

ANNEXURE 1 – LIGHTING SIMULATIONS

ANNEXURE 1.1 – BEKA

TURBINE HALL AT LEVEL 9

Installation : BEKABAY 600w HPS TECHNO REFLECTOR-284241

Project number : MEDUPI POWERSTATION

Customer : ESKOM

Processed by : PAUL NICOLAI

Date : 07.06.2011

Project description:

Bekabay 600w HPS Techno reflector mounted at 14m using a high output lamp of 90 000 lumen.

Maintenance factor was calculated as follows: maintenance factor.LLD 0.9, BC 0.97,DUST 0.9
LC 0.95. TOTAL MF 0.75

Required luxlevel: 300 lux

The following values are based on exact calculations on calibrated lamps, luminaires and their arrangement. In practice, gradual divergences can occur.

Guarantee claims for luminaire data are excluded.

Relux and the luminaire manufacturers accept no liability for consequential damage and damage which is occasioned to the user or to third parties.



A member of the Schröder Group GIE

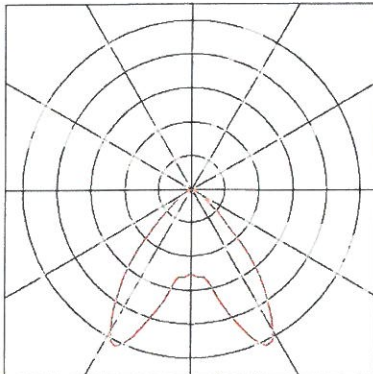
SCHREDER, BEKABAY 600W HPST/HO-SCHREDER-28... (!284241)

Manufacturer: SCHREDER

Luminaire data

Equipped with

Number of	:	1
Designation	:	600w hps/t
Power	:	600 W
Colour	:	
Luminous flux	:	90000 lm



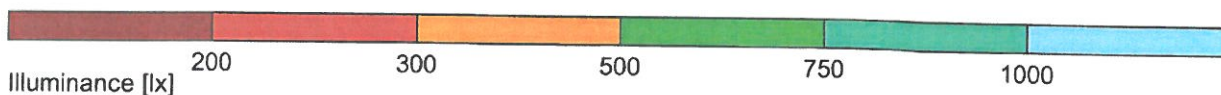
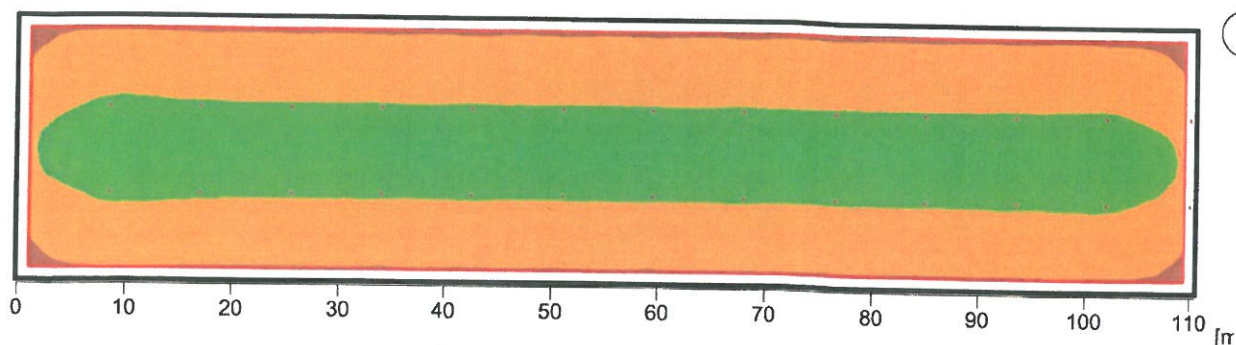
Object : TURBINE HALL AT LEVEL 9
 Installation : BEKABAY 600w HPS TECHNO REFLECT
 Project number : MEDUPI POWERSTATION
 Date : 07.06.2011



Room 1

Summary, Room 1

Result overview, Reference plane 1



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Height of luminaire plane	14.00 m
Maintenance factor	0.75
Total luminous flux of all lamps	2520000 lm
Total power	18060 W
Total power per area (2707.25 m ²)	6.67 W/m ² (1.44 W/m ² /100lx)

Illuminance

Average illuminance	Eav	465 lx
Minimum illuminance	Emin	265 lx
Maximum illuminance	Emax	667 lx
Uniformity g1	Emin/Em	1:1.75 (0.57)
Uniformity g2	Emin/Emax	1:2.52 (0.4)

2 28



SCHREDER

Order No. : !284241
 Luminaire name : BEKABAY 600W HPST/HO-SCHREDER-284241
 Equipment : 1 x 600w hps/t 600 W / 90000 lm

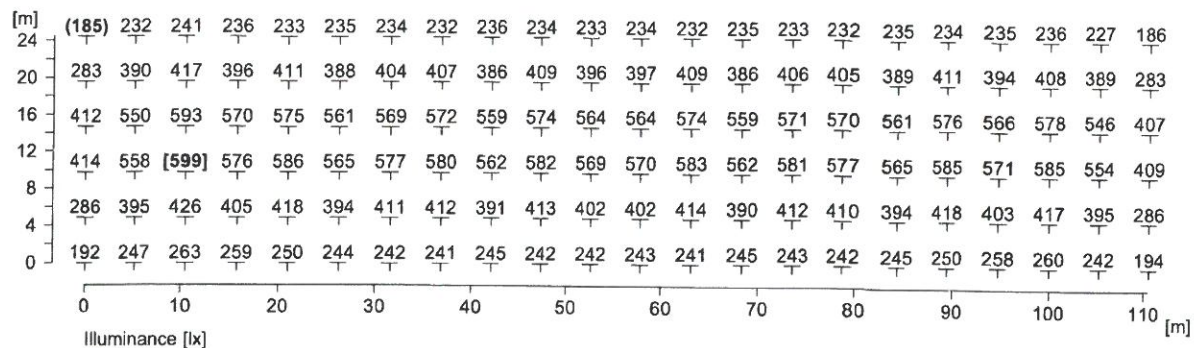
Object : TURBINE HALL AT LEVEL 9
 Installation : BEKABAY 600w HPS TECHNO REFLECTOR
 Project number : MEDUPI POWERSTATION
 Date : 07.06.2011



