

Field Service

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by Experts for Experts



Profitability through availability and long life

The availability and long life of a plant are decisive prerequisites for its economic operation and profitability.

A significant influence in this regard is the trouble-free functioning of the piping systems – which connect the major components like the veins in an organism. Any faulty behavior on their part can lead to failure of the whole system.

The piping systems are inherently dependent on the operational safety of their supports.

The pipe supports must comply with changing operating conditions especially after many years of service. In order to ensure this, not only do the components need to be of the highest quality but they must also be installed in the correct and professional manner.

Risk of breakdown due to support defects

Depending upon the product quality and prevailing operating conditions, the functionality of the supports can be seriously affected. Above all, spring relaxation can lead to reduced load-bearing capacity, while wear and corrosion may cause increased friction.

Defective supports in piping systems result in uncontrolled additional stresses, which if ignored, can result in long-term damage, especially at sensitive connection points, thus increasing the risk of failure.

The faults most frequently noted in pipe supports:

- Increased friction due to corrosion and wear
- Relaxation of springs in variable and constant supports
- Faulty load settings of variable and constant supports
- Jammed bearings and guides
- Broken or bent rods
- Deformed or broken pipe clamps
- Frozen mechanical shock absorbers
- Leaks in hydraulic shock absorbers
- Deformed connections in shock absorbers and rigid struts
- Errors in support design
- Incorrect installation of supports
- Poor quality of certain brands



Inspection and servicing for operational safety

Without inspection of the nominal positions and the condition of the supports, critical deviations cannot be detected. If they remain undetected and are not rectified, costly long-term damage is inevitable.

As a preventive measure, regular plant inspections and assessments of the supports by trained personnel are highly recommended. By checking the nominal positions and making qualified judgments, they can identify and eliminate critical stress conditions.

In older plants in particular, the thermal pipe displacement and the condition of the supports should be systematically inspected at regular intervals. Any deviations detected can then be corrected by prompt action, avoiding costly damage and plant failure.



Specialists for demanding tasks

With its Field Service, LISEGA offers the benefits of a leading international manufacturer, having over 40 years of experience in the specialized field of pipe supports. Experienced experts are available at all LISEGA group locations, ready to perform a wide range of service tasks. We are familiar with working at conventional and nuclear power plants, LNG terminals, offshore platforms, refineries and petrochemical plants of all types.

LISEGA's service teams have been specially trained to perform the specific services required in the field of pipe supports while working in strict accordance to quality management guidelines and the relevant safety standards.

Documentation, recommendations, implementation

The inspection results are documented and suggestions are made for the elimination of defects. If requested, corresponding corrective measures can be actively supported or supervised. In case of need, a well maintained inventory of standard supports is immediately available.

Piping can never be better than its supports!



Support design (Engineering)

If required, all service teams have the assistance of our Support Engineering Department comprised of piping and support design specialists. For more complex overhaul work, this department can prepare complete planning documentation including the design of the surrounding steelwork.

Qualifications and approvals

LISEGA offers Field Service for all types of plants where pipe supports are used including conventional and nuclear installations. All applicable national and international qualifications and approvals can be provided.



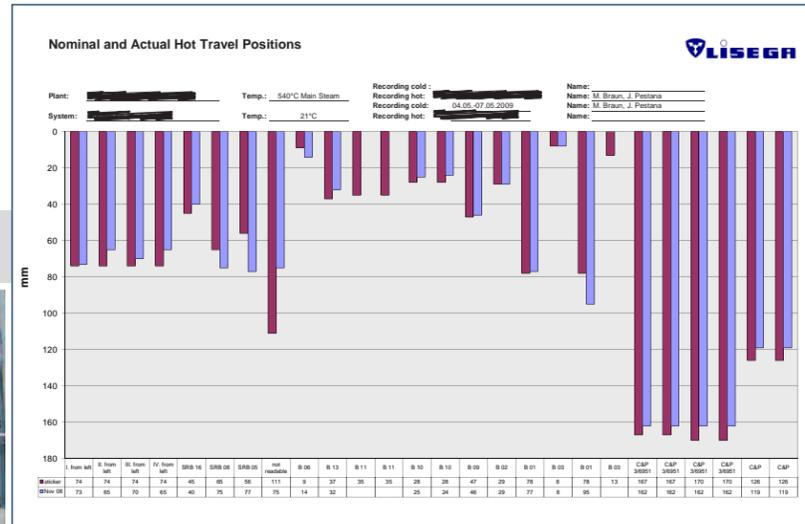
The LISEGA Quality Management ensures the strict application of all qualifications and approvals:

