

### REFERENCE LIST OF PROJECTS AWARDED AND COMPLETED

#### 1. BASE METALS AND NON-FERROUS

(Projects marked \* were full relines or new furnaces)

Materials: Magnesia, mag chrome, chrome mag, chrome alumina, Alumina chrome and aluminosilicate brick & full range of monolithic products (castable, mortar and ramming mixes).

No.	Year	PLANT	FURNACE/TECHNOLOGY	Supply Scope	Country	Commodity
<b>As Vereeniging Refractories Pty Ltd</b>						
1	1994 *	Amplats Waterval Section	No. 2 Six in Line furnace	Complete Rebuild	South Africa	PGM's
2	1996 *	ZCCM Luanshya Zambia	Reverb furnace	Complete Rebuild	Zambia	Copper
3	1996 *	Western Platinum	Six in Line furnace	Complete Rebuild	South Africa	PGM's
4	1997	Makwiro Platinum	Elkem Furnace	Side Walls	Zimbabwe	PGM's
5	1999	Lonmin Platinum	Six in Line furnace	Repair	South Africa	PGM's
6	1999 *	Amplats Union Section	Six in Line furnace	Complete Rebuild	South Africa	PGM's
7	2000 *	Impala Platinum	No. 3 Six in Line furnace	Complete Reline	South Africa	PGM's
8	2000 *	Palabora Mining Company	Reverb furnace	Complete Rebuild	South Africa	Copper
9	2000	Ongopolo Tsumeb Namibia	Reverb furnace	Side Walls & Roof	Namibia	Copper
10	2000 *	Amplats / Xstrata Project	Electric Slag Cleaning furnace	Conversion & Complete Reline	South Africa	PGM's
11	2001 *	ZCCM Smelterco Nkana	Reverb furnace	Complete Rebuild	Zambia	Copper
12	2001 *	Amplats Waterval Section	Electric Slag Cleaning furnace - Pyromet design	New Project	South Africa	PGM's
13	2002 *	Amplats Polokwane Section	Hatch design Six in Line furnace	68 MVA Greenfield's Project, 2 800 Tonnes of Refractories	South Africa	PGM's
14	2002	Northam Platinum	Six in Line furnace	Side Walls & Roof	South Africa	PGM's
15	2002	BSR Zimbabwe	Six in Line furnace	Side Walls & Roof	Zimbabwe	Nickel
16	2002 *	BCL Botswana	Electric Slag Cleaner #2 furnace	Complete Rebuild	Botswana	Nickel
17	2003	KCM Smelterco	No. 4 Reverb furnace	Repair	Zambia	Copper
18	2003	Amplats Waterval Section	Hatch design No. 1 Six in Line furnace	End Wall Rebuild	South Africa	PGM's
19	2003	Amplats Waterval Section	Hatch design No. 2 Six in line furnace	Side Walls & Roof	South Africa	PGM's
20	2003	Makwiro Platinum	Elkem Furnace	Hearth & Side Walls	Zimbabwe	PGM's
21	2003 *	BCL Botswana	Electric Slag Cleaner #1 furnace	Complete Rebuild	Botswana	Nickel
22	2003	Falconbridge Sudbury Canada	Hatch design No. 2 Six in line furnace	Full Roof	Canada	Nickel
23	2004	Amplats Union Section	Hatch design Six in Line furnace	Side and End Walls	South Africa	PGM's
24	2004 *	Amplats Waterval Section	Electric Slag Cleaning furnace - Pyromet design	Full Spare Lining	South Africa	PGM's
25	2004	Amplats Polokwane Section	Hatch design Six in Line furnace	Side and End Walls	South Africa	PGM's
26	2005 *	Amplats Waterval Section	Hatch design No. 2 Six in line furnace	Complete Rebuild	South Africa	PGM's
27	2005 *	Palaborwa Mining Company	Reverb furnace	Bulk of Complete Rebuild	South Africa	Copper
28	2005	Amplats Polokwane Section	Hatch design Six in Line furnace	Side and End Walls	South Africa	PGM's
29	2005	Amplats Waterval Section	Hatch design No. 1 Six in Line furnace	End Walls	South Africa	PGM's
30	2006	Amplats Union Section	Hatch design Six in Line furnace	End Walls	South Africa	PGM's
31	2006	Amplats Polokwane Section	Hatch design Six in Line furnace	Cooler Repair on sidewalls	South Africa	PGM's
32	2006	INCO Sudbury Canada	No. 1 Flash Smelter	100 Tonne Trial Panel	Canada	Copper
33	2006 *	Ongopolo Tsumeb Namibia	Reverb furnace	Complete Rebuild	Namibia	Copper
34	2006 *	Amplats Waterval Section	Hatch design No. 1 Six in Line furnace	Complete Rebuild	South Africa	PGM's
35	2007 *	Amplats Union Section	Hatch design Six in Line furnace	Complete Rebuild & Redesign	South Africa	PGM's
36	2007	Falconbridge Sudbury Canada	Hatch design No. 2 Six in line furnace	Roof Spares	Canada	Copper
37	2007	Amplats Polokwane Section	Hatch design Six in Line furnace	Walls and Hearth Spares	South Africa	PGM's
38	2007 *	BCL Botswana	Electric Slag Cleaner #2 furnace	Complete Rebuild	Botswana	Nickel
39	2007	INCO Sudbury Canada	No. 2 Flash Smelter	200 Tonnes Side & End Walls	Canada	Nickel
40	2007	PT Antam Indonesia	FENI 3 EAF furnace	Emergency - small quantity	Indonesia	Nickel

