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Reference List

Year	Customer	Project	Scope of Work
Toda y/199 9	Various	Various	Engineering consultation on materials, material selection, heat treatment, alternative materials, welding etc.
Toda y/199 9	Own	Software	Development of Price Master II and other pipe estimation and project handling software
Toda y/199 9	International	Software	Development of Bellows Master II and other compensator design software using international standards and own development
Toda y/199 9	Own	Software	Development of multiple small engineering software applications
Toda y/200 7	Own	Design systems	Integrated expansion joint design method using internationally recognized own proprietary software, MathCAD calculation sheets, FEA, CAESAR II, 3D modelling and Word processor. All compiled into one electronically signed PDF file with manufacturing drawings.

Toda y/200 4	Own	Drawing systems	Development of highly productive 3D drawing system using Inventor for compensators and other items.
2013/ 2014	Own	Software	Development of design calculation methods for rectangular bellows based on EJMA, other specifications and good engineering practice
2014/ 2015	Own	Software	Development of design calculation software for thick wall bellows
2014/ 2015	Own	Software	Development of bellows design calculation program to EN 14917 standard
2015	Own	Software	Development of design calculation software to establish bellows element metal temperature
2021	Own	Software	Development of design calculation software for external pressure design and wall thickness calculations
2021	EagleBurgmann	Power Station	Inconel 600 element design and report between EN and ASME designs
2021	Kenflex	Various	Design verification and SANS 347 signatures
2021	NN	Metal industry	Concept design of large diameter expansion joint for over 1700 C fluid
2021	Siseng	Chemical Plant	NB400 expansion joint design
2020/ 2021	SAC	Paper industry	Design of special material expansion joints NM450, NB500 and NB1600
2020	PDPS	Chemical Plant	Design upgrade of existing expansion joints
2020	MegChem	Petro Chemical	Design od NB400 expansion joint for a steam line

2020	MegChem	Petro Chemical	Exhaust line expansion joint design
2020	International	Training	Expansion joint design training
2020	Kenflex	Chemical plant	Design of heat exchanger bellows element
2020	SAC	Power Station	Design of NB400 lateral expansion joint
2020	MegChem	Chemical plant	Investigation and reporting on upgrading existing expansion joint from 80 C design to 343 C
2020	International	Food industry	Consultation in selecting expansion joint types, positions and CAESAR II use
2020	International	Food industry	Design of 6 lateral expansion joints NB600 to NB2100
2020	EagleBurgmann	Chemical plant	Design of 40 bar, NB500 lateral expansion joint
2020	NN	Metal industry	Tender design of two expansion joints with fluid temperature 1650° C
2020	NN	Bio mass fired Power Station	Design of NB1700 expansion joint for tender with fluid temperature at 899° C
2020	Two companies, NN	Chemical plant	Assisting in a project where design conditions given for the design of expansion joints were highly suspect
2020	International	Power Station	Design assistance in designing round and rectangular flue duct expansion joints
2020	SAC	Chemical plant	Design of high pressure expansion joint for a heat exchanger
2020	International	Military installation	Design assistance of high temperature expansion joints

2020	NN	ASME VIII Div 1	Authoring two bellows test procedures approved by ASME inspector
2019	Various	Various	Evaluation of suspect expansion joint designs and reporting
2019	Various	Various	Design review and signing under pressure regulations
2019	MegChem	Chemical plant	NB300 lateral expansion joint
2019	Bellow Weld	Chemical plant	NB2800 high temperature gimbal expansion joints
2019	SAC	Pulp plant	NB1600 SAF2205 lateral expansion joint with special design
2019	SAC	Pulp plant	NB500 SAF2205 lateral expansion joint
2019	SAC	Pulp plant	NB450 SAF2205 lateral expansion joint
2019	SAC	Power Station	NB 400 low pressure lateral expansion joints
2019	Process Projects/SAC	NOx plant	NB600 single element high temperature lateral expansion joint
2019	Process Projects/SAC	NOx plant	NB600 double element high temperature lateral expansion joint
2019	Own	Manufacturer	Two day training given on expansion joints and software
2019	SNC-Lavalin	Chemical plant	Inquiry design and documents for NOx line expansion joint
2019	Kenflex	Sugar Mill	High pressure NB300 lateral expansion joint for main steam line
2019	Kenflex	Sugar Mill	NB200 lateral expansion joint for main steam line, calculations, DRWG review
2019	SAC	Chemical Plant	28" lateral expansion joint with common hinge arrangement
2019	Kenflex	Chemical Plant	Special material NB150 expansion joint design for Fluid Service M
2019	SNC-Lavalin	Chemical plant	Existing expansion joint design review and stress analysis assistance