Room 1

Calculation results, Room 1

Table, Floor (E)



Average illuminance	Eav	: 395 lx
Minimum illuminance	Emin	: 185 lx
Maximum illuminance	Emax	: 599 lx
Uniformity g1	Emin/Eav	: 1 : 2.14 (0.47)
Uniformity g2	Emin/Emax	: 1 : 3.24 (0.31)



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Object : TURBINE HALL AT LEVEL 9
 Installation : BEKABAY 600w HPS TECHNO REFLECTOR
 Project number : MEDUPI POWERSTATION
 Date : 07.06.2011



Calculation results, Room 1

Table, Reference plane 1 (E)

313	309	306	310	314	312	307	307	312	314	311	307	308	313	314	310	307	310	315	314	309	308	314	317	316	310	309	307	293	(265)
373	356	349	361	375	369	352	351	367	376	363	349	355	373	375	358	349	360	376	372	355	352	368	380	370	355	355	362	345	301
412	399	390	406	414	411	393	392	410	415	408	390	397	412	414	402	390	405	415	413	396	393	413	420	416	398	398	396	375	335
451	439	430	444	449	450	434	432	449	449	445	431	438	452	451	442	431	444	451	452	437	434	452	455	455	440	438	431	404	362
495	497	495	493	494	494	498	497	494	494	493	496	498	495	496	496	495	495	496	496	500	499	498	502	502	507	499	471	442	409
557	555	554	553	556	556	555	555	555	554	555	556	557	558	555	555	555	558	558	558	558	559	564	564	566	558	533	501	460	
618	594	578	603	620	613	584	582	611	621	606	579	591	617	620	598	578	602	621	616	589	583	614	630	620	591	593	595	561	494
642	608	592	623	646	637	599	598	634	647	627	594	605	641	643	613	593	619	646	640	603	598	636	656	643	607	609	616	582	510
624	598	580	608	626	618	587	584	616	627	612	581	595	622	626	603	580	606	627	622	593	585	620	636	625	594	597	600	567	498
566	562	560	561	565	565	561	561	564	564	562	560	562	567	567	562	560	563	567	568	564	564	568	573	573	571	564	543	510	466
502	505	503	501	502	501	507	506	501	502	501	504	506	502	503	504	503	503	504	503	509	508	505	510	510	515	507	478	449	416
456	446	439	449	455	456	442	440	454	454	451	439	445	457	456	448	439	449	456	458	445	442	456	461	460	448	446	436	408	368
418	405	395	412	419	416	399	397	415	419	414	396	403	418	419	408	396	411	420	418	402	399	418	425	421	404	404	401	379	340
380	362	354	367	382	376	358	357	374	382	369	355	360	379	381	364	355	366	382	379	360	357	374	386	377	361	361	368	351	307
323	316	313	318	324	321	315	314	320	325	319	314	316	323	324	317	314	318	325	323	316	316	322	328	324	317	317	316	303	272
60					70					80					90					100 [m]									

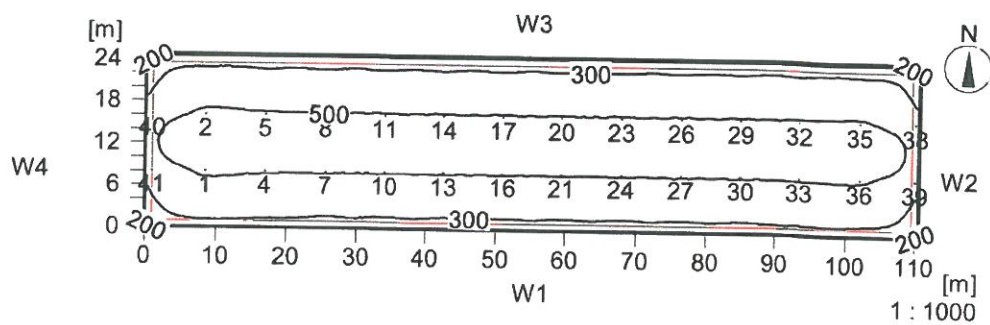
Part2

Object : TURBINE HALL AT LEVEL 9
 Installation : BEKABAY 600w HPS TECHNO REFLECT
 Project number : MEDUPI POWERSTATION
 Date : 07.06.2011



Calculation results, Room 1

Isolines representation, Floor (E)



Illuminance [lx]

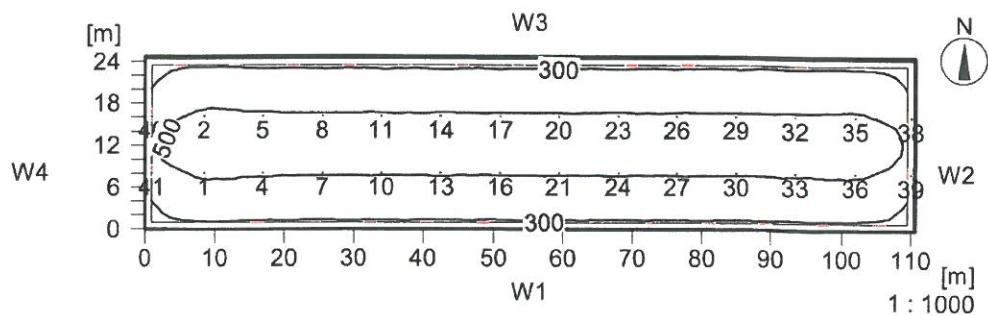
Average illuminance	Eav	: 395 lx
Minimum illuminance	Emin	: 185 lx
Maximum illuminance	Emax	: 599 lx
Uniformity g1	Emin/Eav	: 1 : 2.14 (0.47)
Uniformity g2	Emin/Emax	: 1 : 3.24 (0.31)

Object : TURBINE HALL AT LEVEL 9
 Installation : BEKABAY 600w HPS TECHNO REFLECTOR
 Project number : MEDUPI POWERSTATION
 Date : 07.06.2011



Calculation results, Room 1

Isolines representation, Reference plane 1 (E)



Illuminance [lx]