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# Refractory and Metallurgical Solution (Pty) Ltd



## Reference List

No.	Year	PLANT	FURNACE/TECHNOLOGY	Supply Scope	Country	Commodity
<b>As Vereeniging Refractories Pty Ltd</b>						
41	2008	Amplats Waterval Section	Hatch design No. 1 Six in Line furnace	Side & End Wall Upgrade	South Africa	PGM's
42	2008	Northam Platinum	Six in Line furnace	Infill & Upper Sidewall	South Africa	PGM's
43	2008 *	BCL Botswana	Electric Slag Cleaner #2 furnace	Spare Lining	Botswana	Nickel
44	2009 *	Rand Refinery (Au/Pb)	Electric Arc Furnace	Redesign & Complete Reline	South Africa	Au/Pb
45	2009 *	Amplats Waterval Section	Hatch design No. 2 Six in line furnace	Redesign & Complete Reline	South Africa	PGM's
46	2009	Amplats Waterval Section	Hatch design No. 1 Six in Line furnace	Spare End Walls	South Africa	PGM's
47	2009	PT Antam Indonesia	FENI 3 EAF furnace	Side Wall Repair	Indonesia	Nickel
48	2009 *	Amplats Waterval Section	Electric Slag Cleaning furnace - Pyromet design	Redesign & Complete Reline	South Africa	PGM's
49	2010	Amplats Polokwane Section	Hatch design Six in Line furnace	Complete Rebuild	South Africa	PGM's
50	2010 *	Amplats Waterval Section	Electric Slag Cleaning furnace - Pyromet design	Complete Reline following a Water Leak	South Africa	PGM's
51	2010	Rand Refinery	Electric Arc Furnace	Spare Lining	South Africa	Au/Pb
52	2011	Palabora Mining Company	Reverb furnace	Upper Side Wall and Roof	South Africa	Copper
53	2011	Amplats Polokwane Section	Hatch design Six in Line furnace	Spare Hearth and Roof	South Africa	PGM's
54	2011	PT Antam Indonesia	FENI 2 EAF furnace	Side Wall	Indonesia	Nickel
55	2011	Amplats Union Section	Hatch design Six in Line furnace	Side Walls - Phase 2 Upgrade	South Africa	PGM's
56	2011 *	PT Inco Indonesia	No. 2 EAF	Full Reline	Indonesia	Nickel
57	2011	QMAG Australia	No. 3 Shaft Kiln	Partial Reline	Australia	Magnesite
58	2011	BCL Botswana	Flash Furnace	Full Hearth emergency repair	Botswana	Nickel
59	2011	Amplats Waterval Section	Electric Slag Cleaning furnace - Pyromet design	Spare Hearth & Side Wall	South Africa	PGM's
<b>As Verref Shaped Pty Ltd</b>						
60	2012	QMAG Australia	No. 2 Shaft Kiln	Partial Reline	Australia	Magnesite
61	2013	QMAG Australia	No. 1 Shaft Kiln	Partial Reline	Australia	Magnesite
62	2013	Northam Platinum	Six in Line furnace	Infill and upper side wall emergency repair	South Africa	PGM's
63	2013 *	BCL	Cobalt Slag Cleaning Vessel	Complete Reline	Botswana	Nickel
64	2014	Amplats Union Section	Hatch design Six in Line furnace	Side walls	South Africa	PGM's
65	2014	Amplats Waterval Section	Hatch design Six in Line furnace No.1	Side and end wall repairs	South Africa	PGM's
66	2014	Amplats Polokwane Section	Hatch design Six in Line furnace	End wall repairs and furnace extension	South Africa	PGM's
67	2015	Glencore Sudbury	Hatch design Six in Line furnace	Full sidewall replacement	Canada	Nickel
68	2015 *	Bindura Nickel	Six in Line furnace	Full sidewall and roof replacement	Zimbabwe	Nickel
69	2015	Palabora Copper	Reverb furnace	Partial walls and roof replacement	South Africa	Copper
70	2015	Amplats Waterval Section	Hatch design Six in Line furnace No.2	end wall and matte wall repairs	South Africa	PGM's
71	2015 *	BCL	Niro concentrate driers	Full relines	Botswana	Nickel
72	2015 *	BCL	Cobalt Slag Cleaning Vessel	Full reline	Botswana	Nickel

