
Reference List PRESSURE ACID LEACHING (PAL)-Plants



Gold Mining Industry

1974	A.A.C. Western Deep Levels South Africa	1 Autoclave, out of service since 1984
1980	A.A.C. Afrikan Lease Klerksdorp South Africa	6 Autoclaves, out of service since 1992
1993	*Barrick Goldstrike USA, Carlin, Nevada	Test area and samples with STELLAKITT A MORTAR
1995		Test area with DIDIER SF bricks
1985	*Homestake Mining Company Mc. Laughlin Mine, Lower Lake California, USA	3 Autoclaves, D: 4,0 m L: 18,4 m 6 Flash Vessels, D: 2,0 m H: 5,0 m
	Engineering: Kaverneer Davy, San Ramon, CA, USA	
1993		repairworks in vapour zone
1991	*Miramar (former Nerco Con Mine) Yellowknife Canada Engineering: Fluor Daniel Wright, Vancouver, CDN	1 Autoclave D: 3,2 m L: 11,5 1 Flash vessel D: 2,5 m H: 2,5 m
1994		wear spare parts for Autoclave
1995		wear spare parts for Autoclave
1999		Maintenance for Recommissioning
2000		* Repair of anti-swirl baffles
1990	Barick, former *Placer Pacific Ltd, Porgera, PNG Engineering: Fluor Daniel Wright, Vancouver, CDN	3 Autoclaves D: 4,0 m L: 29 m 3 Flash Vessels D: 4,0 m H: 2,5 m Floor areas, pits, sumps 820 m ²
1993		*1 Autoclave D: 4,0 m L: 29 m
1994		wear spare parts for Autoclave
1995		*Relining Gasphase clave #1; DSB-Supervision
1996		wear spare parts for Autoclave
1997		*Relining Gasphase Clave #3 ;DSB-Supervision
1998		*Relining Gasphase Clave # 2;DSB-Supervision
1999		*Relining Gasphase Clave # 4;DSB-Supervision
1999		*Relining Gasphase Clave #1; DSB-Supervision
2000		wear spare parts for Autoclave
2001	Didier AC bricks, Stellakitt AE-mortar	wear spare parts for Autoclave; DSB-Supervision
2001 Oct.	Didier AC bricks, Stellakitt AE-mortar	*Relining Gasphase Face-course Clave #3 ; DSB-Supervision
2002 April	Didier AC bricks, Stellakitt AE-mortar	*Relining Gasphase Face-course Clave #2 ; DSB-Supervision
2003 Sept.	Existing 65 + 100 mm Lining was replaced against 115 + 100 mm Didier AC bricks, Stellakitt AE-mortar	*Relining Gasphase Face-course Clave #1 ; DSB-Supervision
2004 July.	Existing 65 + 100 mm Lining was replaced against 30 + 65 + 115 mm + Nozzle design changes Didier AC/SF, Stellakitt AE-mortar	* Total Relining Clave #4 ; DSB-Supervision (2 x DSB-Supervisors) + DSB-Installation (14-DSB-Bricklayers)

* Stellakitt A/AE mortar for new installation or Test area, in service

2005 May.	Existing 65 + 100 mm Lining was replaced against 30 + 65 + 115 mm + Nozzle design changes Didier AC/SF, Stellakitt AE-mortar	*Total Relining Clave #2 ;
2005 July.	Existing 65 + 100 mm Lining was replaced against 30 + 65 + 115 mm + Nozzle design changes Didier AC/SF, Stellakitt AE-mortar	*Total Relining Clave #3 ;
2006		Maintenance and spare parts for Autoclave
2007		Maintenance and spare parts for Autoclave
2008		Maintenance and spare parts for Autoclave
2009		Maintenance and spare parts for Autoclave