- ISO 9001 Certification
- KTA 1401 incl. Suitability Tests
- BS OHSAS 18001 (Safety Management)
- SCC** 2011
- DIN EN ISO 14001 (Environmental)
- ASME III Div. 1 NCA 4000 NS – Certificate for Supports
- ASME III Div. I NCA 4000 NPT – Stamp for Supports

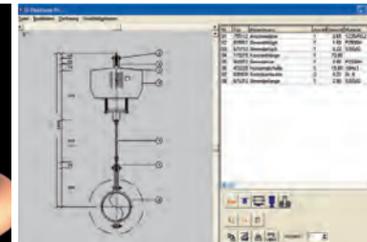
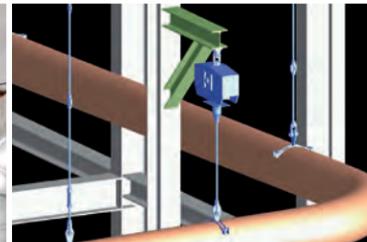
Our range of services

includes the following packages

The service package can be adapted to individual requirements!



Actual positions of a piping system measured for comparison with nominal positions



1

Inspection of pipe supports

- Inspection of general of the pipe supports
- Load and travel checks spring supports
- Function testing of constant and spring hangers utilizing mobile test benches at the plant or stationary benches at the factory. The test results are automatically recorded

2

Inspection of pipe displacements

- Inspection for signs of in their geometrical position
- Inspection of the piping for unrestricted freedom movement in all three axes
- Determination of the vertical displacement at all support points and pipe system connections or selected points in all three axes

3

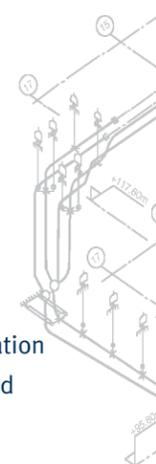
Planning of supports at the plant

- Planning and design of concepts for overhaul measures
- Recording of as-built dimensions at the plant
- Design of special solutions for restricted space conditions
- Design of pipe supports using LICAD and AUTOCAD
- Preparation of parts lists and material data

4

Supervision of construction, installation and commissioning

- Material receipt and checking
- Organization and administration of stock
- Preassembly and arrangement complete support configurations
- Installation of supports predetermined positions
- Technical assistance with installation of piping systems in the prepared supports
- Inspection of the system for correct assembly according to the drawings and the installation and operation instructions
- Deblocking and commissioning the supports according to approved procedures



Cold and Hot Positions of Pipe Supports

Plant: [redacted] Temp.: 540°C Main Steam Recording cold: 04.11.-06.11.2008 Name: M. Braun, J. Pestana
 System: [redacted] Temp.: 21°C Recording hot: 04.05.-07.05.2009 Name: M. Braun, J. Pestana