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No.	Year	PLANT	FURNACE/TECHNOLOGY	Supply Scope	Country	Commodity
<b>As Refractory and Metallurgical Solution Pty Ltd</b>						
73	2016 *	Palabora Copper	Reverb furnace	Full Reline	South Africa	Copper
74	2016	Amplats Polokwane Section	Hatch design Six in Line furnace	Sidewall and end wall repairs	South Africa	PGM's
75	2016	Amplats Waterval Section	Hatch design Six in Line furnace No.1	Hearth and sidewall	South Africa	PGM's
76	2016	Dundee Precious Metals	Ausmelt	Emergency Hearth replacement following water leak	Namibia	Copper
77	2017 *	Rand Refinery	Electric Arc Furnace	Spare Lining	South Africa	Au/Pb
78	2017	Zimplats	Electric Arc Furnace	Partial rebuild	Zimbabwe	PGM's
79	2018 *	Amplats Union Section	Hatch design Six in Line furnace	Full hearth, sidewall and roof replacement.	South Africa	PGM's
80	2018 *	Amplats UNKI Smelter	Electric Arc Furnace	Full reline, except lower hearth – new project	Zimbabwe	PGM's
81	2018	Amplats Polokwane	Hatch design Six in Line furnace	Sidewall and end walls, Replacement, flash driers	South Africa	PGM's
82	2019	Amplats Waterval	Hatch design Six in Line furnace No.2	Matte endwall and partial ring repair.	South Africa	PGM's
83	2019	Zimplats	Electric Arc Furnace	Upper Sidewalls replacement.	Zimbabwe	PGM's
84	2019	Amplats Waterval	Hatch design Six in Line furnace No.1	Matte end wall repairs	South Africa	PGM's
85	2019	Amplats Union Section	Hatch design Six in Line furnace	Matte end wall repairs	South Africa	PGM's
86	2019 *	Rand Refinery	Electric Arc Furnace	Full Reline	South Africa	Au/Pb
87	2019	Amplats UNKI Smelter	Electric Arc Furnace	Upper sidewalls from skewback level	Zimbabwe	PGM's
88	2020	Amplats various	Hatch design Six in Line furnace	Matte end wall repairs	South Africa	PGM's
89	2020	Amplats ACP	Ausmelt converter	Developed and supplied Castable for freeboard	South Africa	PGM's
90	2021 *	Amplats UNKI Smelter	Electric Arc Furnace	Full Reline	Zimbabwe	PGM's
91	2021	Zimplats	Electric Arc Furnace	Upper sidewalls	Zimbabwe	PGM's
92	2021	Amplats ACP	Ausmelt Converter	Castable for freeboard	South Africa	PGM's
93	2021	Hatch (Northam plats)	Hatch design Six in Line furnace	Upper sidewalls and roof	South Africa	PGM's
94	2021 *	SPMP Oman	Rotary Kiln	Full reline (brick and castable)	Oman	Sb/Au
95	2021 *	Tharisa	DC Furnace	Full reline excluding roof	South Africa	PGM's
96	2021 *	Amplats ACP	Ausmelt Converter	Full hearth and sidewall brick	South Africa	PGM's
97	2021	Amplats Waterval	Hatch design Six in Line furnace No.1	Matte endwall repair	South Africa	PGM's
98	2021	Amplats Waterval	Hatch design Six in Line furnace No.2	Ring repair	South Africa	PGM's

Materials (refractory brick, castable, mortar, ramming, gunning and fibre blanket) have and are also supplied on a regular basis to consumable applications as follows:

South Africa	<b>Angloamerican Platinum, Palabora Copper, Impala Platinum, Lonmin Platinum (Sibanye Stillwater), Northam Platinum, Arxo Metals (Tharisa) Fry's Metals, Rand Refinery, Mintek, Sasol</b>
Namibia	<b>Dundee Precious Metals</b>
Botswana	BCL (Closed)
Zambia	KCM, Mopani Copper, <b>Kansanshi Copper</b>
Congo	<b>STL</b> , Gecamines.
Zimbabwe	<b>Zimplats</b> , Bindura Nickel, Riozim, <b>UNKI</b>
Chile	Glencore Copper (Noranda Smelter) and Angloamerican Chagres.
Canada	Vale Inco and Glencore INO (Falconbridge/Sudbury).
USA	Asarco Arizona, <b>Sibanye Stillwater Mining, Freeport.</b>
Indonesia	<b>PT Vale (Inco) - Converter brick supply.</b>
Middle East	<b>SPMP - Oman</b>

**Current supply marked in red**

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**2. FERROALLOYS INDUSTRY**

Materials: Alumina silicate, magnesia & chrome mag brick and monolithic products.

<u>No.</u>	<u>DATE</u>		<u>PLANT</u>	<u>FURNACE</u>	
1.	1994	*	Palmiet Ferrochrome	DC Arc Furnace	Subhearth & Walls
2.	1995	*	Samancor	M3 Furnace SAF	Rebuild
3.	1995		Samancor	No. 6 Furnace SAF	Repair
4.	1995	*	Samancor	SAF	Rebuild
5.	1995	*	Chrome Resources	No. 5 & 6	Complete Rebuild
6.	1995	*	Pyromet	Hernic	Complete
7.	1995	*	Pyromet	Hernic	Complete
8.	1995	*	Pyromet	CMI D Furnace	Complete
9.	1996	*	Samancor	M4 Furnace	Rebuild
10.	1996	*	HSVC	Transalloys	2x Subarcs
11.	1996	*	Pyromet	Ferroalloys Cato Ridge	2x Subarcs
12.	1997	*	Titaco	Advalloy Meyerton	Si Mn Furnace
13.	1997	*	Hatch	Tubatsi No.5	Complete
14.	1998		Tubatsi Ferrochrome	No.5 Furnace	Repair
15.	1998		Middelburg Ferrochrome	M3 Repair	Repair
16.	1998	*	Pyromet	ASA Metals	New Furnace
17.	1998	*	Ferrometals	No. 1 Furnace	Rebuild
18.	1998	*	Titaco	Hernic New Furnace	New Furnace
19.	1998		Tubatsi Ferrochrome	No.1 Furnace	Repair
20.	1998		Ferrometals	No.2 Furnace	Rebuild
21.	1998	*	Middelburg Ferrochrome	E Furnace	Rebuild
22.	1999	*	Ferroalloys	No. 2 Furnace	Rebuild
23.	1999	*	Ferroalloys	Cato Ridge	Rebuild
24.	1999	*	Samancor	M12	Complete
25.	1999	*	Ferroalloys	Cato Ridge No. 4	Rebuild
26.	1999		Chromecor Technology		Repair
27.	1999	*	Silicon Smelters	No. 2 Furnace	Rebuild
28.	1999	*	Assmang Chrome	Machadodorp No. 2	Full Reline
29.	1999	*	Maranatha Ferrochrome	Zimbabwe	Full Reline
30.	2000		Middelburg Ferrochrome	DC Arc Furnace	Spares

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**Reference List**

<u>No.</u>	<u>DATE</u>		<u>PLANT</u>	<u>FURNACE</u>	
31.	2000	*	Samancor	M12	Full Lining
32.	2001	*	Xstrata	Wonderkop	Two Complete Linings
33.		*	"	"	"
34.	2001	*	Assmang Chrome	Machadodorp	Full Lining for Stock
35.	2002	*	Zimbabwe Alloys	A3 Furnace	Complete Rebuild
36.	2002		Middelburg Ferrochrome	DC Arc Furnace	Side Wall Spares
37.	2002	*	Hernic Ferrochrome	No. 2 Furnace	Complete Rebuild
38.	2002		Mogale Alloys	DC Arc Furnace	Sub Hearth & Sidewall
39.	2002		Mogale Alloys	DC Arc Furnace	Spares
40.	2002		Assmang Chrome	Cato Ridge	Wall Repair
41.	2003		Middelburg Ferrochrome	DC Arc Furnace	Spares
41.	2004	*	Siltech Ballengeich	B Furnace	Complete Rebuild
43.	2004	*	Xstrata Lydenburg	A Furnace	Complete Rebuild
44.	2004		Middelburg Ferrochrome	DC Arc Furnace	Spares
45.	2004		Xstrata Wonderkop	No.'s 1 & 2 Furnaces	Hearths for Two Furnaces
46.	2004	*	Hernic Ferrochrome	No. 4 Furnace	New Project
47.	2005	*	Rand Carbide	D Furnace	Complete Rebuild
48.	2005	*	Xstrata Lydenburg	B Furnace	Complete Rebuild
49.	2005	*	Transalloys	No. 5 Furnace	Complete Rebuild
50.	2005	*	Xstrata Lion Project	No. 1 Furnace	New Plant - 2 x 68MVA
51.	2005	*	Xstrata Lion Project	No. 2 Furnace	New Plant - 2 x 68MVA
52.	2006	*	Assmang Chrome	Machadodorp No. 3	Full Reline
53.	2007		Xstrata Rustenburg	No. 1 Furnace	Hearth
54.	2007	*	Middelburg Ferrochrome	DC Arc Furnace	New Furnace (Excl. Anode)
55.	2008		Metalloys	M17	Side Wall Repair
56.	2009		Assmang Chrome	Machadodorp No. 2	Partial
57.	2009	*	Silicon Smelters	No. 2	Full Reline
58.	2009		Xstrata Rustenburg	No. 5	Brick Only
59.	2009		IFM	Rustenburg	Partial - Brick Only
60.	2009	*	Rand Carbide	E Furnace	Full Reline

