

DOMESTIC HEAT PUMPS SA



Case Study

ENERGY SAVING HOT WATER GENERATION

VERDI'S RESTAURANT

DOMESTIC HEAT PUMPS

SOUTH AFRICA

Version 1.0: SEP 2012

Presented by: H.SCHWIKKARD

Worksheet

Client approval: **Yes** _____ No _____

Note whether your case study needs to be ready in time for a specific event:

Date: _____ Event: _____

Your company information

Branch	DOMESTIC HEAT PUMPS S.A.
Address	5 SHERWOOD COURT, CNR DREYERSDAL AND CHILDRENS WAY
City, Code	BERGVLIET, 7800
Phone number	021 713 1335
Fax number	086 684 9276
Contact name	HAYDN SCHWIKKARD
Title	DIRECTOR
Phone number	072 187 8157
Fax number	086 684 9276
E-mail address	haydn@dhpsa.co.za
Solution group	HEAT PUMPS
Solution offering	ELECTRICITY SAVING
Project name or title	VERDIS

SOUTH AFRICA

Customer profile

Customer name	VERDI'S RESTAURNT
Division	FOOD & BEVERAGE
Address	EDGEMEAD SHOPPING CENTRE
City, Code	EDGEMEAD , 7700
Phone number	021 558 4110
Fax number	
Web site address	www.verdi.co.za

Industry	FOOD AND BEVERAGE
Number of employees	54
Annual revenue	CONFIDENTIAL
Contact name	STEPHEN LLWELLAN
Title	OWNER
Phone number	021 558 4110
Fax number	
E-mail address	Verdi <verdi1@lantic.net>

Case Study for VERDI'S RESTAURANT

Company profile

Verdi's Restaurant is a family orientated restaurant with a well-appointed Sports bar area.

Established 12 years ago it has become synonymous with the area Edgemead.

- Restaurant open 10am to 9pm
- Bar area open 10am till late
- Hot water usage min of 12hrs per day
- The load factor employed is well in excess of 60%

Business situation

Due to increasing costs and particularly the increases in electricity, it was decided to look at various means to control these increases. DHPSA was approached to specifically look at the hot water generation costs.

Technical situation

Hot water generation at the establishment was being supplied by a 150 litre 400kPa Kwikot hot water cylinder.

Element size being 3 kW.

Will provide 57 litres of hot water (60deg C) in 1 hour with a delta T of 45.

Efergy meter placed on live of HWC circuit. This provides an hourly readout of kW used.

Meter placed in March 2012. Measurements taken till September 2012.

Solution

Having examined the general usage and thus the load factor on the hot water generating system it was clear that the most economical solution was the installation of a Heat Pump.

Benefits

Utilizing the Eskom Standard product programme provided a further benefit in the form of a rebate. Thus the client was benefitting from lowered electricity bill as well a payment portion of the capex.

Products and services your company used

DHPSA installed a KP30 (3Kw) heat pump as we were replacing like with like and the load factor was evenly spread.







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air source hot water heat pump

Model			KP- 30	KP- 40
Refrigerant			R410a	R410a
Power Supply		V/Ph/Hz	220/1/50	220/1/50
Rated Hot Water Output		L/h	68	83
Heating Capacity		KW	3.15	4.10
Rated Input Power		KW	1.2	1.5
Rated Input Current		A	5.3	5.3
Compressor	Type		scroll	scroll
	Quantity		1	1
Rated Water Temp.		°C	48	50
Ambient Temp.		°C	-15--42	-15--42
Water Pressure Drop		KPa	40	40
Connection Pipe		mm	DN25	DN25
Max water pressure		KPa	600	600
Fan	Air Flow Rate	RPM	850	850
	Output Power	W	1000	1000
Noise Level		dB(A)	50	50
Net Dimension (LxDxH)		mm	990x380x560	990x380x560
Packing Dimension (LxDxH)		mm	1100x420x610	1100x420x610
Net Weight		Kg	40	42
Shipping Weight		Kg	42	44

Test Condition: air temperature DB/WB 20/15°C, water inlet 15°C, water outlet 50°C.



