

Costo Referencial de Posesión y Operación de Equipo Mecánico del MTC

* Mayo 2008 *

Maquinaria

N°	Unidad base para el Cálculo	Potencia (HP)	Capacidad	Peso (Kg.)	Costo de Posesión			Costo de Operación						Costo Horario de Posesión y Operación (a+b)	
					Depreciación	Seguro 0.46%	Total (a)	Mant. y Rep.	Consumo de Combustible	Lubr. + Grasas	Filtros	Llantas	Operador		Total (b)
Equipos para Perforación															
1	Compresoras Neumáticas	76	125-175 PCM	2,000	3.7	0.0	3.7	2.9	22.5	2.9	1.2	0.0	8.3	37.8	41.5
2		87	250-330 PCM	2,000	8.8	0.0	8.8	6.9	28.8	2.9	1.2	0.0	8.3	48.1	56.9
3		93	335-375 PCM	2,500	12.0	0.2	12.2	9.4	45.0	3.3	1.3	0.0	8.3	67.3	79.5
4		150	380-590 PCM	3,500	16.3	0.3	16.6	12.7	47.5	4.0	1.6	0.0	8.3	74.2	90.8
5		196	600-690 PCM	5,000	12.5	0.2	12.8	9.8	91.3	6.1	2.4	0.0	8.3	117.9	130.7
6		240	700-800 PCM	6,500	13.9	0.3	14.1	10.9	108.8	7.5	3.0	0.0	8.3	138.5	152.6
7	Martillos Neumáticos	24 Kg	24	3.0	0.0	3.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0	2.3	5.3
8		29 Kg	29	3.9	0.0	3.9	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	6.9
9	Motoperforadora	1400 RPM	185 CC	26	4.7	0.1	4.7	1.5	0.0	0.0	0.0	0.0	0.0	1.5	6.3
10	Perforadora sobre Orugas		660-690 PCM	6,000	19.2	0.4	19.7	15.4	0.0	0.0	0.0	0.0	0.0	15.4	35.0
Equipos para Movimiento de Tierra															
11	Cargador sobre Oruga	50-79	0.7-1.3 Yd ³	10,000	19.0	0.4	19.4	12.7	41.3	3.6	1.4	0.0	8.3	67.3	86.7
12		80-105	1.5-1.75 Yd ³	12,967	22.5	0.5	23.0	15.0	45.0	4.7	1.9	0.0	8.3	74.9	97.9
13		110-135	2.0-2.25 Yd ³	16,275	38.9	0.8	39.7	25.9	45.0	5.4	2.2	0.0	8.3	86.7	126.4
14		150-180	2.5-2.75 Yd ³	18,387	47.2	1.0	48.2	31.5	70.0	5.8	2.3	0.0	8.3	117.8	166.1
15		190-225	3.2-3.75 Yd ³	25,173	83.6	1.8	85.4	33.4	77.5	7.5	3.0	0.0	8.3	129.8	215.2
16		245	4.0-6.0 Yd ³	28,000	87.0	1.9	88.8	34.8	87.5	7.9	3.2	0.0	8.3	141.7	230.5
17	Cargador Retroexcavador	62	1 Yd ³	8,000	20.7	0.4	21.1	11.6	38.8	3.7	1.5	0.1	8.3	64.0	85.1
18	Cargador sobre Llantas	80-95	1.5-1.75 Yd ³	9,031	28.0	0.5	28.5	18.6	25.0	3.3	1.3	1.2	8.3	57.6	86.2
19		100-115	2.0-2.35 Yd ³	10,308	25.4	0.5	25.9	16.9	35.0	4.3	1.7	1.2	8.3	67.4	93.3
20		100-125	2.50 Yd ³	11,500	37.6	0.7	38.3	25.0	35.0	5.0	2.0	0.9	8.3	76.2	114.5
21		125-155	3.0 Yd ³	16,584	37.6	0.7	38.3	25.0	56.3	5.0	2.0	1.0	8.3	97.5	135.8