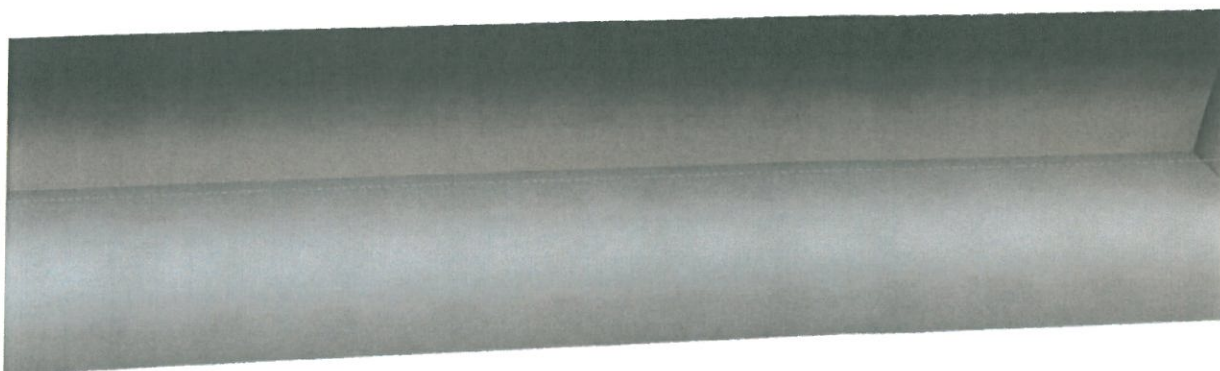
Height of the reference plane	: 0.00 m
Average illuminance	Eav : 465 lx
Minimum illuminance	Emin : 265 lx
Maximum illuminance	Emax : 667 lx
Uniformity g1	Emin/Eav : 1 : 1.75 (0.57)
Uniformity g2	Emin/Emax : 1 : 2.52 (0.40)

Object : TURBINE HALL AT LEVEL 9
Installation : BEKABAY 600w HPS TECHNO REFLECTOR
Project number : MEDUPI POWERSTATION
Date : 07.06.2011



Calculation results, Room 1

3D luminance, View 1



Luminance in the scene

Minimum: : 1.11 cd/m²
Maximum: : 21.3 cd/m²

ANNEXURE 1.2 – MAGNITECH

Room Estimator - Layout 1

Luminaire

IES Filename: SAW701 NHT600

Description:

Lumens Per Lamp:	90000	lms	
Number of Lamps:	1		
Luminaire Lumens:	73953	lms	
Luminaire Efficiency:	82	%	
Luminaire Watts:	630	W	

Total Light Loss Factor (LLF): 0.750

Room Dimensions

Length (X):	110	m	
Width (Y):	25	m	
Height (Z):	23	m	
Workplane Height:	9	m	
Suspension Length:	0	m	
Room Cavity Ratio (RCR):	3.436		

Room Reflectance

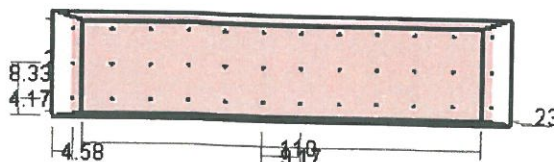
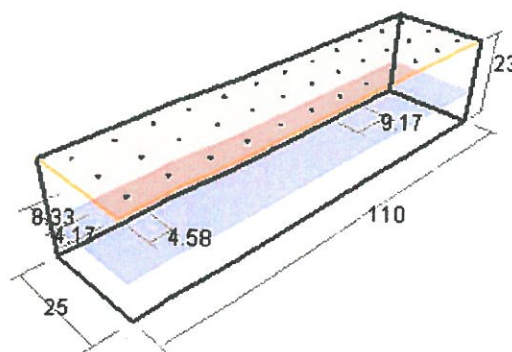
Ceiling:	0.50	
Walls:	0.20	
Floor:	0.10	
Effective Ceiling Cavity:	0.500	
Effective Floor Cavity:	0.075	
Coeffecient of Utilization (CU):	0.575	

Results

Estimated Average Illuminance:	508	lux	
Number of Luminaires:	36		
Lighting Power Density (LPD):	8.247	W/m^2	

Layout

	Rows (Width, Y)	×	Columns (Length, X)	
Grid Layout (Size):	3	×	12	luminaires
Grid Spacing:	8.33	×	9.17	m
Wall (Start) Spacing:	4.17	×	4.58	m
Ceiling Grid Spacing:	N.A.	×	N.A.	m
Spacing Criteria:	1.24	×	1.24	m



ANNEXURE 2 – CALCULATIONS

MEDUPL UNIT 6 TURBINE HALL LIGHTING - FINANCIAL COST EVALUATION

CAPITAL COSTS		
	Quantity	Unit Price*
MAGNITECH (BM3/SAW701 600W HPS)	39	R 2,711.25
BEKA (BEKABAY TECHNO 600W HPST HO 128mm SPACER)	39	R 3,179.52
		R 105,738.75
		R 124,001.28

* Price quoted from the Original BOQ

TOTAL CAPITAL COST	
MAGNITECH	R 105,738.75
BEKA	R 124,001.28

OPERATIONAL COSTS						
	Ballast Power (W)	Wattage (kW)	Energy per year (kWh)	Energy Cost (Cost / kWh)	Energy Consumption Cost/Year	Max Demand (kVA)
MAGNITECH (BM3/SAW701 600W HPS)	630.00	24.57	215,233.20	R 0.64	R 136,888.32	294.84
BEKA (BEKABAY TECHNO 600W HPST HO 128mm SPACER)	667.00	26.01	227,873.88	R 0.64	R 144,927.79	312.16
						R 100.00
						R 100.00
						R 29,484.00
						R 31,215.60

Assume 20% Annual Increase on Energy Cost

	2011	2012	2013	2014	2015	Total
Energy Costs (Magnitech)	R 136,888.32	R 164,265.98	R 197,119.17	R 236,543.01	R 283,851.61	R 1,018,668.09
Energy Costs (Beka)	R 144,927.79	R 173,913.35	R 208,696.01	R 250,435.22	R 300,522.26	R 1,078,494.62

Assume 20% Annual Increase on Demand Costs

	2011	2012	2013	2014	2015	Total
Demand Costs (Magnitech)	R 29,484.00	R 35,380.80	R 42,456.96	R 50,948.35	R 61,138.02	R 219,408.13
Demand Costs (Beka)	R 31,215.60	R 37,458.72	R 44,950.46	R 53,940.56	R 64,728.67	R 232,294.01

