

Report on the Installation of EnviroStart Single and Three Phase Units at the Marriott Hollins Hall Hotel and Leisure Club in Shipley, United Kingdom.

EMS (European) was commissioned by Marriott Hotels to install a full spread of motor energy controls on all suitable applications at their site in Shipley. The units installed were as detailed in the following tables which were compiled by the installers at the time that the units were fitted.

The savings shown were all taken at the time of installation and are indicative only.

The three phase systems demonstrate overall average savings on site of 10.7% with a maximum saving of 20% and a minimum of 1.12%, the median being 9.38%. This does not take into account the additional savings that would be achieved throughout the course of the night periods when loading would be less, ambient temperatures would be lower and the local line conditions better.

The single phase systems demonstrate overall average savings on site of 12% with a maximum saving of 48% and a minimum of 1%, the median being 10%. This detail does not take into account the reduced operating time as a result of the refrigeration systems running cooler. Overall savings, using the data taken from other restaurant sites long term operational improvements using EnviroStart we can estimate that the single phase savings will on average improve by between 5 and 6% taking the average on site savings to slightly higher than 18%.

Based on the energy costs at the Hollins Hall Hotel site being £0.032/kWh the payback on single phase systems, (including costs of installation), was just above seventeen months. On three phase systems, (including installation), the payback period was just under two years.

Installation Applications



External Refrigeration Chiller



Upright Freezer

INSTALLED TESTING FOR SINGLE PHASE MEC'S

Motor Energy Control units were commissioned during a running process and readings taken were using DIP switch 1 function for direct on line and then placed into optimization mode. Total saving is dependant on usage.

DATE	APPLIANCE	S No.	LOCATION	MEC S No.	(A) BEORE	(A) AFTER	Savings %	Unit No
08/05/2003	AHU Mits	01H00138	Roof 1	SP100023/0903	12	10.5	12.5	1
08/05/2003	AHU Managers Office	6000343	Roof 1	SP100022/0903	7.5	6.5	13.3	2
08/05/2003	AHU Mits	413	Roof 1	SP100025/0903	4.8	4.2	12.5	3
08/05/2003	AHU Mits	2302	Roof 1	SP100028/0903	4.8	4.6	4.2	4
08/05/2003	Williams Cooler	6972334	Roof 3	SP100024/0903	4.5	3.8	15.6	5
08/05/2003	Williams Cooler	NA	Roof 3	SP100027/0903	4.5	3.9	13.3	6
08/05/2003	Compressor	NA	Roof 3	SP100021/0903	4.8	4	16.7	7
08/05/2003	AHU Mits	8000990	Treatment Room 3	SP100029/0903	2.6	2.5	3.8	8
08/05/2003	AHU Mits	8008096	Treatment Room 2	SP100030/0903	2.6	2.4	7.7	9
08/05/2003	AHU Mits	8007342	Treatment Room 1	SP100026/0903	2.6	2.4	7.7	10
15/05/2003	Chiller Room Extract	C83	Boiler Room	SP101781/1303	2.2	1.6	27.3	11
15/05/2003	Pool CH Extract	C84	Boiler Room	SP101786/1303	2.8	2.8	0.0	12
15/05/2003	Toilet Extract	C85	Boiler Room	SP101763/1303	0.7	0.5	28.6	13
15/05/2003	Toilet Extract	C86	Boiler Room	SP101782/1303	2.3	1.7	26.1	14
16/05/2003	Toilet Extract	C87	Boiler Room	SP101788/1303	0.25	0.13	48.0	15
16/05/2003	Autonumis B/Cooler	NA	Leisure Bar	SP100008/0903	1	0.8	20.0	16
16/05/2003	Autonumis B/Cooler	NA	Leisure Bar	SP100005/0903	1.1	0.9	18.2	17
16/05/2003	Display Fridge	NA	Leisure Bar	SP101784/1303	1.1	0.8	27.3	18
16/05/2003	Ice Machine	NA	Leisure Bar	SP101785/1303	1.5	1.3	13.3	19
16/05/2003	Autonumis B/Cooler	NA	Hollins Bar	SP101765/1303	1.2	1.1	8.3	20
16/05/2003	Autonumis B/Cooler	NA	Hollins Bar	SP100002/0903	1.1	1	9.1	21
16/05/2003	Williams Fridge	5	Leisure Kitchen	SP100007/0903	1.35	1.1	18.5	22
16/05/2003	Williams Freezer	4	Leisure Kitchen	SP100001/0903	2.1	1.7	19.0	23
16/05/2003	Williams Fridge	8	Leisure Kitchen	SP100009/0903	1.3	1.2	7.7	24
16/05/2003	Williams Blast Freezer	3	Leisure Kitchen	SP100004/0903	2.1	1.69	19.5	25
16/05/2003	Williams upright fr	NA	Leisure Kitchen	SP100003/0903	2.2	2.04	7.3	26
16/05/2003	Williams upright fr	NA	Leisure Kitchen	SP100006/0903	2.1	1.6	23.8	27
16/05/2003	Williams Freezer	NA	Leisure Kitchen	SP101790/1303	2.4	1.8	25.0	28
16/05/2003	Deep Freeze	NA	Leisure Kitchen	SP101547/1203	2.14	1.95	8.9	29
17/05/2003	Fosters Upright Freezer	NA	Hotel Kitchen	SP101789/1303	2.2	2	9.1	30
17/05/2003	Display Cooler	NA	Hotel Kitchen	SP100002/1303	2.4	2	16.7	31
17/05/2003	Display Cooler	NA	Hotel Kitchen	SP101545/1203	2.2	1.95	11.4	32