22		160-195	3.5 Yd ³	18,585	48.9	0.9	49.8	32.5	60.0	5.4	2.2	1.7	8.3	110.1	159.9
23		200-250	4.0 - 4.1 Yd ³	20,826	54.7	1.2	55.9	36.3	62.5	6.1	2.4	2.3	8.3	117.9	173.8
24	Mototrallas Autocargable	200-250	4.6 Yd ³	22,000	56.8	1.2	58.0	37.7	66.3	7.9	3.2	2.3	8.3	125.6	183.6
25		260-300	5.0-5.50 Yd ³	31,105	78.6	1.7	80.3	52.3	68.8	9.0	3.6	2.3	8.3	144.2	224.5
26		375	8.0 Yd ³	49,738	113.6	2.5	116.0	75.5	87.5	11.1	4.4	3.1	8.3	189.9	305.9
27		140-200	11.0 Yd ³	14,200	58.6	1.1	59.7	19.4	66.3	6.2	2.5	2.4	8.3	105.0	164.7
28		210-300	16.0 Yd ³	20,600	88.7	1.7	90.3	29.4	93.8	9.0	3.6	3.0	8.3	147.1	237.4
29		310-350	23.0 Yd ³	32,800	86.0	1.9	87.9	28.6	120.0	10.8	4.3	2.2	8.3	174.1	262.0
30	Retroexcavadora sobre Llantas	310-400	14-20 Yd ³	20,000	83.6	1.8	85.4	27.8	125.0	11.8	4.7	2.3	8.3	179.9	265.3
31		405-480	21-31 Yd ³	15,500	132.8	2.9	135.7	44.1	165.0	14.3	5.7	3.3	8.3	240.7	376.4
32		58	1 Yd ³	9,000	17.1	0.3	17.4	7.4	25.0	2.5	1.0	0.2	8.3	44.5	62.0
33	Retroexcavadora sobre Oruga	80-110	0.50-1.3 Yd ³	17,300	46.5	0.9	47.3	18.6	41.3	8.7	3.5	0.0	8.3	80.4	127.7
34		115-165	0.75-1.60 Yd ³	23,400	64.7	1.2	65.9	25.9	62.5	8.8	3.5	0.0	8.3	109.0	174.8
35		170-250	1.10-2.75 Yd ³	33,800	107.2	2.0	109.2	42.9	87.5	9.9	4.0	0.0	8.3	152.6	261.7
36		325	2.0-3.8 Yd ³	61,600	179.3	3.3	182.6	71.7	112.5	10.1	4.0	0.0	8.3	206.6	389.2
37	Ripper (Potencia 150 HP)		2,000	3.3	0.1	3.4	1.9	0.0	0.0	0.0	0.0	0.0	0.0	1.9	5.2
38	Ripper (Potencia 250 HP)		2,600	5.5	0.1	5.6	3.1	0.0	0.0	0.0	0.0	0.0	0.0	3.1	8.7
39	Ripper (Potencia 300 HP)		4,400	9.6	0.2	9.8	5.4	0.0	0.0	0.0	0.0	0.0	0.0	5.4	15.2
40	Ripper (Potencia 470 HP)		6,600	12.5	0.2	12.8	7.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0	19.7
41	Tractor sobre Orugas	60-70		6,711	19.8	0.4	20.2	10.6	30.0	2.5	1.0	0.0	8.3	52.4	72.7
42		75-100		9,090	30.4	0.6	30.9	16.2	31.3	2.7	1.1	0.0	8.3	59.5	90.4
43		105-135		12,300	42.9	0.8	43.6	22.9	37.5	4.7	1.9	0.0	8.3	75.2	118.8
44		140-160		14,900	37.5	0.7	38.2	20.0	62.5	5.4	2.2	0.0	8.3	98.3	136.5
45		190-240		20,520	71.8	1.5	73.4	38.3	68.8	7.2	2.9	0.0	8.3	125.4	198.8
46		270-295		21,863	69.4	1.8	71.2	37.0	87.5	7.9	3.2	0.0	8.3	143.9	215.1
47		300-330		31,980	69.1	1.8	70.9	46.1	128.8	8.6	3.5	0.0	8.3	195.2	266.2