Assume 10% Annual Increase on Lamp Costs

	2011	2012	2013	2014	2015	Total
Lamp Repl Costs	R 250.00	R 275.00	R 302.50	R 332.75	R 366.03	R 26,072.48

TOTAL OPERATION COST IN 5 YEARS

MAGNITECH	R 1,264,148.70
BEKA	R 1,336,861.11

TOTAL OVERALL COST IN 5 YEARS

MAGNITECH	R 1,369,887.45
BEKA	R 1,460,862.39

ANNEXURE 3 – LIGHTING SUPPLIER TECHNICAL INFORMATION

ANNEXURE 3.1 – BEKA

LIGHTING SUPPLIER'S TECHNICAL DETAILS

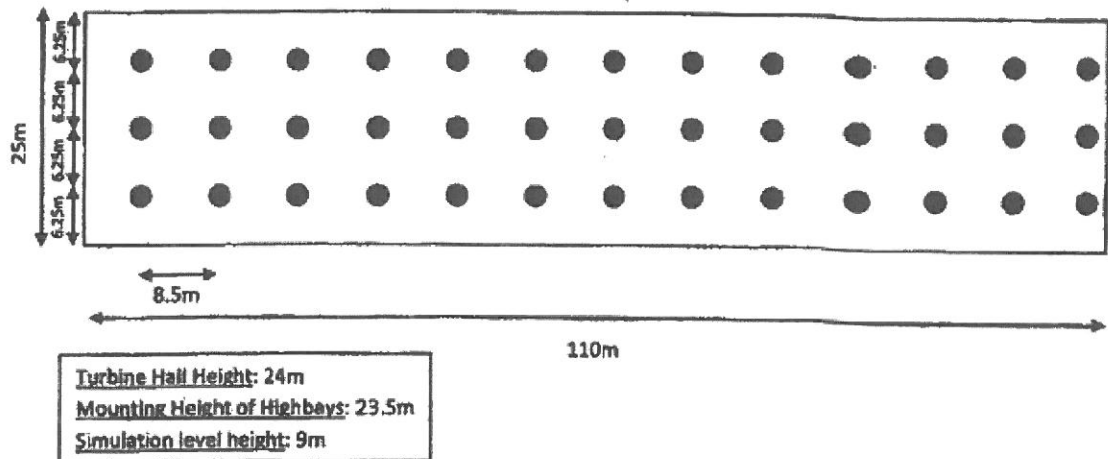


Figure 1: Schematic Diagram of Medupl Unit 6 Turbine Hall – Plan Layout (N.T.S)

Table 1: Table to be filled out by Lighting Supplier – Technical Specifications

SUPPLIER NAME OF FITTING	LAMP TYPE	LAMP RATING	LIGHT OUTPUT (INITIAL)	POWER WITH BALLAST	RATED AVERAGE LIFE	EFFICACY (lm/W)
BELABAY TECHNO 600W HPST HO 12% mm SPACER	600W HPS HIGHBAY	600W	90 000	667	24 000 h	150

Table 2: SABS Photometric and Test Reports

SUPPLIER NAME OF FITTING	PHOTOMETRIC TEST REPORT (Y/N)	SABS MANUFACTURER TEST REPORT (Y/N)
BELABAY TECHNO 600W HPST HO 12% mm SPACER	YES	WILL FOLLOW SOON



226-TEST

RTECH-PHOTOMETRY LABORATORY

Test report : Measurement of luminous intensity distribution related to the standard NBN-EN 13032-1 and the procedure PT-P-01 and PT-P-02

rue de Mons, 3 B-4000 LIEGE - Tel : 04/224.71.40 - Fax 04/224.25.90

HID

NBN EN ISO/IEC 17025 :2005

Measurement for Schröder group.

Origin Beka (PTY) LTD South Africa		Production Beka (PTY) LTD South Africa		Luminaire LOW BAY 0.0°		Request # FD28181	
Type HID	HID : Sphere measurement / LED : BIN N600/5/P/B rack/32°/90765lm		Source Trademark Philips	Reference SON-T+	Power 600.0	Reflector 2083	
Master Aluminium Brightened Deep drawn Metalco Industrial 0.0°			Reflector		No No No 2083		
Protector Refractor(See detail) Lens							
Laboratory observation							
<p>Measurement uncertainty on Intensity : $\pm 3.0\%$</p> <p>Measurement uncertainty on angle in degree (in C and) : $\pm 0.5\%$</p> <p>Note : The publication of this test report in an other form than the original one is not allowed without the agreement of the laboratory. This test report only refers to the test object that was tested.</p>							
Purpose CTR				Sample date 25/09/2008		Sample # 28R206	
Observation							
Asked by LMA	Measured by AU+FC	Approved by AB	Appendix 1	Viewed by Photometry <input type="checkbox"/> AGR <input type="checkbox"/>		28424	

LUMINOUS INTENSITY DIAGRAM


(cd for 1000 lumens)