DATE	APPLIANCE	S No.	LOCATION	MEC S No.	(A) BEFORE	(A) AFTER	Savings %	Unit No
17/05/2003	Williams Blast Freezer	19	Hotel Kitchen	SP101543/1203	2.4	2.2	8.3	33
17/05/2003	Williams Blast Freezer	17	Hotel Kitchen	SP101544/1203	1.9	1.7	10.5	34
17/05/2003	Artica LockH Blast Fr	11	Hotel Kitchen	SP101541/1203	2.2	2	9.1	35
17/05/2003	Williams Blast Freezer	NA	Hotel Kitchen	SP101548/1203	2.1	2	4.8	36
17/05/2003	Williams Blast Fridge	7	Hotel Kitchen	SP101751/1303	2.4	1.9	20.8	37
17/05/2003	Williams Upright Fridge	NA	Hotel Kitchen	SP100082/0903	2.1	1.9	9.5	38
17/05/2003	Carvell Upright Fridge	NA	Hotel Kitchen	SP100086/0903	1.9	1.8	5.3	39
17/05/2003	Williams Double Fridge	NA	Hotel Kitchen	SP101555/1203	2.2	1.8	18.2	40
17/05/2003	Williams DD Fridge	NA	Hotel Kitchen	SP100084/0903	2.2	1.9	13.6	41
17/05/2003	Fosters Upright Fridge	NA	Hotel Kitchen	SP100083/0903	1.9	1.6	15.8	42
17/05/2003	Deep Freeze	NA	Hotel Kitchen	SP100090/0903	1.2	0.9	25.0	43
17/05/2003	Ice Machine	NA	Hotel Kitchen	SP100089/0903	4.8	4	16.7	44
17/05/2003	Ice Cream Machine	NA	Leisure Kitchen	SP100085/0903	6.5	5.8	10.8	45
18/05/2003	AHU	Mits	Roof 1	16A unit	12	10.8	10.0	46
18/05/2003	AHU	Mits	Side of Building	SP100134/0903	6.4	6	6.3	47
18/05/2003	AHU	Mits	Side of Building	SP100135/0903	4.6	4	13.0	48
18/05/2003	AHU	Mits	Side of Building	SP100140/0903	5.8	5.6	3.4	49
18/05/2003	AHU	Mits	Creche	3020/1/3115/102	5.2	5	3.8	50
18/05/2003	AHU	Mits	Front of Building	SP100088/0903	4.8	4.7	2.1	51
18/05/2003	AHU	Mits	Front of Building	SP100133/0903	5.2	5	3.8	52
18/05/2003	AHU	Mits	Front of Building	3020/1/3697/102	4.9	4.2	14.3	53
18/05/2003	AHU	Mits	Managers Office	SP100139/0903	4.9	4.8	2.0	54
18/05/2003	AHU	Mits	Office	SP100081/0903	5.3	5.3	0.0	55
18/05/2003	Autonumis B/Cooler	NA	Hollins Bar	SP100136/0903	1.2	1.1	8.3	56
18/05/2003	Autonumis B/Cooler	NA	Hollins Bar	SP100087/0903	1	0.9	10.0	57
18/05/2003	Carvell Upright Fridge	NA	Hollins Bar	SP100031/2303	2.1	2	4.8	58
18/05/2003	Autonumis B/Cooler	NA	Bar	SP100101/2303	1	0.9	10.0	59
18/05/2003	Autonumis B/Cooler	NA	Bar	SP100102/2303	1.1	1	9.1	60
18/05/2003	AHU	Mits	Leisure Area	16A unit	10.6	10	5.7	61
18/05/2003	AHU	Mits	Leisure Area Gym 1	16A unit	9.4	9	4.3	62
18/05/2003	AHU	Mits	Leisure Area Gym 2	16A unit	11.8	11	6.8	63
18/05/2003	AHU	Toshiba	Roof 2	16A unit	12.2	12	1.6	64
18/05/2003	AHU	Toshiba	Roof 2	16A unit	11.4	11	3.5	65
18/05/2003	AHU	Mits	IT	16A unit	10.5	10.4	1.0	66
18/05/2003	AHU	Mits	Reception 1	16A unit	10.2	10	2.0	67
18/05/2003	AHU	Mits	Reception 2	16A unit	10.5	10	4.8	68
18/05/2003	AHU	Mits	Office	16A unit	10.1	9.6	5.0	69
18/05/2003	Williams Upright Fridge	NA	Bar	SP101790/1303	2	1.9	5.0	70

