



COMPANY PROFILE 2020 LISEGA Group





Issue 1, 2020

About LISEGA

Page 3-4

Locations worldwide

Page 5-7

Products

Page 8 - 11

Services

Page 12 - 16

QHSE Management

Page 17 - 18

References

Page 19 - 21

General Information

Page 22

LISEGA product groups VICODA® product brand

LICAD® planning design software for pipe supports Engineering and support design Field services Material testing laboratory LIMALAB Snubber test services

About LISEGA

The LISEGA Group is a global leader in the production and sale of industrial pipe support systems. Headquartered in Zeven, Germany, LISEGA operates a further five production facilities in France, UK, USA, China and India. These are supplemented by Service offices in Russia, South East Asia, GCC, South Africa and USA as well as a network of representatives throughout the world. Customers and business partners benefit from more than 50 years of experience and more than 1,200 motivated and highly qualified employees worldwide.

The unique LISEGA modular system, incorporating more than 50,000 standard components (without customer-specific variations) facilitates the optimum support and protection of all piping applications. Consequently, LISEGA is the leading supplier for large-scale power plants, chemical and petrochemical industry, and process as well as LNG plants.

LISEGA's reliable solutions are also designed to increase offshore and solar efficiency. Alongside the standard solutions, a team of qualified and experienced engineers is available to develop bespoken designs as required.

LISEGA can offer customers the complete solution from initial support design, through integrated 3D modelling, hardware manufacture, supply and delivery, to on site expert commissioning supervision.

One of the most important facets of the LISEGA package is the software that we offer for free to allow rapid and accurate 2D & 3D support design. The LICAD program allows the support designers to complete a support design in just a few minutes and additionally produce a 3D model compatible with PDS or PDMS at the click of the mouse. This ability offers the user many benefits which are mentioned on page 12.



The aim of the LISEGA product strategy is to achieve and maintain full benefits at lowest possible cost for our customers.

LISEGA has continuously expanded their market position in industrial pipe support systems and thus strengthened the value of the company.

BENEFITS OF PIPE SUPPORT SYSTEMS

Almost all pipe materials expand or contract as their temperature is increased or decreased. To support a piping system properly and avoid substantial damage, there will be a combination of different pipe support components. We offer the piping engineer and pipe support designer a comprehensive design package within our product catalogues and engineered solutions. Another advantage is in case of very restricted space constraints, our products can be installed easily.

About LISEGA



REGISTERED TRADEMARKS

LISEGA®, LICAD® (software for support design), VICODA® (product brand - vibration isolation), HIPAC® (cryrogenic), m·connect®

ANNUAL PRODUCTION (AVG.)

25,000 constant hangers, 75,000 variable hangers, 5,000 snubbers, 15,000 rigid struts, 300,000 threaded rods, 350,000 connecting elements, such as clevices and eye nuts, 600,000 pipe clamps and clamp bases and 20,000 metric tons pipe support material

The LISEGA Group includes 7 manufacturing sites in Europe, North America and Asia. A worldwide network of more than 40 representatives ensures customer proximity as well as fast and reliable delivery. We partner with customers globally to help them meet their requirements, with a focus on providing high quality products, engineering, service and customization.

LISEGA SE, GERMANY

Headquarter, 1964

Competences: Engineering, manufacturing, services Core Business: Manufacturing of the complete LISEGA product program

LISEGA SE | Gerhard-Liesegang-Straße 1 | 27404 Zeven | Germany

LISEGA SAS, FRANCE

Subsidiary, 1978

Competences: Engineering, manufacturing, services Core Business: Manufacturing of snubbers

LISEGA SAS | 21 Rue Gutenberg | 91919 Bondoufle | CEDEX, France

LISEGA INC., USA

Subsidiary, 1987

Competences: Engineering, manufacturing, services Core Business: Secondary steel construction, manufacturing of essential LISEGA products

LISEGA Inc. | 370 East Dumplin Valley Road | Kodak | TN 37764 | USA

LISEGA LTD., UK

Subsidiary, 1991

Competences: Engineering, manufacturing, services Core Business: Steel construction, manufacturing of customized solutions

LISEGA Ltd. | Unit 3 Washington Centre | Halesowen Road | Netherton | West Midlands | DY2 9RE | UK

LISEGA PST, CHINA

Subsidiary, 2004

Competences: Engineering, manufacturing, services Core Business: Manufacturing of the complete LISEGA product program

LISEGA PST | 7800 Songze Ave. | Qingpu Industrial Zone | Shanghai | ZIP 201700 | China