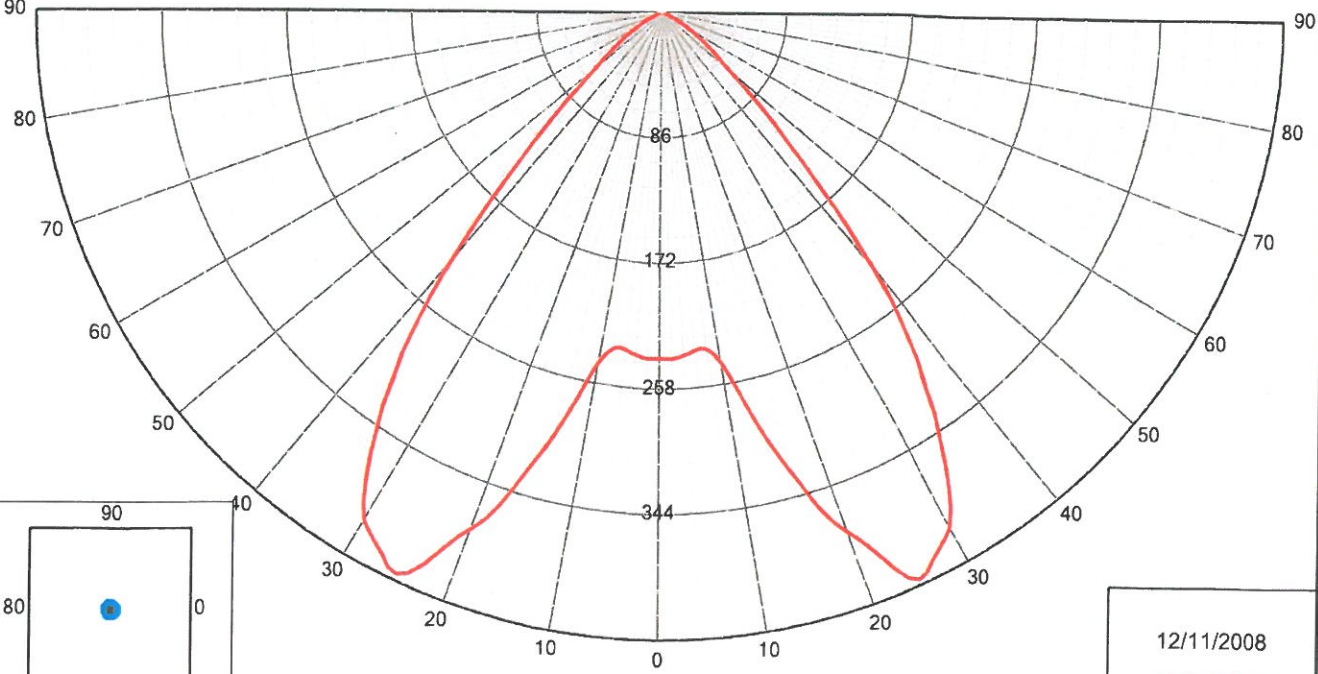
Origin Beka (PTY) LTD South Africa		Production Beka (PTY) LTD South Africa		Luminaire LOW BAY 0.0°		Request # FD28181	
Source	Type HID1	Trademark Philips	Reference SON-T+	Power 600.0	Flux * 90765		
Flux measured for HID Catalogue flux for LED *							
Reflector	Aluminium Brightened Deep drawn Metalco (0.0°)					No No No 2083	
Matrices	284241 0-90° = 76.8% - 90-99° = 0.0%		284242 0-90° = 64.7% - 90-99° = 0.0%		284243 0-90° = 77.1% - 90-99° = 0.0%		
Protector	Without		Glass Flat Smooth		Without		
Refractor Lens							
Comment	luminaire industriel symétrique avec réflecteur brillanté de fab. Metalco du PH28422 et 423 mais avec le support lampe repère " 600W HPS/T 128mm" Industrial Luminaires with symmetrical reflector of polished fob. Metalco of PH28422 and 423 but with the support 600W lamp spotted HPST / T 128mm		avec le verre. Constatation faite après essai: le réflecteur ne tient plus correctement sur le support. With glass observation made after the test: the reflector is no longer correctly on the support		nouvel essai sans protecteur idem matrice 1 après avoir reserré les vis de fixation du réflecteur. New trial without a protective matrix ditto after tightening the screws of the reflector		
Source	-237.0/Axis/90.0//On		-237.0/Axis/90.0//On		-237.0/Axis/90.0//On		
Tilt/Pos/Incl/Rot/On/Off							
Calibration	25.0°		25.0°		25.0°		
Drawed plane	0°		0°		0°		
I zero	251		228		264		
I Pointe	515		435		504		
Peak position	27		26		25		
Index	S		S		S		

12/11/2008
28424

LUMINOUS INTENSITY DIAGRAM

(cd for 1000 lumens)

Origin Beka (PTY) LTD South Africa		Production Beka (PTY) LTD South Africa		Luminaire LOW BAY 0.0°		Request # FD28181	
Source	Type HID1	Trademark Philips	Reference SON-T+	Power 600.0	Flux * 90765		
Flux measured for HID Catalogue flux for LED *							
Reflector	Aluminium Brightened Deep drawn Metalco (0.0°)						No No No
Matrices	284244 0-90° = 64.6% - 90-99° = 0.0%						
Protector Refractor Lens	Glass Flat Smooth						
Comment	nouvel essai avec protecteur idem matrice 2.						
Source	-237.0/Axis/90.0//On						
Tir/Pos/Incl/Rot/OnOff							
Calibration	25.0°						
Drawed plane	0 ©						
I zero	237						
I Pointe	426						
Peak position	25						
Index	S						



12/11/2008
28424

Almog, Joel

From: Paul Nicolai [nicolaip@beka.co.za]
Sent: 13 April 2011 11:05 AM
To: Almog, Joel
Subject: 600w ballast spec- medupi
Attachments: SSI Ballast spec 600w-01.pdf; Spec 600w hps ballast-VS-TRID.pdf

Hi Joel,

With regards to the power consumption for the 600w HPS lamp. We are now using the VS. type ballast which at 230 Vac runs at 2.9 amps (667 watts), which is lower than the Tridonic type which runs at 3.1 amps (713 watts). See enclosed info from ballast manufactures. VS. type code is 506132.

Regards,

PAUL NICOLAI.
BEKA (Pty) Ltd – Industrial
MANAGER – Industrial Lighting Division.