2019	SAC	Power Station	NB650 ASME B31.1 expansion joint design for a steam line
2018	Kenflex	Chemical plant	Special material NB200 expansion joint design
2018	Bellow Weld	Refinery	High pressure axial expansion joint for a heat exchanger
2018	Kenflex	Sugar mill	High pressure double gimbal expansion joint
2018	SAC	Process plant	NB80 axial bellows design for steam line
2018	Kenflex	Steel mill	NB1500 expansion joint partial FEA, review and engineer's signature
2018	MegChem	Petrochemical	Lateral expansion joint design and drawings
2018	SAC	Paper mill	Preliminary design of 13 SS expansion joints
2018	MegChem	NN	Consultation on failed expansion joint and how to proceed with repairs
2018	SAC	Sugar Mill	Design of 10" HP hinged expansion joint for a steam line
2018	SAC	Sugar Mill	Design of 10" HP lateral expansion joint for a steam line
2018	NN	Sugar Mill	Stress analysis assistance on steam line to turbine connection with expansion joints
2018	NN	NN	Review, verification and commenting on signed off but wrongly calculated expansion joint design calculation
2017	SAC	Airport	Design of SS pressure balanced expansion joint
2017	Bellow Weld	Power Station	Design of lense type expansion joint with particular material appraisal

2017	SAC	Chemical plant	NB900 and NB1000 duplex axial expansion joints
2017	SAC	Brewery	Pressurized hot water piping consultation and pressure balanced expansion joint design
2017	Foreign	Refinery	Design support on FCCU expansion joints
2017	Bellow Weld	Power Station	Low pressure high convolution expansion joint to EN 14917
2017	Various	Various	Design and drawing reviews and engineer's signatures
2017	Moraform Engineers	Power Station	Stress analysis of high temperature steam ejector outlet pipe
2017	Kenflex	Steam plant	Design of high temperature and pressure reinforced hinge expansion joint
2017	SAC	Metal refinery	Stress analysis of a new steam pipes
2017	SAC	Metal refinery	Design of 9 expansion joints for a new steam pipes
2017	Bellow Weld	Steam plant	Technical review and engineer's signature for repair of two very high pressure expansion joints
2017	Nicro	Chemical plant	Stress analysis of steam and condensate lines
2017	NN	Overseas	Technical review and recommendation how to fix newly manufactured large pressure balanced expansion joint
2017	RPP	Pump house	3D modelling of solid struts
2017	RPP	Pump house	Small steel structure designed to have minimum displacements under load. Design completed with extensive use of FEA.