48		335-410		37,170	76.1	2.0	78.1	50.7	137.5	10.4	4.2	0.0	8.3	211.1	289.2
49		410-470		52,007	104.4	2.7	107.1	55.7	163.8	12.8	5.1	0.0	8.3	245.7	352.9
50		510		54,760	132.3	3.5	135.7	70.6	163.8	14.6	5.8	0.0	8.3	263.1	398.8
51		650		70,320	170.2	4.4	174.6	113.4	206.3	31.5	12.6	0.0	8.3	372.0	546.6
52	Tractor sobre Llantas	200-250		20,500	39.9	0.7	40.7	26.5	102.5	10.6	4.2	2.3	8.3	154.4	195.0
53		300-350		30,380	52.4	1.0	53.4	34.6	148.8	14.2	5.7	4.5	8.3	216.1	269.4
54		400-500		46,355	112.4	2.1	114.5	74.6	150.0	17.7	7.1	4.9	8.3	262.6	377.2
55	Pala Frontal	195	3.0 Yd ³	38,380	139.2	2.6	141.8	111.4	136.3	7.2	2.9	0.0	8.3	266.0	407.8
Equipos de Compactación															
56	Vibrador de Concreto	4	1.25 Pulg.		2.6	0.0	2.6	1.4	0.0	0.0	0.0	0.0	0.0	1.4	4.0
57		4	1.50 Pulg.		2.7	0.0	2.7	1.5	0.0	0.0	0.0	0.0	0.0	1.5	4.2
58		4	2.40 Pulg.		3.2	0.0	3.2	1.8	0.0	0.0	0.0	0.0	0.0	1.8	5.0
59	Compactador Vibrador Tipo Plancha	4		95	1.9	0.0	1.9	0.8	3.4	0.4	0.2	0.0	8.3	13.1	14.9
60		5.8		145	2.3	0.0	2.3	1.0	3.9	0.8	0.3	0.0	8.3	14.3	16.6
61		7		160	3.5	0.0	3.5	1.1	4.1	1.1	0.5	0.0	8.3	15.1	18.6
62	Rodillo Liso Vibratorio Manual	10.8	0.8 - 1.1 Ton.	800	3.8	0.1	3.7	2.9	5.6	1.8	0.7	0.0	8.3	19.4	23.0
63	Rodillo Liso Vibratorio Autopropulsado	70-100	7-9 Ton.	7,300	14.5	0.3	14.8	7.7	26.3	3.3	1.3	0.8	8.3	47.5	62.3
64		101-135	10-12 Ton.	11,100	15.5	0.3	15.8	8.2	43.8	5.0	2.0	0.8	8.3	68.0	83.7
65		136-170	15-17 Ton.	13,700	19.0	0.4	19.3	10.0	46.3	5.4	2.2	0.8	8.3	72.9	92.2
66	210	19-23 Ton.	19,600	21.8	0.4	22.2	11.5	69.9	7.2	2.9	1.1	8.3	100.9	123.0	
67	Rodillo Liso Vibratorio de Tiro	50-80	4-5.5 Ton.	5,500	5.5	0.1	5.6	2.9	23.8	2.9	1.2	0.0	8.3	39.1	44.6
68	Rodillo Neumático Autopropulsado	60-80	3.0-5.0 Ton.	3,700	11.2	0.2	11.4	4.5	21.3	2.9	1.2	0.2	8.3	38.3	49.8
69		81-100	5.5-20 Ton.	5,500	15.0	0.3	15.3	4.0	25.0	3.3	1.3	0.2	8.3	42.1	57.4
70		127	8.23 Ton.	8,000	11.3	0.3	11.6	6.0	38.8	4.7	1.9	0.2	8.3	59.8	71.4
71		135	9.26 Ton.	9,000	11.6	0.3	11.8	6.2	38.3	4.7	1.9	0.2	8.3	59.5	71.3
72	Pata de Cabra Vibratorio Autopropulsado	84	8.1 Ton.	8,200	8.6	0.2	8.8	6.8	28.3	2.9	1.2	0.7	8.3	48.2	57.0
73		100-135	11-13 Ton.	11,300	15.1	0.3	15.5	8.0	37.9	4.7	1.9	0.7	8.3	61.4	76.9
74		136-180	15-17 Ton.	15,300	16.0	0.4	16.4	10.6	50.6</						