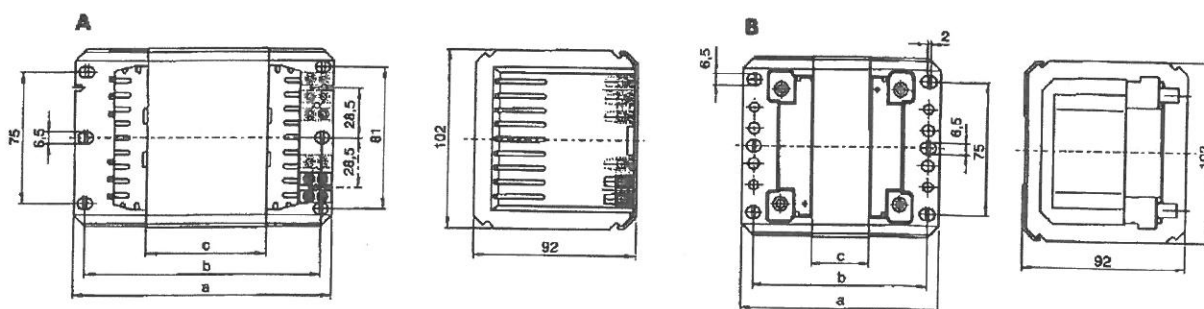
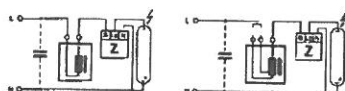
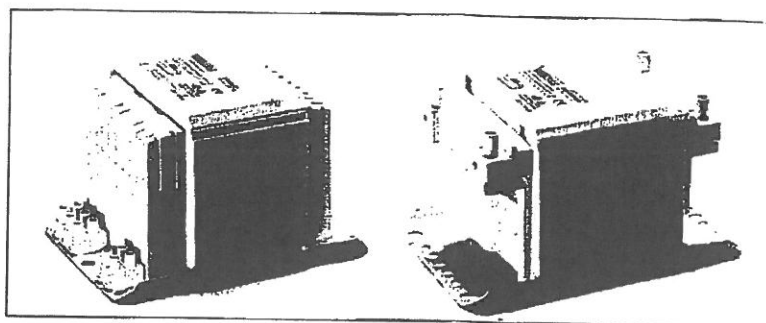
Address: P.O. box 120, Olifantsfontein, 1665, South Africa.
Phone: +27-11-238-0040
Fax: +27-11-238-0189
Mobile: +27-82-775-6623
E-mail: nicolaip@beka.co.za
Web: www.beka.co.za

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Ballasts for HS and HI Lamps 250 to 600 W

Shape: 92x102 mm

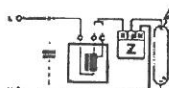
For high pressure sodium lamps (HS)
and metal halide lamps (HI)
Vacuum-impregnated with polyester resin
Screw terminals: 0.75–2.5 mm²
Protection class I
tw 130



Lamp Output W	Type	Current A	Ballast Type	Part No.	Power W	Length mm	Width mm	Height mm	Weight g	Protection Class	Tw	Capacitor µF	Capacitor V
250	HS, HI	3.00	NaHJ 250.003	179743	220, 50	133	120	44	3.56	A	70	0.41	32 1.32
250	HS, HI	3.00	NaHJ 250.727	178771	230, 50	133	120	44	3.56	A	70	0.39	32 1.26
250	HS, HI	3.00	NaHJ 250.727	500976	240, 50	133	120	44	3.56	A	70	0.39	32 1.21
250	HS, HI	3.00	NaHJ 250.011	500401	220, 60	133	120	44	3.56	A	65	0.43	25 1.35
400	HS, HI	4.45	NaHJ 400.006	179740	220, 50	148	135	68	5.20	A	70	0.44	50 2.00
400	HS, HI	4.45	NaHJ 400.006	178790	230, 50	148	135	68	5.20	A	70	0.44	50 1.95
400	HS, HI	4.45	NaHJ 400.737	500402	240, 50	148	135	68	5.20	A	70	0.43	50 1.90
400	HS, HI	4.45	NaHJ 400.012	500403	220, 60	148	135	68	5.20	A	70	0.44	40 2.00
400	HI	3.50	J 400.027	505782	230/240, 50	148	135	68	5.20	A	60	0.45	35 1.64/1.59
600	HS	6.20	NaH 600.010	500404	220, 50	173	160	96	6.80	B	70	0.44	65 2.90
600	HS	6.20	NaH 600.005	506132	230/240, 50	173	160	96	6.80	B	70	0.43	65 2.90/2.85
600	HS	6.20	NaH 600.013	500406	220, 60	173	160	96	6.80	B	70	0.47	55 3.00

With Thermal Cut-out

Thermal cut-out with automatic reset



Lamp Output W	Type	Current A	Ballast Type	Part No.	Power W	Length mm	Width mm	Height mm	Weight g	Protection Class	Tw	Capacitor µF	Capacitor V
250	HS, HI	3.00	NaHJ 250.727	500969	230/240, 50	133	120	44	3.56	A	70	0.39	32 1.26/1.21
400	HS, HI	4.45	NaHJ 400.737	179424	230/240, 50	148	135	68	5.20	A	75	0.43	50 1.95/1.90
400	HI	3.50	J 400.027	509613	230/240, 50	148	135	68	5.20	A	60	0.45	35 1.64/1.59
600	HS	6.20	NaH 600.005	507441	230/240, 50	173	160	96	6.80	B	70	0.43	65 2.90/2.85

ANNEXURE 3.2 – MAGNITECH

LIGHTING SUPPLIER'S TECHNICAL DETAILS

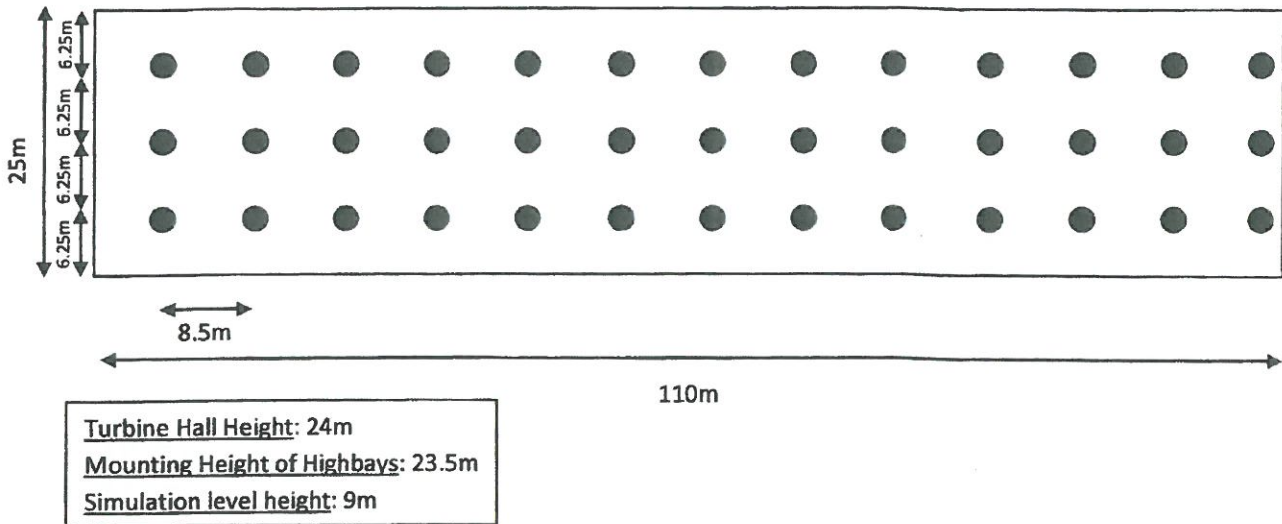


Figure 1: Schematic Diagram of Medupi Unit 6 Turbine Hall – Plan Layout (N.T.S)