2017	SAC	Turbine	Reason for failure identification during unit startup. Imported expansion joint.
2017	SAC	African export	NB450 lateral compensator
2017	SAC	Steel mill	Unrestrained expansion joints
2017	NN	Overseas Refinery	NB300 axial pressure balanced unit made out of N080904
2016	International bellows manufacturer	Training	Expansion joint training
2016	Engineering company	6 MW turbine	NB400 pressure balanced expansion joint design
2016	SAC	Steel mill	NB900 axial pressure balanced unit design with drawings
2016	SAC	Chemical plant	Heat exchanger bellows design
2015/ 2016	Training company	Training	Number of 2 day pipe training courses
2015	International	Bellows Manufacturer	Writing bellows squirm and burst test procedures
2015	SAC	Mining	Investigation and reporting on failed diesel line expansion joints
2015	Rand Water	Bulk water	Investigation and reporting on large diameter pipe ovality issues
2015	International	Bellows Manufacturer	Writing bellows fatigue test procedures
2015	SAC	Chemical Plant	Design of NB1200 expansion bellows
2015	NN	Training	Training presentation Introduction to piping design & valve selection, 2 days
2015	NN	Beverage Industry	Investigation and reporting on failed expansion joint
2015	Various	Various	Pro Bono consulting on bellows. Training young engineers
2015	SAC	Refinery	Design of bellows for HEX nozzle

2015	SAC	Power Station	Design of high pressure bellows for HEX
2015	NICRO	Chemical Plant	Stress analysis of small bore steam and condensate lines
2015	SAC	Refinery	Design of HEX bellows
2015	SAC	Steel mill	Design of special rectangular bellows
2015	Ngoboyi	Training	ASME B31.3 training presentation, 3 days
2015	MegChem	Training	Expansion bellows training to pipe engineers
2014	PDPS/SASOL	Training	Expansion bellows training to pipe engineers
2014	Various International	Various	Bellows material and design consultation
2014	Various	Various	Assisting pro bono young engineers to solve bellows related issues
2014	NN	Jet engine test facility	Material and design consultation
2014	SAC/KENTZ	Petrochemical Plant	Design of HEX expansion bellows including establishing various operating conditions
2014	SAC	Chemical Plant	Evaluation of existing bellows element of a failing HEX and recommendations for replacement
2014	SAC	Refinery	Design of two high temperature flue gas duct replacement expansion bellows
2014	SAC	Training	Two day expansion bellows design and software training
2014	NN	Petrochemical Plant	Design of a replacement bellows and special tools to fabricate it for a heat exchanger

2014	NN	Petrochemical Plant	Site evaluation and design of emergency replacement of two bellows elements.
2014	Various	Food processing plant	Technical consultation including CAESAR II calculations on the design of high temperature air ducts and design of associated expansion bellows
2014	SAIBA Engineering	Chemical plant expansion joint	Engineer's design verification and approval to SANS 347 requirements
2014	SASOL Nitro	Chemical Plant	Technical assistance to replace failed expansion bellows
2014	Steinmüller	Power Station Export, various	Design and mass estimation of rectangular expansion joints for tenders
2014	NN	Chemical plant	Design of high pressure (100 bar) reinforced hinged expansion joint including FEA
2013 /2014	Steinmüller	Fabrication	Design of various special tools for expansion bellows fabrication
2013 /2014	Steinmüller	Chemical plant	Design of a heat exchanger expansion joint
2013 /2014	NICRO	Chemical plant	Small diameter steam and condensate line design and stress analysis (CAESAR II)
2013	NICRO	Chemical plant	High temperature gas duct design
2013	Steinmüller	Power Station Export	Design of 24 rectangular expansion joints
2013	SAC	Chemical plant	Design of two heat exchanger expansion joints including FEA
2013	Steinmüller	Platinum Mines	Evaluation and report on two over land compressed air lines.
2013	Steinmüller	Platinum Mines	Design of two externally pressurized expansion joints including FEA