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18/05/2003	Deep Freeze	NA	Bar	SP101547/1303	1.2	0.9	25.0	71
18/05/2003	Williams Upright Fridge	NA	Bar	SP100082/2303	1.6	1.2	25.0	72
18/05/2003	Foster Fridge	NA	Bar	SP101789/1303	2.2	1.8	18.2	73

INSTALLED TESTING FOR THREE PHASE MEC'S

DATE	APPLIANCE	S No.	LOCATION	MEC S No.	(A) BEORE	(A) AFTER	Savings %	ITEM
14/05/2003	Daikin	NA	Leisure area	TP10081/1803	6.5	5.9	9.23	1
14/05/2003	Daikin	Unit1	Leisure Bar	TP10062/1803	8.7	7.5	13.79	2
14/05/2003	Daikin	Unit2	Leisure Bar	TP10085/1803	7.5	6	20.00	3
14/05/2003	Daikin	Unit3	Leisure Bar	TP10069/1803	7.7	7	9.09	4
14/05/2003	Daikin	Unit1	Function room	TP10090/1803	7.2	6.9	4.17	5
14/05/2003	Daikin	Unit2	Function room	TP10080/1803	6.7	5.5	17.91	6
14/05/2003	Daikin	Unit3	Function room	TP10061/1803	6.7	6	10.45	7
14/05/2003	Daikin	No.3	Heathcliffe area	TP10007/1803	5.8	5	13.79	8
14/05/2003	Daikin	No.2	Heathcliffe area	TP10079/1803	6	5.8	3.33	9
14/05/2003	Daikin	No.1	Heathcliffe area	TP10070/1803	6.2	5.5	11.29	10
15/05/2003	Pump1	C76	Boiler room	TP10075/1803	4.6	4.2	8.70	11
15/05/2003	Pump2	C77	Boiler room	TP10078/1803	4	3.7	7.50	12
15/05/2003	Pump HWS	C79	Boiler room	TP10074/1803	2.2	1.8	18.18	13
15/05/2003	Pump Shunt	C81	Boiler room	TP10073/1803	2.1	1.9	9.52	14
15/05/2003	Pump Shunt	C82	Boiler room	TP10077/1803	2.2	2	9.09	15
15/05/2003	AHU Supply	C90	Boiler room	TP10056/1803	4.5	3.8	15.56	16
15/05/2003	AHU Extract	C98	Boiler room	TP10057/1803	2.5	2.2	12.00	17
15/05/2003	AHU2 Supply	C102	Boiler room	TP10076/1803	2.8	2.3	17.86	18
15/05/2003	AHU2 Extract	C104	Boiler room	TP10059/1803	2.8	2.5	10.71	19
15/05/2003	AHU3 Supply	C113	Boiler room	TP10060/1803	6.5	6.2	4.62	20
15/05/2003	AHU3 Extract	C117	Boiler room	TP10055/1803	8.5	7.9	7.06	21
15/05/2003	AHU4 Supply	C107	Boiler room	TP10058/1803	4.5	3.9	13.33	22
15/05/2003	AHU4 Extract	C108	Boiler room	TP10089/1803	3.5	2.9	17.14	23
16/05/2003	Booster	Pump1	Next to sw/room	TP10082/1803	4.5	4.4	2.22	24
16/05/2003	Booster	Pump2	Next to sw/room	TP10064/1803	4.5	4.4	2.22	25
16/05/2003	Booster	Pump3	Next to sw/room	TP10066/1803	4.45	4.4	1.12	26
16/05/2003	Williams C Cooler	1	Next to Cellar1	TP10071/1803	4.5	4	11.11	27
16/05/2003	Williams C Cooler	2	Next to Cellar2	TP10067/1803	5.2	4.9	5.77	28
17/05/2003	Daikin	NA	Leisure Area	TP10065/1803	6.2	5.8	6.45	29

DATE	APPLIANCE	SNo.	LOCATION	MEC SNo.	(A) BEFORE	(A) AFTER	Savings %	ITEM
17/05/2003	Daikin	NA	CV Area	TP10068/1803	5.5	5	9.09	30
17/05/2003	Yorke AHU 1	Comp1	Roof1	TP10088/1803	8.8	6.5	26.14	31
17/05/2003	Yorke AHU 1	Comp2	Roof1	TP10086/1803	8.5	7	17.65	32
17/05/2003	Yorke AHU 1	Fan	Roof1	TP10083/1803	4.6	4	13.04	33
17/05/2003	Yorke AHU 2	Comp1	Roof1	TP10072/1803	7.9	7.5	5.06	34
17/05/2003	Yorke AHU 2	Comp2	Roof1	TP10087/1803	8.2	8	2.44	35
17/05/2003	Yorke AHU 2	Fan	Roof1	TP10063/1803	5.2	4.8	7.69	36

Customer Marriott Hotel, Hollins Hall, Shipley, England

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Report Compiled by ICM First Ltd and EMS (European) Ltd 30th April 2004.