Table 1: Table to be filled out by Lighting Supplier – Technical Specifications

SUPPLIER NAME OF FITTING	LAMP TYPE	LAMP RATING	LIGHT OUTPUT (INITIAL)	POWER WITH BALLAST	RATED AVERAGE LIFE	EFFICACY (lm/W)
SAW 701: 600 HPS BM3	600W HPS HIGHBAY	600W	90 000	630 w.	24 000 H	142.85 lm/W

Table 2: SABS Photometric and Test Reports

SUPPLIER NAME OF FITTING	PHOTOMETRIC TEST REPORT (Y/N)	SABS MANUFACTURER TEST REPORT (Y/N)
BM3 SAW 701 600 HPS	Y	Y

Comments:

Lighting Supplier:

MAGNITECH

Lighting Supplier Representative (Name):

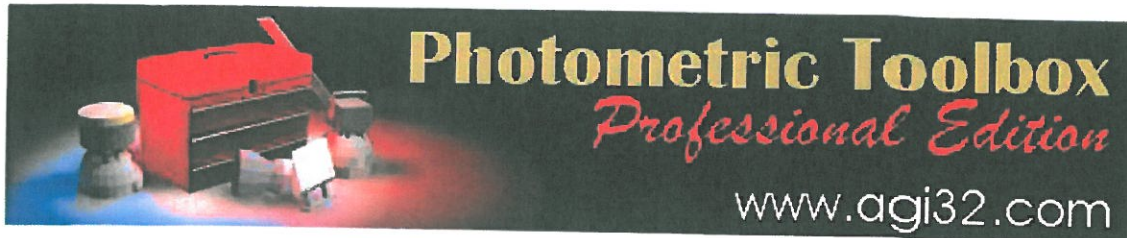
J HENNING

Lighting Supplier Representative (Signature):

[Signature]

Date:

14/03/11



IES INDOOR REPORT

PHOTOMETRIC FILENAME : SAW701 NHT600.LDT

DESCRIPTION INFORMATION (From Photometric File)

Luminaire Type: SAW701/NHT600
 Lamp Type: 1xNHT600
 Lamp Output: 90,00 kLumen
 [EULUM_AREALENGTH] 0
 [EULUM_AREAWIDTH] 0
 [EULUM_CO_LUM] 0
 [EULUM_C90_LUM] 0
 [EULUM_C180_LUM] 0
 [EULUM_C270_LUM] 0
 [EULUM_TILT] 0
 [EULUM_LAMP_1_COLOR]
 [EULUM_LAMP_1_CRG] 1 B
 [MANUFAC] Magnitech (Pty) Ltd
 [TEST]
 [LUMINAIRE] SAW710 NHT600
 [LUMCAT]
 [LAMP] NHT600
 [ISSUEDATE]

CHARACTERISTICS

Lumens Per Lamp	1000 (1 lamp)
Total Lumens	1000
Luminaire Lumens	822
Total Luminaire Efficiency	82 %
Luminaire Efficacy Rating (LER)	1
Total Luminaire Watts	630
Ballast Factor	1.00
CIE Type	Direct
Spacing Criteria (0-180)	1.24
Spacing Criteria (90-270)	1.24
Spacing Criteria (Diagonal)	1.30
Basic Luminous Shape	Point
Luminous Length (0-180)	0.00 m
Luminous Width (90-270)	0.00 m
Luminous Height	0.00 m

LUMINANCE DATA (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	0	0	0
55	0	0	0
65	0	0	0
75	0	0	0
85	0	0	0

IES INDOOR REPORT
PHOTOMETRIC FILENAME : SAW701 NHT600.LDT

CANDELA TABULATION

	<u>0</u>
0	429
5	256
10	247
15	318
20	417
25	421
30	358
35	320
40	290
45	246
50	185
55	111
60	54
65	16
70	3
75	1
80	1
85	1
90	1

IES INDOOR REPORT
PHOTOMETRIC FILENAME : SAW701 NHT600.LDT

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	306.75	30.7	37.3
0-40	508.36	50.8	61.9
0-60	797.19	79.7	97
0-90	821.69	82.2	100
90-120	0	0	0
90-130	0	0	0
90-150	0	0	0
90-180	0	0	0
0-180	821.69	82.2	100

Total Luminaire Efficiency = 82.2%

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	26.18
10-20	94.09
20-30	186.47
30-40	201.61
40-50	186.33
50-60	102.5
60-70	21.83
70-80	1.58
80-90	1.09
90-100	0
100-110	0
110-120	0
120-130	0
130-140	0
140-150	0
150-160	0
160-170	0
170-180	0