2013	Steinmüller	Sugar plant	Design of 4.5MPa, 450°C lateral expansion joint including FEA
2013	NN	Piping	Engineer's verification and approval to SANS 347 requirements
2013	Steinmüller	Training	Compensator training
2013	NN	Steel mill	Design of 2.6 m diam expansion bellows including FEA
2013	Steinmüller	HP heater	3D modelling of a HP heater to be used as template in the future.
2012 /2013	SAC	Chemical plant	Technical consultant on expansion joint related problems
2012 /2013	NN international	Petrochemical	Technical consultant on expansion joint related dispute case. Expert witness.
2012 /2013	Steinmüller	Various	Consultant on technical issues
2012	Various	Piping	Technical assistance in tender preparation
2012	SAC	SASOL	Compensator and system analysis
2012	Steinmüller	ESKOM	Design calculations of two HP heaters to EN code using MathCAD
2011/ 2012	BHR Germany	Olkiluoto Nuclear P.S.	Member J. Tolonen was nominated as Project Engineer on erection of all nuclear island pipes
2011	NN	Olkiluoto Nuclear P.S.	Technical solution to solve problem with deforming pipe ends.
2008/ 2011	BHR Germany	Olkiluoto Nuclear P.S.	Member J. Tolonen was nominated as Quality Assurance Manager to lead QA department responsible for all nuclear island pipes excluding primary loop.
2008	Steinmüller	SASOL	Various steam pipe inspections, reporting, preparation of inspection plans and inspection drawings

2007 /2008	South African Compensators	Kriel P.S.	Design of large size replacement axial pressure balanced compensators.
2007	Steinmüller	HP Steam system of a Gas fired P.S. in Northern Africa	Joint venture together with an engineer to do flexibility analysis and site inspection of MS, HR, CR and by pass steam lines on a modern large base load station
2007	Steinmüller	PF Pipes, Komati P.S.	Flexibility analysis, site inspections and reporting of PF pipe systems
2007 & 2008	Eagle Burgmann	Various	Design verification calculations of compensators.
2007	Bellow Weld	Wet Sulphuric Acid	Basic, detailed engineering and manufacturing drawings of 7 2.8 to 3.2 m stainless steel compensators for gas ducts.
2007	Thuthuka Group	CO ₂ dosing plant	Flexibility analysis and pipe design calculations of NB80 to NB 200 overland gas distribution pipe lines.
2007	Klomac	Chlorine dosing plants	Design verification and flexibility analysis of Cl injection systems
2007	Steinmüller	Grootvlei P.S.	Site survey and flexibility analysis of HP feed water system
2007	Steinmüller	Paper mill steam line	Site survey and flexibility analysis of medium pressure steam system
2006	Steinmüller	SASOL West Steam Plant	High Pressure steam pipe technical evaluation, flexibility analysis, visual inspections, project handling and report preparation (About 440 pages). 8 boilers, 6 turbines and 4 distribution headers

2006	Steinmüller	SASOL East Steam Plant	High Pressure steam pipe technical evaluation, flexibility analysis, visual inspections, project handling and report preparation (About 580 pages). 9 boilers, 5 distribution headers and over 2 km transfer line
2006	Steinmüller	Grootvlei P.S.	Main Steam and Extraction line drain designs including site measurements, design calculations, 3D modeling and drawings
2006	South African Compensators	Various	Bellows designs
2006	Kentz	NN Turbine house	High pressure and temperature pipe line estimation using P&I and rudimentary GA
2006	Steinmüller	Grootvlei P.S.	Technical evaluation and reporting of customer inquiry
2006	KOG Fabricators	Compensator product development	Basic engineering, 3D modeling and preparation of high quality 3D images
2006	KOG Fabricators	High Temperature Test Unit (PBMR)	Design of steel structure, pipes, supports, special items and vessels, 3D modeling and manufacturing drawings
2006	KOG Fabricators	Various	Expansion joint designs for inquiries and fabrication. Compensator design reviews.
2006	KOG Fabricators	Various	Preparation of A1 to A0 size high quality posters of our 3D designs
2005	Bateman	ISCOR	Basic engineering, design calculations and estimation of high pressure and feed water systems for a planned power station. Joint venture between 3 engineers.