1997	* Lihir Joint Venture Lihir Island, New Ireland Province Papua Neuguinea/New Guinea	
	Engineering: Davy Kinhill Flour Daniel Brisbane, Australia	*Bricklining in 1997
	<ul style="list-style-type: none"> Supply + Installation of Bricklining for Autoclave, Flash Vessel, Blast Spool 	3 Autoclaves D: 4,5 m L : 36 m 3 Flash Vessels D: 5,5 m H: 8,0 m 3 Quench Vessels D: 3,3 m H: 6,0 m 3 Ducts D: 1,6 m L: 28,0 m
1998		Spare parts for Autoclaves
1999		Spare parts for Autoclaves
2000		Spare parts for Autoclaves + Flash Vessels

1998		*Relining Gasphase Autoclave
1996	*Newmont Gold Comp. Twin Creek Mine, NV, USA Engineering: Kilborn, Toronto, CDN	Test area with STELLAKITT A MORTAR Test area with DIDIER SF bricks

2007	Agnico Eagle , Kittila Mine, Fin Engineering: SNC-Lavalain Eng. Consultants	
2007	<ul style="list-style-type: none"> Supply of Autoclave Steel Vessel Supply of Flash Vessel Supply of Internals 	1 Autoclave D: 3,88 m L : 26 m 1 Flash Vessels D: 4,82 m H: 10,5 m Titanium Gr2, Gr12, SAF2507
2008	<ul style="list-style-type: none"> Supply and Installation of Membrane + Bricks for Clave and Flash Vessel 	Stellagen FUR Membrane Didier SF + Didier AC bricks Resacid FQ, Stellakitt KG, Stellakitt AE, Stellakitt BG
2009	<ul style="list-style-type: none"> Inspection 	
2009	Amursk Gold POX, Polymetal, Russia Engineering: SNC-Lavalain INC. CDN	
	<ul style="list-style-type: none"> Supply + Installation of Membrane + Bricklining for Autoclave, Flash Vessel, Blast Spool 	1 Autoclave : D: 3,60 m L : 23,40 m 1 Flash Vessels: D: 4,40 m H: 6,60 m Blast Spool: D: 0,70 m L: 2,00 m
	<ul style="list-style-type: none"> Installation planed for 2010 	

* Stellakitt A/AE mortar for new installation or Test area, in service

Zinc Mining Industry		
1990	Ruhr-Zink GmbH Datteln; BRD/FRG Engineering: Lurgi AG	Flash Vessel D : 1,3 m H : 3,0 m Autoclave D : 2,3 m H : 4,5 m Slurry Tank D : 2,0 m H : 2,5 m Cooling Tank D : 2,0 m H : 2,5 m Autoclave D : 4,0 m L : 25 m
1993		wear spare parts for Autoclave
1994		wear spare parts for Autoclave
1995	COMINCO Canada	wear spare parts for Autoclave
1996		wear spare parts for Autoclave
2003	Kazakhmys Corporation Balkash Zinc Refinery, Balkash, Kazakhstan	3 Autoclaves D: 3,40 m L = 22 m
2003	Supply and Installation of Membrane and Bricklining in 3 x Ti-cladded Autoclaves	Didier SF bricks in Stellakitt KG and Stellakitt AE, Stellagen FUR Membrane

* Stellakitt A/AE mortar for new installation or Test area, in service

Copper Autoclaves in the Platinum Mining Industry

1990/ 1991	Northam-Platinum, Northam South Africa	1 Autoclave 1 Flash Vessels	D: 2,90 m, L: 12,5 m D:1,0m, H=1,2m
2003		1 Autoclave 1 Flash Vessels	D: 2,90 m, L: 12,5 m D:1,0m, H=1,2m
2004		Maintenance in claves	
2006		Maintenance in claves	
2009		Maintenance in claves	
1996	*Hartley Platinum Zimbabwe	2 Autoclaves	D: 2,85 m, L: 14,0 m
1999		out of operation since 1999	
2003	Now called Zimplats, Hartley	Recomissioning of two claves 2003, June	
1973	*Impala Platinum Springs, South Africa	3 Autoclaves	D: 3,0 m L: 11,0 m
1975		3 Autoclaves	D: 3,0 m L: 11,0 m
1987		3 Autoclaves	D: 3,0 m L: 11,0 m
1991		2 Autoclaves	D: 3,0 m L: 11,0 m
1994		1 Autoclave	D: 2,85 m L: 12,0 m
1996		*1 Autoclave	D: 2,85 m L: 10,0 m
2000		*1 Second Stage Leaching Autoclave D: 3,0 m L = 10 m	
2002	Didier SF- Bricks	Complete Relining of one clave with SF bricks	
2003	Didier SF- Bricks , AE-Mortar		
2004	Didier SF- Bricks , AE-Mortar	Maintenance in claves	
2005	Didier SF- Bricks , AE-Mortar	New Autoclave with Alloy-dividing walls and baffles 1 Autoclaves D: 3,0 m L: 12,0 m	
2006		Maintenance in claves	
2007		Maintenance in claves	
2008		Maintenance in claves	
2009		Maintenance in claves	