IES INDOOR REPORT

PHOTOMETRIC FILENAME : SAW701 NHT600.LDT

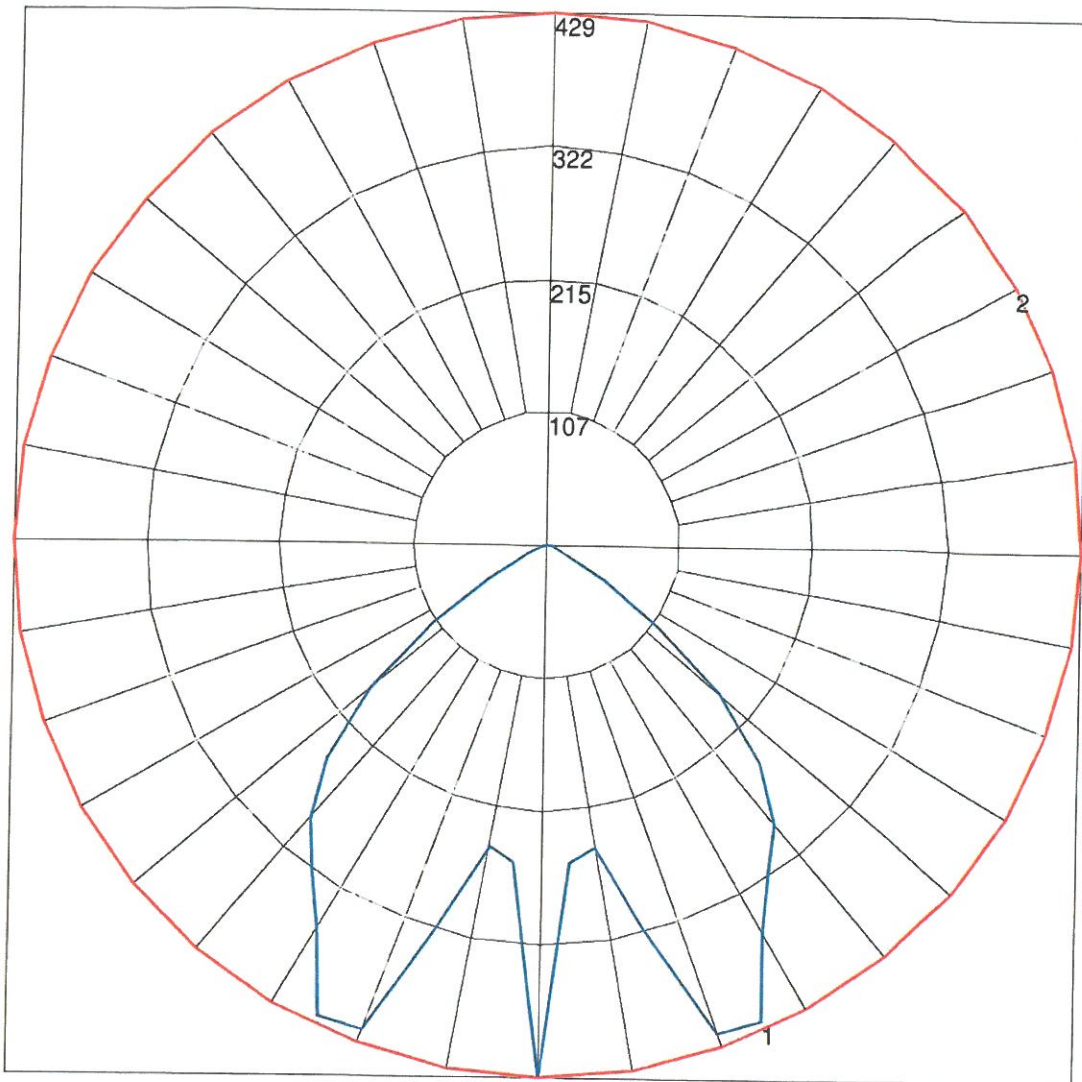
COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

Effective Floor Cavity Reflectance 0.20

RC RW	80				70				50			30			10			0
	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	98	98	98	98	96	96	96	96	91	91	91	87	87	87	84	84	84	82
1	92	89	86	84	90	87	85	83	84	82	80	81	79	78	78	76	75	74
2	85	80	76	72	83	79	75	71	76	72	70	73	70	68	71	69	67	65
3	79	72	67	62	77	71	66	62	68	64	61	66	63	60	64	61	59	57
4	73	65	59	54	71	64	58	54	62	57	53	60	56	53	58	55	52	50
5	68	59	52	48	66	58	52	47	56	51	47	55	50	46	53	49	46	45
6	63	53	47	42	61	53	46	42	51	46	42	50	45	41	49	44	41	40
7	59	49	42	38	57	48	42	37	47	41	37	46	41	37	45	40	37	35
8	55	44	38	34	53	44	38	34	43	37	33	42	37	33	41	36	33	32
9	51	41	35	30	50	40	34	30	39	34	30	39	34	30	38	33	30	29
10	48	38	32	28	47	37	31	28	36	31	27	36	31	27	35	30	27	26

IES INDOOR REPORT
PHOTOMETRIC FILENAME : SAW701 NHT600.LDT

POLAR GRAPH



Maximum Candela = 429 Located At Horizontal Angle = 0, Vertical Angle = 0
1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (0) (Through Max. Cd.)

ANNEXURE 4 – ESKOM COMMENT LETTER (SPF NO: 257-74113)



**Parsons
Brinckerhoff**

Building 1
Sanhill Park
1 Eglon Road Sunninghill
PO Box 1091
Johannesburg, RSA, 2000

Letter to:
Actom (Pty) Ltd
P. O. Box 13024
Knights
1413

Your Reference: 5342.12_001
SPF Number: **257-74113**
Transmittal Number: **261-13506**

Attention: Graham Davie/ Kevin McGregor

Date: 31 May 2011

MEDUPI POWER STATION PROJECT

Contract Number: 4600011222

Contract Title: ELECTRICAL POWER INSTALLATIONS (P11)

Subject: MEDUPI POWER STATION MAIN TURBINE HOUSE LIGHTING – U6

Dear Sir,

We hereby confirm that ACTOM document ref. 5342.12_001 (SPF ref. 200-44975) is rejected based on the following:

1. Wrong information from the Beka fitting was used eg. The power with the ballast should be 667W and not 713W therefore the efficacy, Lux level and power consumption of their luminaries will improve.
2. The electronic photometric data supplied by Magnitech for the simulation is clearly that of a 1000W HPS elliptical lamp so that the claimed output looks much better than the actual output for the 600W HPS tubular lamps output. (See the difference between the elliptical and tubular lamps.) Currently only the 600W HPS tubular lamps are available. A 600W HPS tubular lamp will have a totally different output in the same fitting. Is this a deliberate supply of fraudulent information in an attempt to sell their product? Please investigate this issue and provide us with feedback on the situation.
3. The data sheets supplied for the Magnitech fitting on their catalogue date back to 1983. Very old information. Do they still use the same technology, moulds, control gear and outputs as back in 1983? These data sheets might be outdated. More recent data sheets are required i.e. not older than 3 years.

The rejection of this design has a serious impact on the installation schedule which is currently 5 months behind schedule due to design delays. Please correct this situation urgently.

Best Regards

Hennie Blignaut

For and on behalf of the Engineer

