REFERENCE LIST OF MAINTENANCE, INSPECTION, REFORMS AND NEW GASHOLDERS
BRAZIL AND SOUTH AMERICA

PROJECT	TYPE	CAPACITY (M^3)	GAS TYPE	YEAR	SERVICE
Gerdau Açominas - Ouro Branco. MG	Klonne	50.000	COG	2020	Basic Engineering for Conversion
Ternium Argentina - San Nicolás - Argentina	Klonne	85.000 e 30.000	COG e BFG	2020	Inspections and reports of the 2 gasholders
AMT - ArcelorMittal, Serra, ES	Wiggins	80.000	LDG	2019	Inspection, recommendations and comments on the other 2 gasholders
Usiminas - Ipatinga, MG	Wiggins	158.000	BFG / LDG	2019 & 2020	Engineering, technical assistance for erection, special materials' supply, tests, commissioning, training, assisted operation
CSN Volta Redonda - SP	Wiggins	90.000 / 50.000	BFG/LDG	2019	Inspection and repairs' T.A. at the 2 gasholders
Usiminas Ipatinga MG	Water Sealed	45.000	LDG	2018 & 2019	Technical Assistance, inspection and tests
AMT ArcelorMittal Serra ES	MAN	40.000	COG	2018	T.A. for the seal change
Gerdau – Açominas Ouro Branco - Minas Gerais	Water Sealed	50.000	LDG	2018 & 2019	Engineering and T.A. for the complete refurbishment
AMT ArcelorMittal Serra - Espírito Santo	MAN	40.000	COG	2017	Inspection and T.A. (technical Assistance) for the seal change
AMT ArcelorMittal Serra - Espírito Santo	Wiggins	80.000	LDG	2017	Inspection
AMT ArcelorMittal Serra - Espírito Santo	Klonne	150.000	BFG	2015	Inspection and recommendations
CSN Volta Redonda - SP	Wiggins	50.000	LDG	2015	T.A. during seal change and other repairs, tests, adjustments, commissioning and seal supply
CSN Volta Redonda - SP	MAN	40.000	COG	2015	T.A. during seal change, various repairs, tests, adjustments & commissioning
Usiminas Cubatão - SP	Wiggins	20.000	COG	2014	Engineering for a new gasholder
TK CSA	Wiggins	120.000	BFG	2014	Inspection, engineering, seal supply, Repairs & seal change T.A., tests, adjustments, commissioning
TK CSA	Wiggins	120.000	BOF	2012	Inspection, engineering, recommendations, seal supply, T.A. of repairs and seal substitution, tests, adjustments, commissioning
V&M Tubes Belo Horizonte - MG	MAN	30.000/10.000	BFG	2012	Inspection of two gasholders