* Stellakitt A/AE mortar for new installation or Test area, in service

1987	*Lonmin , former Western Platinum Marikana, South Africa	1 Autoclave 1 Autoclave	D: 3,0 m L: 11,0 m D: 3,0 m L: 11,0 m
1988		1 Autoclave	D: 3,0 m L: 11,0 m
1991		1 Autoclave 3 Flash Vessels	D: 3,0 m L: 11,0 m D: 1,0 m; H = 1,2 m
1995		*Relining of vapour zone	
1996		Maintenance work in claves	
1997		Maintenance work in claves	
1998		Maintenance work in claves	
1999		Maintenance work in claves	
2000		*Relining of vapour zone	
2001		Maintenance work in claves	
2002		*Relining of vapour zone	
2003		Complete Relining of one clave with SF-bricks, AE-mortar	
2004		Maintenance with AE-Mortar	
2005		Maintenance in claves	
2006		Maintenance in claves	
2007		Maintenance in claves	
2008		Maintenance in claves	
2009		Maintenance in claves	

* Stellakitt A/AE mortar for new installation or Test area, in service

Copper Autoclaves in the Copper Mining Industry

August – October 2004	<p>*Sepon Copper Project, for Client: Lane Xang Minerals Limited, Laos Member of the Oxiana Resources Group Engineering: Khanong Development Group , Brisbane, Australia</p>	<p>Supply of Autoclave Steel Vessel D: 4,0 m L: 17,0 m Stellagen FUR Membrane, SF/AC Bricks, AE-, KG, BG-Mortar Supply of Flash Vessel Steel Vessel D: 5,0 m Height: 9,0 m Stellasin CR-Rubber, SF-bricks , FQ-Mortar Supply of Pre Heater Steel Vessel Supply of Titanium Internals</p>
November 2005	<p>Autoclave: Baffle- + Agitator-area re-pointing Flash Vessel: in perfect conditions Vent-Vessel: Replacement Gas-entrance pipe</p>	Stellakitt AE-mortar
March 2006	<p>Autoclave: Baffle- + Agitator-area re-pointing Flash Vessel: in perfect conditions Vent-Vessel: in perfect conditions</p>	Stellakitt AE-mortar
2007	Maintenance work in Clave	Stellakitt AE-mortar, Stellakitt KG-Mortar, Didier SF bricks
2008	Maintenance work in Clave	Stellakitt AE-mortar, Stellakitt KG-Mortar, Didier SF bricks
2009	Maintenance work in Clave	Stellakitt AE-mortar, Stellakitt KG-Mortar, Didier SF bricks
2008	<p>*Sepon Copper II Project, for Client: Lane Xang Minerals Limited, Laos Member of the Oxiana Resources Group Engineering: Khanong Development Group , Brisbane, Australia</p>	<p>1 Autoclave D: 4,0 m L: 17,0 m Stellagen FUR Membrane, SF/AC Bricks, AE-, KG, BG-Mortar 1 Flash Vessel: D: 5,0 m Height: 9,0 m Stellasin CR-Rubber, SF-bricks , FQ-Mortar</p>
	<ul style="list-style-type: none"> • Supply of Autoclave Steel Vessel • Supply of Flash Vessel • Supply of Pre Heater • Supply of Metal-Internals 	<p>w: 176t D: 4,0 m L : 17,0 m w: 62t D: 5,0 m H: 9,0 m w: 30t D:3,6m H: 15m Titanium Gr 2, Gr 12, SAF 2507</p>
2009	Maintenance work in Clave	Stellakitt AE-mortar, Stellakitt KG-Mortar,
May-August 2006	<p>*Kansanshi Copper Project, for Rebuilding of 2 Autoclaves in the vapour phase FQML=First Quantum Minerals, Perth , AUS Engineering: GRD-Minproc, Perth , AUS</p>	<p>2 x Autoclave D: 3,4m L: 24,0 m TT Inconel 625/homogenous Lead Stellagen FUR Membrane, SF Bricks, AE-, KG, BG-Mortar</p>
2009	Maintenance work in Clave	Stellakitt AE-mortar, Stellakitt KG-Mortar,
2006	<p>Xstrata Cu CCR Xstrata Montréal, Québec, Canada Engineering: HATCH & DSB</p>	<p>Pentlandite Project 2 Autoclaves D: 2,9 m H: 4,4 m Rubber Membrane Vitreous Silica Bricks Stellakitt KG and AE Mortars.</p>
2009	Maintenance work in Clave s	Stellakitt AE-mortar, Stellakitt KG-Mortar,