CONTACT :- KARL LUFF
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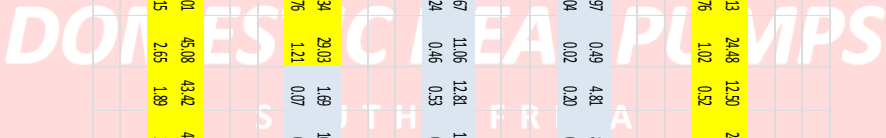
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DOMESTIC HEAT PUMPS
SOUTH AFRICA

MEASUREMENTS AND SUMMARY :

MARCH 2012		APRIL 2012		MAY 2012		JUNE 2012		JULY 2012																						
46.88	42.51	36.14	2.26	1.97	1.53	26.60	27.08	34.01	26.60	28.42	33.12	21.80	20.70	39.99	32.47	27.65	18.13	24.48	12.50	24.67	35.90	33.43	32.00	34.52	27.02	21.96	23.04	38.82	35.39	33.55
2.04	1.77	1.51	0.09	0.08	0.06	1.19	1.13	1.42	1.11	1.18	1.38	0.91	0.86	1.67	1.35	1.15	0.76	1.02	0.52	1.03	1.50	1.39	1.33	1.44	1.13	0.92	0.96	1.62	1.47	1.40
MARCH 2012		APRIL 2012		MAY 2012		JUNE 2012		JULY 2012																						
10.98	10.03	8.84	10.40	11.81	10.21	10.28	9.43	8.49	5.18	2.07	11.06	8.90	12.02	8.21	9.40	0.97	0.49	4.81	8.27	9.21	10.17	10.21	7.83	9.73	17.72	36.88	33.85	22.51	34.77	
0.46	0.42	0.37	0.43	0.49	0.43	0.43	0.39	0.35	0.22	0.09	0.46	0.37	0.50	0.34	0.39	0.04	0.02	0.20	0.34	0.38	0.42	0.43	0.33	0.41	0.74	1.54	1.41	0.94	1.45	
MARCH 2012		APRIL 2012		MAY 2012		JUNE 2012		JULY 2012																						
6.15	12.77	9.03	11.17	10.32	10.78	12.68	12.28	11.07	9.39	8.59	9.63	11.79	13.22	0.30	5.57	8.92	5.67	11.06	12.81	11.84	6.42	12.56	5.52	10.83	7.81	13.19	12.92	6.42	8.07	11.50
0.26	0.53	0.38	0.47	0.43	0.45	0.53	0.51	0.46	0.39	0.36	0.40	0.49	0.55	0.01	0.23	0.37	0.24	0.46	0.53	0.49	0.27	0.52	0.23	0.45	0.33	0.55	0.54	0.27	0.34	0.48
MARCH 2012		APRIL 2012		MAY 2012		JUNE 2012		JULY 2012																						
11.74	11.56	12.30	10.96	10.56	7.79	9.82	11.09	12.64	10.11	10.27	10.62	15.40	34.10	44.76	36.91	42.34	28.03	1.69	10.89	10.12	12.38	11.93	10.22	12.69	11.12	8.08	3.16	10.71	12.32	
0.49	0.48	0.51	0.46	0.44	0.32	0.41	0.46	0.53	0.42	0.43	0.44	0.64	1.42	1.87	1.54	1.76	1.21	0.07	0.45	0.42	0.52	0.50	0.43	0.53	0.46	0.34	0.13	0.45	0.51	
MARCH 2012		APRIL 2012		MAY 2012		JUNE 2012		JULY 2012																						
11.08	7.72	10.83	9.99	10.81	12.10	9.41	13.15	10.86	9.02	12.63	11.56	11.82	13.09	36.63	44.64	37.32	63.01	46.08	43.42	47.39	42.53	32.11	45.14	57.86	28.83	1.78	6.66	9.30	8.27	9.87
0.65	0.51	0.52	0.48	0.51	0.58	0.50	0.73	0.68	0.47	0.55	0.50	0.49	0.55	2.03	2.63	1.56	3.15	2.65	1.89	2.06	2.66	1.46	2.38	2.41	1.70	0.88	0.32	0.62	0.49	0.45



From the detailed measurements (summary above) the following facts were ascertained :

- Unit using element heating only
 - Daily Kilowatt usage 32.23kW
 - Average kWhrs – 1.53 kWatts per hour
- Unit using Heat Pump technology
 - Daily Kilowatt usage 9.59kW
 - Average kWhrs – 0.43 kWatts per hour

Thus one can extrapolate the following with regard electricity saving :

Assume R 1.40 per kWhr

Assume 30.2 days in a month

NO HEAT PUMP

HEAT PUMP

Cost per month

R 1 362.68

Cost per month

R 405.46

Thus one can conservatively expect a saving of **R 960.00** per month.

Cost of Project

R 14 995.00

Eskom SP Rebate

R 6 470.00

Total Cost to Client

R 8 525.00

Total Project paid for

9 Months

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