ALTRAD MOTHERWELL BRIDGE

kce

REFERENCE LIST OF MAINTENANCE, INSPECTION, REFORMS AND NEW GASHOLDERS BRAZIL AND SOUTH AMERICA

PROJECT	TYPE	CAPACITY (M^3)	GAS TYPE	YEAR	SERVICE
Usiminas Ipatinga - MG	MAN	30.000	COG	2012	T.A. erection of new piston and seal, tests, adjustments, commissioning
Usiminas Ipatinga - MG	Klonne	150.000	BFG	2011	T.A.seal change. seal supply and repairs
Gerdau – Açominas Ouro Branco - Minas Gerais	Water Sealed	50.000	LDG	2010	Inspection & recommendations
AMT Serra - Espírito Santo	Klonne	150.000	BFG	2009 & 2010	Inspection, seal supply, T.A. seal change and retrofit of Wiggins counterweight system
CSN Volta Redonda - SP	Wiggins	90.000	BFG	2009	T.A. seal change and general repairs
CSN Volta Redonda - SP	MAN	45.000	COG	2009	T.A. for seal change and various repairs
CSN Volta Redonda - SP	MAN	45.000	COG	2008	T.A. during emergency repairs
AMT ArcelorMittal Serra - Espírito Santo	MAN	40.000	COG	2008	Seal supply, T.A. of seal change and other repairs including seal trough
AMT ArcelorMittal Serra - Espírito Santo	Klonne	145.000	BFG	2008	Inspections and emergency interventions at seal
CST ArcelorMittal Serra - Espírito Santo	Wiggins	80.000	LDG	2007	T.A. of seal change, adjustments, commissioning
CST ArcelorMittal Serra - Espírito Santo	MAN	40.000	COG	2006	Seal supply and T.A. necessary repairs
CST ArcelorMittal Serra - Espírito Santo	Klonne	150.000	BFG	2005	Inspection
Cosipa Cubatão - São Paulo	MAN	125.000/10.000	BFG/COG	2001 & 2006	Several inspections and improvement recommendations
CSN Volta Redonda - SP	MAN	45.000	COG	2005	T.A. and engineering for piston recovery, seal change, tests, adjustments and commissioning
CSN Volta Redonda - SP	Wiggins	90.000	BFG	2005	Inspection
CST ArcelorMittal Serra - Espírito Santo	MAN	40.000	COG	2004	Tangential Guides' supply and inspection
CST ArcelorMittal Serra - Espírito Santo	Wiggins	80.000	LDG	2003 & 2004	Engineering of new Gasholder, seal & other components supply, Erection T.A., tests, commissioning, assisted operation
Usiminas - Cosipa Cubatão - São Paulo	MAN	10.000	COG	2003 & 2004	Inspection, engineering, technical supervision for repair and commissioning

REFERENCE LIST OF MAINTENANCE, INSPECTION, REFORMS AND NEW GASHOLDERS BRAZIL AND SOUTH AMERICA					
PROJECT	**TYPE**	**CAPACITY (M^3)**	**GAS TYPE**	**YEAR**	SERVICE
Gerdau – Açominas Ouro Branco - Minas Gerais	Klonne	50.000	COG	2003	Inspection and distortion measurement of shell plates
Gerdau – Açominas Ouro Branco - Minas Gerais	Water Sealed	50.000	LDG	2003	Inspection, engineering and T.A. of repairs and commissioning
CSN Volta Redonda - SP	MAN	45.000	COG	2002	T.A. of seal change, adjustments and commissioning
Gerdau – Açominas Ouro Branco - Minas Gerais	Klonne	50.000	COG	2002	General Inspection and shell plates' distortion measurement
Cosipa Cubatão - São Paulo	MAN	125.000	BFG	2001 & 2002	Inspection, engineering and T.A. of big repair, seal Chang, tests, adjustments, commissioning, assisted operation
CST ArcelorMittal Serra - Espírito Santo	MAN	40.000	COG	2002	Inspection, seal change, tests, commissioning
V&M Tubes Belo Horizonte - MG	MAN	30.000	BFG	2001	New seal supply, T.A. of seal change, tests, commissioning
CST ArcelorMittal Serra - Espírito Santo	Klonne	150.000	BFG	2001	Inspection
CST ArcelorMittal Serra - Espírito Santo	MAN	40.000	COG	2001	Inspection
CSN Volta Redonda - SP	Wiggins	90.000	BFG	2000	Inspection, engineering, components' supply, tests, commissioning, assisted operation
CSN Volta Redonda - SP	Wiggins	50.000	LDG	2000	Inspection, engineering, components' supply, tests, commissioning, assisted operation
Cia. Estadual de Gás do Rio de Janeiro - CEG	Water Sealed	90.000	Natural	1996	Inspection, T.A. of repairs, commissioning
Cia. Estadual de Gás do Rio de Janeiro - CEG	Water Sealed	100.000	Natural	1991	Inspection, T.A. of repairs, commissioning
Cia. Estadual de Gás do Rio de Janeiro - CEG	Water Sealed	100.000	Natural	1991	Inspection, T.A. of repairs, commissioning