Costo Referencial de Posesión y Operación de Equipo Mecánico del MTC

* Mayo 2008 *

Maquinaria

N°	Unidad base para el Cálculo	Potencia (HP)	Capacidad	Peso (Kg.)	Costo de Posesión			Costo de Operación							Costo Horario de Posesión y Operación (a+b)
					Depreciación	Seguro 0.46%	Total (a)	Mant. y Rep.	Consumo de Combustible	Lubr. + Grasas	Filtros	Llantas	Operador	Total (b)	
97	Chancadora Secundaria 24"S	M.E. 30	46-70 Ton/Hr.	22,000	17.4	0.6	17.9	8.7	0.0	1.5	0.6	0.1	8.3	19.2	37.2
98	Chancadora Secundaria 36"S	M.E. 75	46-70 Ton/Hr.	23,000	30.1	1.0	31.1	15.0	0.0	1.5	0.6	0.1	8.3	25.6	56.6
99	Chancadora Primaria-Secundaria (Incluye 5 fajas)	M.E. 75	46-70 Ton/Hr.	39,000	61.0	2.1	63.1	32.5	112.5	1.6	0.6	0.1	8.3	155.6	218.7
100	Chancadora Primaria - Secundaria (Azteca)		40-80 Ton/Hr.		26.1	1.7	27.8	10.4	0.0	0.0	0.0	0.0	9.3	19.7	47.5
101	Chancadora Primaria - Secundaria (Escorpión)		60-120 Ton/Hr.		32.6	2.1	34.7	13.0	0.0	0.0	0.0	0.0	10.3	23.3	58.0
102	Zaranda Vibratoria 4"x6"x14'	M.E. 15	11 Kw	7,000	9.0	0.3	9.3	6.0	0.0	1.2	0.5	0.1	8.3	16.1	25.4
Equipos para Obras de Concreto															
103		M.E. 40	50 M ³ /Hr.	17,000	24.7	0.8	25.6	19.8	0.0	1.8	0.7	0.0	8.3	30.6	56.2
104	Dosificadora de Concreto	M.E. 45	50-90 M ³ /Hr.	20,000	29.4	1.0	30.4	23.5	0.0	1.8	0.7	0.0	8.3	34.3	64.7
105		M.E. 60	120 M ³ /Hr.	23,000	33.1	1.1	34.2	26.5	0.0	1.8	0.7	0.0	8.3	37.3	71.5
106	Mezcladora de Concreto Tipo Trompo	8	9 Pie ³	500	2.6	0.1	2.7	1.8	0.0	0.0	0.0	0.1	0.0	2.0	4.6
107		18	7 Pie ³	1,500	6.5	0.1	6.6	4.7	0.0	0.0	0.0	0.1	0.0	4.7	11.4
108	Mezcladora de Concreto Tipo Tambor	23	11-12 Pie ³	2,200	10.7	0.2	10.9	7.7	0.0	0.0	0.0	0.1	0.0	7.8	18.7
109		20-35	16 Pie ³	2,700	13.7	0.3	14.0	9.9	0.0	0.0	0.0	0.1	0.0	10.0	24.0
Equipos para Refine y Afirmado															
110		65-80		6,000	15.5	0.4	15.9	10.3	27.5	2.9	1.2	0.2	8.3	50.4	66.3
111		85-120		9,100	20.9	0.6	21.5	13.9	40.0	4.6	1.8	0.2	8.3	68.9	90.4
112		125		11,515	22.2	0.6	22.8	14.8	53.8	4.7	1.9	0.2	8.3	83.6	106.3
113	Motoniveladora	130-135		12,365	29.5	0.8	30.3	19.7	53.8	5.0	2.0	0.2	8.3	89.0	119.3
114		145-150		13,540	29.3	0.8	30.1	19.5	62.5	5.8	2.3	0.2	8.3	98.7	128.8
115		180-200		18,370	49.1	1.3	50.4	32.7	68.8	6.2	2.5	0.6	8.3	119.0	169.4
Equipos para Pavimentación															
116	Amasadora de Asfalto	23.5	5.4 M ³	9,500	24.8	0.5	25.2	19.8	62.5	2.0	0.8	0.1	8.3	93.5	118.7
117	Barredora Mecánica	10-20	7 Pulg. LON	1,000	5.4	0.1	5.4	3.9	12.5	1.3	0.5	0.1	8.3	26.6	32.1
118	Calentador de Aceite 48-S	5	468 P ³	5,700	9.6	0.2	9.8	5.8	0.0	0.0	0.0	0.0	8.3	14.1	23.9
119	Cocina de Asfalto		320 Gln	2,100	8.5	0.1	8.6	3.1	5.0	1.3	0.5	0.1	8.3	18.3	26.9
120	Planta de Asfalto en frío	M.E. 30	30-60 Ton/Hr.	9,000	18.7	0.6	19.4	15.0	0.0	1.5	0.6	0.2	8.3	25.5	44.9
121	Secador de Aridos	M.E. 50	30-64 Ton/Hr.	8,000	12.4	0.4	12.8	9.9	0.0	0.0	0.0	0.0	8.3	18.2	31.1
122	Planta de Asfalto en frío	M.E. 50	60-115 Ton/Hr.	9,000	26.8	0.9	27.7	21.4	0.0	1.5	0.6	0.2	8.3	31.9	59.6
123	Planta de Asfalto en Caliente (CYBER)		60 Ton/Hr.	32,350	63.4	2.0	65.4	0.0	1,237.5	5.2	2.1	0.0	8.3	1,253.1	1,318.5
124	Planta de Asfalto en Caliente (CIFALLI)		90-120 Ton/Hr.	46,800	61.3	1.9	63.3	0.0	1,987.5	5.2	2.1	0.0	8.3	2,003.1	2,066.4
125	Secador de Aridos	M.E. 70	60-115 Ton/Hr.	8,500	16.3	0.6	16.8	8.7	0.0	6.0	2.4	0.0	8.3	25.4	42.2
126	Pavimentadora sobre oruga	69	10 Pulg.	12,000	29.6	1.0	30.6	19.8	23.3	3.8	1.5	0.0	8.3	56.7	87.3