| No. | Elevation (m) | Notation support - position | Type | Serial number | Calor. load (KN) | Theor. travel up (mm) | Theor. travel down (mm) | Load scale (KN) | Recording cold set | | | Recording during operation | | | G | max. possible travel position (mm) | Pos. travel (mm) | See separate lists | | | | | | | | | |
|-----|---------------|-----------------------------|---------|---------------|------------------|-----------------------|-------------------------|-----------------|----------------------|----------------------|----------------------|----------------------------|------------|------------|-----|------------------------------------|------------------|--------------------|-----------|---------|-----------|-------------|--------------------|------------------|------------------|-----|---|
| | | | | | | | | | white-st. actual D/M | white-st. actual D/M | white-st. actual D/M | Red sticker M/Y | Actual M/Y | Actual M/Y | | | | | Dev. (mm) | Up (mm) | Down (mm) | Travel (mm) | Theor. travel (mm) | Real travel (mm) | Real travel (mm) | | |
| 1 | 45,0 | I. from left | CV-16 C | | 32,21 | 19 | | 55 | 60 | 60 | -5 | 60 | 80 | yes | 74 | 73 | 1 | 73 | 67 | yes | -19 | -13 | 0 | - | 140 | 140 | |
| 2 | 45,0 | II. from left | CV-16 C | | 32,21 | 19 | | 55 | 60 | 60 | -5 | 60 | 80 | yes | 74 | 65 | 9 | 65 | 75 | yes | -19 | -5 | 0 | - | 140 | 140 | |
| 3 | 45,0 | III. from left | CV-16 C | | 32,21 | 19 | | 55 | 58 | 58 | -3 | 58 | 82 | yes | 74 | 70 | 4 | 70 | 70 | yes | -19 | -12 | 0 | - | 140 | 140 | |
| 4 | 45,0 | IV. from left | CV-16 C | | 32,21 | 19 | | 55 | 60 | 60 | -5 | 60 | 80 | yes | 74 | 65 | 9 | 65 | 75 | yes | -19 | -5 | 0 | - | 140 | 140 | |
| 5 | 40,0 | SRB 16 | 115215 | | 10,80 | 5 | | 40 | 41 | 41 | -1 | -109 | 103 | yes | 45 | 40 | 5 | 40 | 104 | yes | -5 | 1 | 0 | - | 144 | 144 | |
| 6 | 37,0 | SRB 08 | 115215 | | 12,80 | 25 | 13,6 | 40 | 40 | 65 | 0 | -110 | 83 | yes | 65 | 75 | -10 | 75 | 48 | yes | -25 | -10 | 0 | - | 123 | 123 | X |
| 7 | 32,6 | SRB 05 | 115215 | | 16,87 | 16 | 17,4 | 40 | 40 | 50 | 0 | -110 | 54 | yes | 56 | 77 | -21 | 77 | 17 | yes | -16 | -27 | 0 | - | 94 | 94 | X |
| 8 | | not readable | CV-11F | | 0,11 | 25 | | 86 | 78 | 78 | 8 | 78 | 12 | yes | 111 | 75 | 36 | 75 | 15 | yes | -25 | 3 | 0 | - | 90 | 90 | |

Digital specimen of a hanger check list from a plant



Performance testing of shock absorbers of different makes at the plant with one of LISEGA's mobile test benches



5 Inspection, servicing and checking of shock absorbers of all brands

- Load and travel checks commissioning in with specifications
- Inspection to confirm piping movement clearance in all three axes
- Re-calibration of supports in the case of any detected load differences

- Visual inspection to detect of possible faulty functioning and detailed assessment of external state and surrounding conditions
- Removal of shock absorbers for test
- Functional testing on mobile test benches at the plant or stationary benches at the factory
- Disassembly of shock and inspection of components for wear or damage

- Replacement of all seals, hydraulic fluid, and any internal components showing recognizable wear
- Final functional testing in compliance with the test program and in accordance with relevant specifications
- Reinstallation in the plant
- Preparation of complete final documentation

Further information can be obtained on our home page at www.lisega.com or by telephone from our contact persons for Field Service and Engineering:



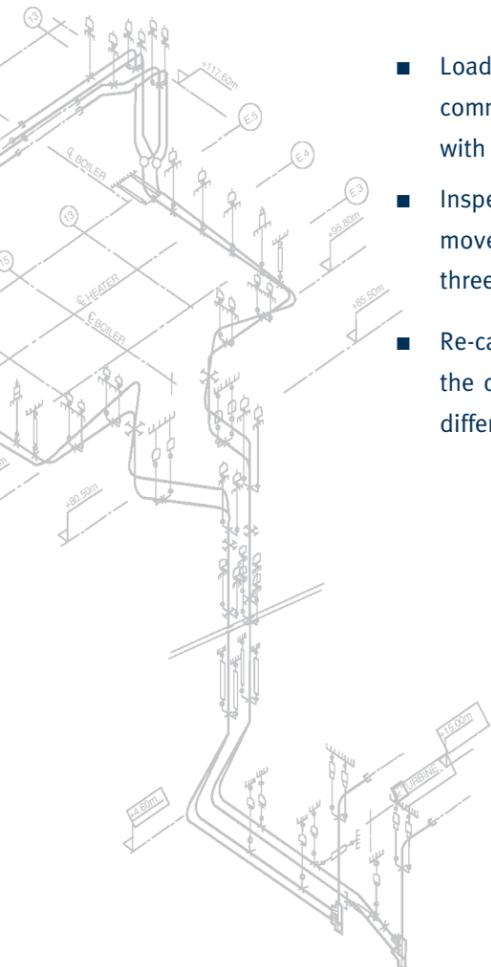
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Testing constant hangers on site with mobile test bench

The wide range of LISEGA services are specifically aimed at ensuring the functionality of pipe supports and their proper application in piping systems. The appropriate use of the LISEGA service package will make a valuable contribution to the functional safety of complex piping systems and therefore increasing the longevity of the entire plant.