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Uranium Autoclaves in the Mining Industry

2006	<p>*Aflease Project, for</p> <p><u>Client:</u> Aflease, Klerksdorp, NW-Province, South Africa</p> <p><u>Engineering:</u> Bateman, Johannesburg, SA</p>	<p>2 Autoclaves D: 4,0 m L: 24,0 m Stellagen FUR Membrane, SF/AC Bricks, AE-, KG, BG-Mortar 2 HT-Flash Vessel: D: 2,4 m Height: 5,5 m 2 MT-Flash Vessel: D: 2,7 m Height: 5,4 m 2 LT-Flash Vessel: D: 3,5 m Height: 5,7 m Stellagen FUR SF-bricks , KG-, FQ-, AE-Mortar</p>
2006/7	Engineering, Delivery for Train I+II	Installation for Train I
2007		Installation for Train II

* Stellakitt A/AE mortar for new installation or Test area, in service

Nickel and Cobalt Mining Industry

1998	*Bulong Nickel Project Energy Oil & Gas N.L. +Bulong Nickel PTY LTD, Australia Engineering: BKK Bateman Kinhill Kilborn JV, Perth; Australia	4 Flash Vessels D: 3,0 m L: 10,0 m 4 Heater Vessels D: 4,0 m L: 8,0 m
1999		Relining of Dome in HP-Heater
2000	DSB-Supervison	Relining of Nozzles in Heaters + Flash Vessels with Stellagen FUR
Oct. 2001	DSB-Supervison, Didier AC Bricks, Stellakitt AE-mortar	Relining of Nozzles in Heaters + Flash Vessels Stellagen FUR
May 2002	DSB-Supervison, Didier AC Bricks, Stellakitt AE-mortar for Face course maintenance	Relining of Face-course in Heater (104) + Flash Vessel(106) Stellagen FUR
Dec 2002	DSB-Supervison, Didier AC Bricks, Stellakitt AE-mortar for Face course maintenance	Relining of Nozzles in Heater (104) + Flash Vessel(106) Stellagen FUR
Nov. 2003	Shut down of plant	
2000	Avmin-Cosak-Project Chambishi Metals PLC, Zambia Engineering: Hatch Associates, Mississauga,CDN	5 vertical Autoclaves D: 3,8 m H: 3,6 m 1 vertical Flash Vessel D: 3,8 m H: 4,8 m with Stellagen FUR-membrane
2001	Didier SF, Stellakitt AE, Stellakitt KG	Relining Autoclave #1 after accident
2002	Didier SF, Stellakitt AE	Relining Autoclave #1 after accident
2002	Didier SF, Stellakitt AE	Relining Autoclave #1 after accident
2003	Didier SF, Stellakitt AE	Maintenance work on Autoclave #1
2000	Murrin Murrin Project Annaconda Operations Murrin Murrin Minesite, WA, Australia	Relining of Face course in 1 st . Stage Flash Vessel, Train 1
2000		Relining of Face course in 1 st . Stage Flash Vessel, Train 2
2001 April	Didier AC Bricks	Maintenance Work 1 st . Stage Flash Vessel, Train 1, 7 Rings AC Bricks
2001 Oct.	Didier AC Bricks, Stellakitt AE-mortar, 4 Rings AC Bricks	Maintenance Work 1 st . Stage Flash Vessel, Train 2,
2002 April	Didier AC Bricks, Stellakitt AE-mortar in Face course Didier SF Bricks, Stellakitt KG-mortar in 2nd course	Maintenance Work 1 st . Stage Flash Vessel, Train 1,
2007	Didier SF bricks in first and second layer, KG-mortar in Face course, FQ-mortar in backing course	Maintenance Work in 1 st and 2 nd stage Flash Vessels
2008	Didier SF bricks in first and second layer, KG-mortar in Face course, FQ-mortar in backing course, Stellagen FUR-Membrane	Maintenance Work in 1 st and 2 nd stage Flash Vessels
2009	Didier SF bricks in first and second layer, KG-mortar in Face course, FQ-mortar in backing course,	Maintenance Work in 1 st and 2 nd stage Flash Vessels