16,809.6

Vehículos y Camiones

N°	Unidad base para el Cálculo	Potencia (HP)	Capacidad	Peso (Kg.)	Costo de Posesión			Costo de Operación							Costo Horario de Posesión y Operación (a+b)
					Depreciación	Seguro 2.19%	Total (a)	Mant. y Rep.	Consumo de Combustible	Lubr. + Grasas	Filtros	Llantas	Operador	Total (b)	
1	Camioneta Pick-Up 4X2 - C. Simple	90	1,000 Kg	2,100	4.5	0.3	4.9	3.6	21.6	4.3	1.7	0.2	7.8	39.2	44.1
2		90	2,000 Kg	3,000	5.9	0.4	6.3	4.7	23.0	4.6	1.8	0.3	7.8	42.2	48.5
3	Camioneta Pick-Up 4X4 - C. Simple	107	1,000 Kg	2,450	5.1	0.4	5.4	4.0	27.0	4.3	1.7	0.2	7.8	45.1	50.5
4		90	750 Kg	1,850	5.5	0.4	5.9	4.4	21.6	4.3	1.7	0.3	7.8	40.1	46.0
5	Camioneta Pick-Up 4X2 - C. Doble	118	5 Pas.	1,850	5.3	0.4	5.6	4.2	24.3	4.3	1.7	0.3	7.8	42.6	48.2
6	Camioneta Rural 4X4	135	5 Pas.	1,882	7.0	0.5	7.5	5.5	35.8	4.3	1.7	0.3	7.8	55.4	62.9
7	Camioneta Station Wagon 4x2	100	6 Pas.	1,800	4.4	0.3	4.7	3.5	27.0	4.3	1.7	0.3	7.8	44.6	49.3
8		122	1,500 Gln	9,900	14.9	1.4	16.3	11.1	48.8	4.7	1.9	0.4	7.8	74.6	90.9
9	Cisterna de Agua 4X2	145-165	2,000 Gln	13,000	17.1	1.6	18.7	12.8	50.0	4.7	1.9	0.4	7.8	77.5	96.2
10		178-210	3,000 Gln	19,000	21.0	2.0	23.1	13.1	70.0	7.2	2.9	0.6	7.8	101.5	124.6
11	Cisterna de Combustible 4X2	122	2,000 Gln	13,000	17.9	1.7	19.6	11.2	41.3	4.7	1.9	0.4	7.8	67.1	86.8
12	Cisterna de Asfalto 4X2	178-210	2,000 Gln	13,000	20.6	2.0	22.6	12.8	69.9	7.2	2.9	0.5	7.8	101.1	123.7
13	Concretero 4X2	178-210	4 M ³	19,000	41.2	4.0	45.1	25.7	69.9	8.9	3.6	0.5	7.8	116.4	161.5
14	Concretero 6X4	300	6 M ³	26,000	47.4	4.6	52.0	29.6	100.0	10.7	4.3	0.5	7.8	152.9	204.9
15	Dumper 6X4	146-240	12 M ³	32,200	42.7	4.1	46.8	26.6	48.3	5.0	2.0	1.0	7.8	90.6	137.4
16	Dumper 6x6	146-240	13 M ³	38,400	51.1	4.9	56.0	31.8	69.9	7.2	2.9	1.5	7.8	121.1	177.1
17	Camión Imprimador 6X2	178-210	1,800 Gln	16,475	20.7	2.0	22.7	12.9	69.9	10.6	4.2	0.2	7.8	105.7	128.4
18		122	8 Ton.	13,000	22.5	2.2	24.6	14.0	32.5	10.5	4.2	0.4	7.8	69.3	94.0
19	Plataforma 4X2	178-210	12 Ton.	19,000	28.4	2.7	31.2	17.8	35.0	10.5	4.2	0.4	7.8	75.6	106.7
20	Plataforma 6X4	300	19 Ton.	26,000	57.0	5.5	62.4	35.6	81.3	17.6	7.0	0.5	7.8	149.8	212.2
21		330	35 Ton.	42,600	41.9	4.0	45.9	31.4	97.4	17.8	7.1	0.4	7.8	161.8	207.7
22	Semitrayler 6X4	330	40 Ton.	54,420	42.7	4.1	46.8	32.0	97.4	17.8	7.1	0.5	7.8	162.6	209.4
23		120-140	4 M ³	11,500	11.9	1.2	13.1	11.9	60.0	7.2	2.9	0.4	7.8	90.1	103.2
24	Volquete 4X2	140-210	6 M ³	15,000	16.1	1.6	17.6	16.0	69.9	10.7	4.3	0.5	7.8	109.1	126.7
25		210-280	8 M ³	19,000	22.2	2.1	24.3	22.1	93.3	14.2	5.7	1.0	7.8	144.0	168.3
26	Volquete 6X4	330	10 M ³	26,000	22.6	2.2	24.8	22.5	109.9	17.8	7.1	1.0	7.8	166.1	190.9