Locations worldwide



Locations worldwide



LISEGA SE OFFICE KUALA LUMPUR, MALAYSIA

Subsidiary, 2018

Competences: Engineering support, Field Services (Piping & Support) Core Business: Providing technical support to LISEGA clients and representatives in South East Asia

LISEGA SE, Office Malaysia | 2, Jalan P Ramlee | 50250 Kuala Lumpur | Wilayah Persekutuan Kuala Lumpur | Malaysia



Our product solutions for all industrial applications

The LISEGA product program covers all components required for the implementation of modern concepts in the support of pipe systems. Pipe supports are designed to carry, guide and secure complex piping systems. Loads are to be distributed and displacements due to heat expansion are to be compensated, free from reaction forces.

To meet all customer requirements, LISEGA offer a wideranging performance package which encompasses all fields of pipe support technologies:

- Standard products
- Custom-made solutions
- Engineering, construction and development
- Design development tools
- Site services

The unique modular system consits of more than 50,000 systematically arranged standardized components without customer-specific variations. These components cover all support situations, operational loads, temperatures and travel ranges normally experienced in piping systems in industrial plant constructions.















LISEGA's unique modular system

The standardized components are divided into 7 product groups according to task and function as well as 2 groups including the divisions of planning software and services. Together they form the basis of rational computerized administration and processing.



Constant hangers are used for piping and related components where higher levels of vertical travel occur. Their job is to transfer the working load over the whole travel area while keeping it constant, i.e. without any considerable deviations. The functional precision of the constant hangers is decisive for favorable long term behavior of the components involved.



Spring hangers and **spring supports** are used to balance slight vertical displacements in the pipe system. These components work on the basis of preset helical coil springs which exert a variable supporting load over the range of movement in accordance with their specified spring characteristics. Load variations resulting from this are limited through the stress analysis calculations, depending on the sensitivity of the piping.



The use of **snubbers** is preferred in thermally operated plants. In a dynamic event, snubbers instantaneously provide a fixed, practically rigid connection between the component to be secured and the surrounding structure. In this way the dynamic energy from abrupt displacement can be absorbed at once and harmlessly dissipated. The thermal movements during routine operation remain free of any significant resistance thanks to the specialized operating principles of the snubbers.

Products

HORIZONTAL CLAMP, RISER CLAMP, CLAMP BASE Product Group **1**



Due to the requirements of operating at elevated temperatures, **pipe clamps and pipe bearings** are the most vulnerable components of the support chains in heat conducting piping. At the same time their surrounding insulation makes regular inspection very difficult. Particular attention must therefore be paid to the design of these critical components.



EYE NUT, CLEVIS WITH BOLT, TURNBUCKLE, ROD COUPLING, TIE / THREADED ROD Product Group 6



Roller bearings are the optimum solution for pipe systems of larger diameters that are subjected to high loads and horizontal displacements. They feature high load-bearing capacity, great reliability and extremely low friction resistance. Our complete product range of **insulated cryogenic pipe supports** is designed to suit all kinds of low temperature pipe systems. These products are normally used in industrial processes for the production, transport and distribution of liquefied gases.

The threaded connecting elements are

specially designed components for connecting rods to other support components. They connect components in the load chains with their counterparts, such as lugs, U-bolts or eyelets. **Threaded rods** connect the support components to each other in order to bridge installation heights. They can be used as rigid supports and in spring-mounted load chains with spring and constant hangers.

Special components for welding or clamping are available to connect the pipe supports to the supporting structure.

VICODA[®] product brand

SPRING ELEMENTS



VICODA®

VICODA[®] spring elements are effectively used for vibration isolation of machinery within power stations, e.g. turbine tables, feedwater pumps etc. They provide support of static loads and reduce the transmission of dynamic loads to the foundation.

SMALL SPRING ELEMENTS

VICODA® small spring elements are used for small and medium-sized plants and machinery. VICODA® spring elements and damped spring elements ensure that the vibration induced by the equipment – the source of the vibration – is not transmitted to the environment (isolation of source).



VICODA®viscoelastic dampers effectively reduce vibrations by converting kinetic energy into heat, thereby damping the movement of the system. Their design allows them to be used over a wide range of frequencies, however, the required type of viscoelastic damper depends on the planned application. The application range extends from process technology to the damping of individual machines or complete piping systems.



VICODA[®] tuned mass dampers are used as effective vibration protection for all applications. Pedestrian- or wind-induced vibrations can be effectively controlled with passive tuned mass dampers e.g.