2005	Chempute	Training	Official training officer for CADWorx Plant
2005	KOG Fabricators	High Pressure Test Unit (PBMR)	Design of steel structure, pipes, supports and special items, 3D modeling and manufacturing drawings
2005	KOG Fabricators	Various	Expansion joint designs for inquiries and fabrication. Compensator design reviews.
2005	Kentz	SASOL 1	Consulting and take off on over 2000 ISO piping project. Our software PM II used for project monitoring and invoicing back up.
2005	IST	Test Plant (PBMR)	Various special tool designs in 3D and manufacturing drawings
2005	KOG Fabricators	Test Plant (IST/PBMR)	Design of various high temperature expansion joints and special items, 3D modeling and manufacturing drawings.
2005	KOG Fabricators	Various	Tender preparations
2005	Steinmüller	Omnia fertilizers	Chemical plant pipe technical evaluation and detailed reporting.
2005	Steinmüller	Duvha P.S.	GO report preparation on high pressure pipes including levels, visual inspections and hanger readings.
2005	Steinmüller	Kelvin P.S.	Feed water spray line design, site measurements and drawings.
2004	bellows africa	Various	Complex expansion joint designs for inquiries and fabrication.
2004	Steinmüller	Various	Pipe take offs and erection estimations using our PM II estimating software.
2004	Steinmüller	Kriel P.S.	GO report preparation on high pressure pipes including levels, visual inspections and hanger readings.

2004	Arminco	Various	Complex expansion joint designs for inquiries and fabrication. Project handling.
2004	Steinmüller	Hendrina P.S.	Drawings for super heater shields
2004/ 2003	KOG Fabricators	Various	Basic design and pricing of oil and gas measuring skids
2004/ 2003	KOG Fabricators	Nigeria	Detailed design, 3D modeling and manufacturing drawings for 3 oil measuring skids.
2003	Arminco	Various	Complex expansion joint designs for inquiries and fabrication. Project handling.
2003	Arminco	Various	Pipe take offs and erection estimations using our PM II estimating software.
2003	Arminco	Various	Multi discipline project estimation, site visits and tender preparations.
2003	Kentz	Various	Pipe take offs and erection estimations using our PM II estimating software. Project support to customer.
2002	Kentz	Fertilizer Plant	Technical support to project manager, chute and ducting drawings and designs.
2002	Arminco	Richards Bay	N2 cabinet design and drawings
2002	Arminco	Kumba	Injection lance design, drawings and project handling
2002	Kentz	Fertilizer Plant	Steel platform design and drawings
2002	Arminco	Micro Model (PBMR)	Consultant, project handling and detailed engineering of piping
2002	Arminco	Various	Complex expansion joint designs for inquiries and fabrication.
2002	Arminco	Various	Tender preparation of piping and other projects including turn key

2001/ 2002	Kentz	Sulphos	Consulting and take off on large piping project. Our software PM II used for project monitoring and invoicing back up.
2001/ 2002	Arminco	Phalaborwa	Project handling, pipe design and drawings, material ordering and subcontractor monitoring. Multi discipline project.
2001	Arminco	Various	Complex expansion joint designs for inquiries and fabrication.
2001	Arminco	Various	Tender preparation of piping, bellows and other projects including turn key
2001	Kentz	Various	Pipe take offs and erection estimations using our PM II estimating software.
2000	Arminco	Sappi	Large special filter measurements for drawings and project handling of fabrication and erection.
2000	Arminco	Various	Tender preparation of multiple projects from single items to full plants (Turn key)
2000	Arminco	Various	Complex expansion joint designs for inquiries and fabrication.
2000	Kentz	Various	Pipe take offs and erection estimations using our PM II estimating software.
2000	Keith Kirsten's	Various	Computer support
2000	South African Compensators	Compensators	Engineering software development
2000	Advanced Software Technologies	Accounting and POS	Software development
2000	Arminco	Tutuka P.S.	Plastic pipe failure analysis
1999	SA Data technology	Accounting	Software development

1999	Steinmüller	Funen	Transport frame design and manufacturing drawings.
1999	Arminco	Various	Complex expansion joint designs for inquiries and fabrication.
1999	Kentz/JTS	Software	Development of steel structure estimating program
1999	SMP	Software	Development of RatesTool software to update estimating software prices.