* Stellakitt A/AE mortar for new installation or Test area, in service

July 2006	Goro Nickel Project New Caledonia for INCO Australia Management	New installation of :
	3 x LT-Heater/Flash Vessels	D: 6,5 m H cyl, bricklined: 3,0 m
	3 x IT-Heater/Flash Vessels	D: 5,5 m H cyl, bricklined: 3,8 m
	3 x HT-Heater/Flash Vessels	D: 6,0 m H cyl, bricklined: 3,4 m
	Stellagen FUR-Membrane	AE/KG-Mortar
		9 x SiC-Impingement blocs
2007	Delivery of Bricklining and Membrane	
2008	Installation of Linings	
April 2008	Moa Nickel Expansion Project Cuba for Sherritt International Corporation, Toronto – Canada (Project currently suspended)	New installation of :
	5 x Leaching Reactor	D: 3,0 m H cyl: 11,9 m
	2 x Leach Flash Tank	D: 3,8 m H cyl: 4,0 m
	2 x Flash Tank Separator	D: 0,9 m H cyl: 3,2 m
	1 x Slurry Heater	D: 2,0 m H cyl: 5,9 m
	1 x Product Liquor Hotwell	D: 3,3 m H cyl: 9,5 m
	1 x Slurry Pre-Heater	D: 1,5 m H cyl: 4,7 m
	1 x Autoclave Vessel	D: 3,5 m H cyl: 9,9 m
	1 x Sulphide Flash Tank	D: 2,8 m H cyl: 2,7 m
	1 x Product Liquor Heater	D: 3,4 m H cyl: 5,3 m
	1 x H ₂ S Dehumidifier	D: 2,1 m H cyl: 5,9 m
2008	Delivery of Bricklining and Membrane	
2008	Installation of Linings	

TiO₂ Mining Industry

2001 – 2002	Rio Tinto QIT-Fer et Titane Sorel – Tracy, Québec, Canada Engineering: HATCH & DSB	Total Reline of 4 Acid Leach Reactor vessels D: 6.3 m H: 16 m Rubber Membrane Carbon and Vitreous Silica Bricks Furan Mortars
2006		UGS 375 Project 1 new Acid Leach Reactor D: 6.3 m H: 17 m Rubber Membrane Carbon and Vitreous Silica Bricks Furan and Phenolic Mortars
2007	Maintenance on Reactors Repointing work with Phenolic mortar	UGS Reactors
2008	Maintenance on Reactors Repointing work with Phenolic mortar	UGS Reactors

* Stellakitt A/AE mortar for new installation or Test area, in service