Also flow-induced vibrations in pipelines, as well as vibrations of components and machines can be effectively reduced. Passive, semi-active and active systems are all used in building and bridge construction.

Services

LICAD[®] - LISEGA planning design software for pipe supports

The LICAD[®] program has set new standards in this field. It enables the creation of true to scale support drawings and material list (BOM) in minutes.

The pertinent data for a given support point is entered using menu-driven program control. Input parameters are: pipe diameter, pipe temperature, operation load, displacement, installation height and support configuration. From this input, the appropriate components are automatically selected and saved. The supports can be printed out as drawings and modified at any time.

A broad spectrum of interfaces enable the import / export of existing data from, and to, CAD and CAE systems. Utilizing component libraries, the drawing prepared in LICAD[®] can be transformed into 3D via add-ons in various CAD programs. LICAD[®] plug-ins for different systems are also available.



2D interfaces (dxf) **3D** interfaces Library for AutoCAD[®] from Autodesk[®] AutoCAD[®] und AutoCAD[®] Plant 3D. Autodesk DXF data transfer to any CAD software PDMS[®] und E3D[®], AVEVA[™] TEKLA[®] Structures, Trimble Intergraph Smart[®] 3D, Hexagon[®] SUPPORT MODELER[®], Hexagon[®] MicroStation[®], Bentley Systems dPIPE ROHR2, Sigma[®] CAESAR II, Hexagon[®] AVEVA Bentley Smart ∋3D Trimble 🔼 AUTODESK. **INTERGRAPH**

Services

Engineering and support design

The functionality and appropriate design of the pipe support in the existing piping and plant concept has a significant impact on the long-term behavior of the pipe system. Therefore the design of the pipe supports should be given the same level of importance as that given to the piping itself. The choice of the product, the availability of a modern design software and especially the experience of the design engineers has a significant influence on the support design quality.

Besides the quality requirements, close coordination of schedules and economic goals need to be achieved. If necessary we can rely on successful teamwork within the company network and the cooperation with engineering offices to avoid endangering the budgeting and logistics of entire projects. By using this group wide coordination, the design scope can be completed in a timely manner. We offer you a holistic engineering solution for your project.

Utilization of the LISEGA design expertise can yield many advantages for our customers:

- Improved efficiency through the design process
- Complete and lasting computerized documentation
- Expert performance by experienced specialists
- Availability of highly skilled personnel for any required subsequent services
- Fast and flexible processing of the entire project from initial order up to delivery - everything from one source







Field services

Our services comprise all the necessary aspects & activities to ensure optimum performance of piping systems in power plants, LNG terminals, offshore platforms, refineries as well as petrochemical plants and other applications. By employment of the LISEGA field service team and the use of our innovative measurement and testing technology we can help ensure that the piping system and your plant operate at the utmost efficiency.

Profit from our long term expertise. Services like monitoring, installation, commissioning, maintenance and the refit of function and security related spare and wear parts form the core of our individualized and sustainable customer support. LISEGA meet the guidelines laid down by quality management and fulfill the relevant safety standards. Following services complete our service portfolio:

- Supervision of construction, installation
- Commissioning of entire pipe systems
- Inspection of pipe supports
- Overhaul of supports
- Inspection, servicing and verification of snubbers of all brands
- Hanger test at site





The appropriate use of the LISEGA service package will make a valuable contribution to the functional safety of complex piping systems and therefore increases the longevity of the entire plant.

Services

Material testing laboratory LIMALAB

The testing laboratory LIMALAB is accredited according to DIN EN ISO / IEC 17025 and offers independent material testing services in the areas of mechanical or destructive testing as well as non-destructive testing methods.



The core competences of the test laboratory lie in the mechanical testing methods such as tensile and flexural tests, welding procedure tests, spectral analyzes as well as impact and hardness tests. Further competences are metallographic investigations and non-destructive tests.

Services test laboratory LIMALAB:

- Mechanical / technological material testing according to EN / ISO and ASTM
- Non-destructive material testing (NDT)
- Metallographic examination
- Optical emission spectrometry (OES)
- Simulating heat treatments
- Welding procedure qualification
- Damage case examination
- Sample production and transport
- Personal advice about your testing request
- Flexible and fast order processing





Services

Snubber Test Services

Thanks to precise and reliable testing systems for nearly all kind of inspection tasks we supply optimized solutions for the metalworking industry.

Test benches make an important contribution to the qualification of products, constructions and materials. LISEGA reverts to decades of experience in static and dynamic testing.