3100.1

Equipos Diversos

N°	Unidad base para el Cálculo	Potencia (HP)	Capacidad	Peso (Kg.)	Costo de Posesión			Costo de Operación							Costo Horario de Posesión y Operación (a+b)
					Depreciación	Seguro 0.46%	Total (a)	Mant. y Rep.	Consumo de Combustible	Lubr. + Grasas	Filtros	Llantas	Operador	Total (b)	
1	Faja Transportadora 18"X40'	M.E. 3	150 Ton/Hr.	4,000	5.2	0.5	5.7	3.5	0.0	0.2	0.1	0.0	0.0	3.8	9.5
2	Faja Transportadora 18"X50'	M.E. 3	150 Ton/Hr.	4,000	5.7	0.5	6.1	3.8	0.0	0.2	0.1	0.0	0.0	4.0	10.2
3	Faja Transportadora 30"X40'	M.E. 5	550 Ton/Hr.	7,800	5.9	0.5	6.5	4.0	0.0	0.2	0.1	0.0	0.0	4.2	10.7
4	Faja Transportadora 30"X50'	M.E. 5	800 Ton/Hr.	12,000	6.7	0.6	7.3	4.5	0.0	0.2	0.1	0.0	0.0	4.7	12.0
5	Faja Transportadora 30"X60'	M.E. 7	800 Ton/Hr.	15,000	8.9	0.8	9.7	6.0	0.0	0.2	0.1	0.0	0.0	6.2	15.9
6		38	20 Kw	500	3.3	0.3	3.6	3.0	0.0	0.0	0.0	0.0	0.0	3.0	6.6
7		56	37.5 Kw	720	3.7	0.4	4.1	3.5	0.0	0.0	0.0	0.0	0.0	3.5	7.6
8		89	50 Kw	1,150	4.5	0.5	4.9	4.2	0.0	0.0	0.0	0.0	0.0	4.2	9.1
9		116	75 Kw	1,500	5.3	0.5	5.8	4.9	0.0	0.0	0.0	0.0	0.0	4.9	10.8
10	Grupo Electrónico	140	90 Kw	1,700	6.7	0.7	7.4	6.3	0.0	0.0	0.0	0.0	0.0	6.3	13.7
11		230	150 Kw	2,000	15.9	1.6	17.5	14.8	0.0	0.0	0.0	0.0	0.0	14.8	32.3
12		380	250 Kw	2,											