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<u>No.</u>	<u>DATE</u>	<u>PLANT</u>	<u>FURNACE</u>		
61.	2010	Zimasco Zimbabwe	No. 5 Furnace	Partial	
62.	2010	Transalloys	No. 6 Furnace	Partial	
63.	2011	Transalloys	No. 1 Furnace	Partial	
64.	2012	*	Xstrata Lydenburg	D Furnace	Full Reline
65.	2012	Metix Zimasco	No. 2 Furnace	Partial	
66	2012	Middelburg Ferrochrome	No.3 Furnace	Partial	
67.	2013	Middelburg Ferrochrome	No.4 Furnace	Partial	
66	2013	Tubatse Ferrochrome	No. 5 Furnace	Partial	
67	2013	Middelburg Ferrochrome	DC Arc furnace	Sidewall replacement	
68	2014	Middelburg Ferrochrome	DC Arc Furnace	Sidewall replacement	
69	2018	Middelburg Ferrochrome	DC Arc Furnace	Upper sidewall replacement	

RMS supplies monolithic products to the industry.

Many projects were conducted as Vereeniging Refractories and Verref Shaped until 2012. From 2014 it is Verref Shaped and RMS.

**3. IRON AND STEEL, ILMENITE SMELTING**

Materials: Mag chrome, chrome alumina, high alumina and alumina silicate brick and monolithic products. Consumable ladle brick supplied to Scaw Metals, Highveld Steel, **Richards Bay Minerals, Tronox and Arcelor Mittal.**

<u>No.</u>	<u>DATE</u>	<u>PLANT</u>	<u>FURNACE</u>	<u>COMMENT</u>	
1.	1993	*	HSVC	No. 4 Sub Arc, Elkem	All but Sub Hearth
2.	1996	*	HSVC	No. 3 Sub Arc, Elkem	All but Sub Hearth
3.	1999	*	HSVC	No. 7 Sub Arc, Demag	All but Sub Hearth
4.	2002	*	HSVC	No. 2 Sub Arc, Elkem	All but Sub Hearth
5.	2005	*	HSVC	No. 5 Open Arc, Elkem	All but Sub Hearth - Conversion
6.	2006	*	HSVC	No. 6 Open Arc, Elkem	All but Sub Hearth - Conversion
7.	2007	*	HSVC	No. 1 Open Arc, Elkem	All but Sub Hearth - Conversion
8.	2008	*	HSVC	Ajax Induction Mixer	New Induction Super Heater
9.	2011		HSVC	No. 7 Sub Arc, Demag	Partial
10	2014		ArcelorMittal Newcastle	Newcastle	Hot Blast Main supply and sacrificial pad in blast furnace.
11.	2016		Arcelor Mittal VDB	Coke Ovens	Coke oven reline, SD brick supply.

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**4. PAPER, PETROCHEMICAL AND OTHER INDUSTRY**

Materials: Mag chrome, chrome alumina, high alumina and alumina silicate brick and monolithic products. Consumable brick and monolithic products supplied to Sasol, Petrosa and Sappi.

<b><u>No.</u></b>	<b><u>DATE</u></b>	<b><u>PLANT</u></b>	<b><u>FURNACE</u></b>	<b><u>COMMENT</u></b>
1.	2018	Sasol Secunda	EAF	Full heath and upper sidewall
2.	2021	Sappi Saiccor	Boilers	Full supply and install

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