Based on these experiences, we offer the following independent testing services according to the specifications of our customers:

- Dynamic testing up to ± 5,000kN at 5 Hz (worldwide only provider)
- Static testing up to ± 10,000kN
- Configuration of the test setup
- Connection options according to customer requirements
- Issuing inspection certificates
- Documentation
- Certified and calibrated test benches according to DIN EN ISO 7500-1 (Suppl. 2, DIN 51220)

Apart from providing testing services, LISEGA has been selling test benches successfully for more than 40 years.





Our QHSE (Quality, Health, Safety, Environmental) Management implements, promotes and controls a safe and healthy working environment, excellent work standards and environmental protection for all of our company's employees and third parties.

Our products and services are produced in line with the highest technological standards. The quality is systematically checked and controlled through an integrated quality management system. All activities that are decisive for product quality are subject to special procedures at LISEGA. They are based on the relevant international norms and regulations and together with the quality management manual form the quality assurance program.

Our independent quality management ensures strict compliance with these guidelines. The procedures are integral components of the corporate processes. This is demonstrated by our numerous international approvals and certifications. We work continuously on our quality assurance and optimization of our products, including e.g. processes like a thorough inspection of incoming material and material testing, quality inspection during manufacturing, examination of settings and functions, comprehensive customer documentation as well as suitability tests.

Therefore our customers get high value products meeting all the quality requirements.

LISEGA personnel for non-destructive testing (NDE) are qualified to:

- ISO 9712 level II and level III
- SNT-TC-1a level II, level III is appt. to an external person

NDE procedures are available with respect to $\ensuremath{\mathsf{EN}}\xspace$ / ISO and RCC-M rules, as well as to ASME

 ASME V for PT; MT and UT; RT are performed by an approved and qualified subcontractor

LISEGA personnel for welding are qualified to:

- ISO 9606-1
- ASME IX

International / European welding engineers (IWE and EWE) and international welding experts (IWS) are available according to EN ISO 14731.

Welding procedures are available with respect to ${\sf EN}/{\sf ISO}$ and RCC-M rules, as well as to ASME

- ISO 15614-1
- ASME IX

Welding processes are performed according to ISO 4063 as

- GMAW (gas metal arc welding) = process N°: 135
- FCAW (flux core arc welding) = process N°: 136
- GTAW (gas tungsten arc welding) = process N°: 141



We have achieved compliance across a full range of standards (extract of certifications):

CERTIFICATION CODE	CERTIFYING BODY	CERTIFICATION NO.
ISO 9001:2015	TÜV Nord	44 100 161534
EN 1090-1:2009/+A1:2011	TÜV Nord	0045-CPR-1090-1.00151. TÜV NORD.2013.006
ASME III Div. I NCA 4000 NS	ASME	N 3092
ASME III Div. I NCA 4000 NPT	ASME	N 3169
ASME III Div. I, Subs. NF Class1.23, MC, ASME XI	Tractebel Belgium	3803
KTA 1401	VGB, EnBW Kernkraft, RWE, eon, Vattenfall	IBOI-G/2016/de/0060
NNSA Designing – HAF Code 604	China National Nuclear	19036
NNSA Manufacturing – HAF Code 604	Safety Administration	19037
Industrial Safety Certificate (code 22 222 222C)	TS Bezopasnost	СДС.ТС-Б.001.ТУ.00074
GOST R	RST Expert	РОСС DE.AД44.H04687 РОСС DE.AД44.H04685 РОСС DE.AД44.H04688
SPIR-0-2008	ATT	22222.RU.013(0C).00618/ 0000942
SSMFS 2008:13	Inspectra Nuclear AB	5477
AD 2000 Merkblatt-HP0	TÜV Nord	07-203-1290-HP-0513/19
DIN EN ISO 3834-2	TÜV Nord	07-204-1280-HS-0513/19
BS OHSAS 18001:2007 "Safety Management"	TÜV Nord	44 116 161534
SCC**	TÜV Nord	44 106 161534
DIN EN ISO 14001:2015 "Environmental"	TÜV Nord	44 104 161534
DIN EN ISO 50001:2011 "Energy"	TÜV Nord	44 764 161543

