Strength	UP: 90 DOWN: 90		
Standard device name	Static volumetric method/standard Meter Method Water Flow/Standard Device		
Standard device accuracy	0,20%		

Test	Standard Meter flow		Temperature	Pressure	Tested Meter Flow		Basic Error	Repeatability		
Point	m3/h		°C	Mpa	m3/h		%	%		
Point 1	101,52	101,47	25,0	0,300	102,27	102,10	0,739	0,759	-0,147	0,147
	101,47		25,0	0,300	102,07		0,591			
	101,42		25,0	0,300	101,97		0,542			
Point 2	71,27	71,27	25,0	0,300	71,75	71,75	0,673	0,759	-0,146	0,147
	71,19		25,0	0,300	71,65		0,646			
	71,34		25,0	0,300	71,86		0,729			
Point 3	26,32	26,36	25,0	0,300	26,51	26,55	0,722	0,759	-0,132	0,147
	26,36		25,0	0,300	26,56		0,759			
	26,39		25,0	0,300	26,58		0,720			

Verification Based on JIG 1030-2007 < Ultrasonic flowmeter verification procedures >  
 Scale Factor=1

TEST REPORT





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## RIF600 | Test Report misuratore di portata ad ultrasuoni clamp on

Diametro tubazione	DN80	Date	15/12/2018
Temperatura ambiente	29°C	Model:	RIF600W
Dispositivo standard prima del test	Normale		
Dispositivo standard dop il test	Normale		
Risultato del test	Qualified		
Liquido	Acqua		
Accuratezza	1%		
Potenza dei segnali	UP: 90 DOWN: 90		
Tipo di dispositivo standard	Metodo volumetrico statico/Misuratore di portata volumetrico		
Accuratezza del dispositivo standa	0,20%		

Test	Misuratore standard	Temperatura	Pressione	Misuratore testato	errore base	Ripetibilità
Punti	m3/h	°C	Mpa	m3/h	%	%
Punto 1	101,52	25,0	0,300	102,27	0,739	-0,147
	101,47	25,0	0,300	102,07	0,591	
	101,42	25,0	0,300	101,97	0,542	
Punto 2	71,27	25,0	0,300	71,75	0,673	-0,146
	71,19	25,0	0,300	71,65	0,646	
	71,34	25,0	0,300	71,86	0,729	
Punto 3	26,32	25,0	0,300	26,51	0,722	-0,132
	26,36	25,0	0,300	26,56	0,759	
	26,39	25,0	0,300	26,58	0,720	

Verification Based on JJG 1030-2007 < Ultrasonic flowmeter verification procedures >  
 Scale Factor=1

TEST R