Extract of some significant customer projects

Conventionel power plants

Project	Country	Technical data and supplied products
Kemper County Energy Facility	USA	IGCC plant, 582 MW. Complete pipe support package comprised of spring and constant hangers, snubbers, rigid struts, pipe clamps and accessories
Mundra Ultra Mega Power Project	IND	4,000 MW. Complete pipe support package for high pressure and high temperature piping systems, comprised of spring and constant hangers, snubbers, rigid struts, pipe clamps and accessories
Neurath lignite power station	DEU	4,400 MW. Complete pipe support package comprised of spring and constant hangers, snubbers, rigid struts, pipe clamps and accessories
Pembroke Power Station	GBR	CCPP plant, 2,000 MW. Complete pipe support package that meets the high demands on corrosion protection, comprised of spring and constant hangers, snubbers, rigid struts, pipe clamps and accessories
Beni Suef Burullus New Capital	EGY	4,800 MW. Mega CCP project. Complete pipe support package comprised of spring and constant hangers, snubbers, rigid struts, pipe clamps and accessories

Nuclear power plants



Project	Country	Technical data and supplied products
LAES II	RUS	PWR VVER-1200. Complete pipe support package consisting of hydraulic snubbers, spring hangers and accessories
Sanmen Nuclear Power Station	CHN	PWR AP 1000, 2 x 1,100 MW. Complete pipe support package consisting of hydraulic snubbers, spring and constant hangers and accessories
Susquehanna Steam Electric Station	USA	BWR (Boiling Water Reactor), 2,600 MW. Hydraulic snubbers and accessories to replace old mechanical snubbers





 \odot

References

Extract of some significant customer projects



Project	Country	Supplied products
Valemon	NOR	Complete pipe support package for the offshore platform comprised of spring and constant hangers, pipe clamps and accessories that meets the demanding requirements of the harsh offshore environment
Dung Quât Refinery	VNM	Complete pipe support package for the oil refinery comprised of spring and constant hangers, rigid struts, pipe clamps and accessories
Jamnagar Refinery	IND	Complete pipe support package for the oil refinery and petrochemical plant comprised of spring and constant hangers, snubbers, rigid struts, pipe clamps and accessories

LNG plants



Project	Country	Supplied products
Prelude FLNG	AUS	Complete pipe support package consisting of constant and spring hangers, insulated pipe supports, rigid struts, pipe supports, sound-proofing components and slide plates
Cameron LNG	USA	Complete pipe support package consisting of constant and spring hangers, and insulated pipe supports
Dahej LNG	IND	Complete insulated pipe support system for the kilometres long 32" piping system of the ship investor
Dalian LNG	CHN	Complete pipe support package consisting of constant and spring hangers, and insulated pipe supports





Extract of some significant customer projects

Solar plants



Project	Country	Supplied products
Noor1-Quarzazate	MAR	Complete pipe support package for the solar plant (160 MW) comprised of spring and constant hangers, snubbers, rigid struts, specialised pipe shoes and accessories
Mojave Solar Project	USA	Complete pipe support package for the solar plant (250 MW) comprised of spring and constant hangers, snubbers and accessories
Upington Khi Solar One	ZAF	Complete pipe support package for the solar plant (50 MW) comprised of constant and variable hangers, angulating spring supports, horizontal and vertical pipe clamps, clamp bases and accessories



21

OVERVIEW

22



Company organization	Public Limited Company
Address	LISEGA SE Gerhard-Liesegang-Str. 1 27404 Zeven Germany +49 42 81 713-0 +49 42 81 713-214 info@de.lisega.com www.lisega.com
Chairman of the Supervisory Board	Hans-Herlof Hardtke
President and CEO	Dr. Holger Krasmann
Year of establishment	1964
Country of registration	Germany
Registration No.	HRB 121249 Tostedt
VAT-Id No.	DE 116922376
Tax number	52/200/17019
Customs number	236 8803
Banking details	Deutsche Bank, Branch Bremen Domshof 22-25 28195 Bremen Account No. 2 401 404 Bank Code 290 700 50 BIC-Code DEUTDEHB IBAN-Code DE53 2907 0050 0240 1404 00 Commerzbank Bremen Schüsselkorb 5 - 11 28195 Bremen Account No. 681 099 800 Bank Code 290 400 90 BIC-Code COBADEFF290 IBAN-Code DE92 2904 0090 0681 0998 00

CONTACT

LISEGA SE | GERMANY

Gerhard-Liesegang-Straße 1 27404 Zeven P. O. Box 1357 27393 Zeven

T. | +49 (0) 42 81 — 713-0 F. | +49 (0) 42 81 — 713-214

M. | info@de.lisega.com www.lisega.com

© 2020 LISEGA SE. All rights reserved. All information without guarantee and subject to change