Pipe Support Design Process

Taking Advantage of Technology

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Tom Burnett
Dan Klawonn
Pipe Support Design Process
Taking Advantage of Technology

Topics Presented

- LISEGA general information
- Pipe Support Engineering Design Process
- Walk Through an Example of Pipe Support Design Process
- Utilizing Caesar Output to Generate Pipe Support Design Data
- Manual Selection of Spring Hanger Assembly Requirements
- LICAD – A State of Art Pipe Support Design Tool Demonstration
- Export LICAD information to 2D & 3D Platforms
- Question and Answers
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LISEGA General Information

- Founded in 1964 by Gerhard Liesegang
- Largest Pipe Hanger Company Worldwide
- Numerous International Fabrication locations
- Predominant Supplier in the Power Market – Fossil & Nuclear
- Distribution began in 1987 from Laconia, New Hampshire
- Manufacturing began in Newport, Tennessee in late 1993
- Moved to new facility in Kodak, Tennessee in March 2011
### Pipe Support Design Process

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## LISEGA General Information

<table>
<thead>
<tr>
<th>Locations</th>
<th>LISEGA Group</th>
<th>LISEGA AG Germany</th>
<th>LISEGA Inc. USA</th>
<th>LISEGA Ltd. UK</th>
<th>LISEGA PST China</th>
<th>LISEGA SAS France</th>
<th>Mürmann GmbH Germany</th>
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<td>Employees</td>
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<td>155</td>
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<td>2)</td>
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<td>961</td>
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<td>18</td>
<td>216</td>
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<td>29</td>
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<tr>
<td>Shop</td>
<td>588</td>
<td>281</td>
<td>85</td>
<td>7</td>
<td>166</td>
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<td>Areas</td>
<td>1,686,092 ft²</td>
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<td>312,040 ft²</td>
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<td>Outside</td>
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</table>
Pipe Support Design Process
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LISEGA Facility in Kodak, TN
Pipe Support Design Process
Taking Advantage of Technology
LISEGA Facility in Kodak, TN

22,000 ft² Office Space

100,000 ft² Manufacturing Space
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LISEGA Facility in Kodak, TN
Pipe Support Design Process
Taking Advantage of Technology
LISEGA Facility in Kodak, TN

CNC Plasma Torch. (Note that steel plates load directly onto table by forklift from outside)
Pipe Support Design Process
Taking Advantage of Technology
LISEGA Facility in Kodak, TN

4-head oxy-acetylene Torch. (Both CNC & Oxy torches are controlled by a single operator)
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LISEGA Facility in Kodak, TN
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Pipe Support Design Process
in
Petro-Chemical Industry
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Pipe gets routed → Pipe gets stress analyzed → Support locations/types are identified wrt to space and structural attachment points → Support design information is passed on to the designer for designing/selection of supports

Stress Analyzed Systems

STD Supts Designer selects standard supports from typical

Engrd Supts Designer creates hanger data sheets for spring hangers, snubbers, struts

Hanger Data Sheets issued to support vendor → Hanger list along with typical details issues to support vendor

Interference check performed Isometric dwgs are issued → Based on support selected, designer locks space in 3D model

Hanger drawings created by vendor and supports fabricated
Sample of Typical Support Drawing

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### Pipe Support Design Process

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**Sample Typical Bill of Quantity**

<table>
<thead>
<tr>
<th>Pipe Size (in)</th>
<th>Rod Size (in)</th>
<th>Item No. 1 (Feet)</th>
<th>Item No. 2 (Feet)</th>
<th>Item No. 3 (Feet)</th>
<th>HOLE (in)</th>
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<tbody>
<tr>
<td>1/2</td>
<td>1/2</td>
<td>FIG. 55</td>
<td>FIG. 289</td>
<td>HEX NUT</td>
<td>FIG. 146</td>
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<tr>
<td>3/4</td>
<td>1/2</td>
<td>FIG. 55</td>
<td>FIG. 289</td>
<td>HEX NUT</td>
<td>FIG. 146</td>
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<tr>
<td>1</td>
<td>1/2</td>
<td>FIG. 55</td>
<td>FIG. 289</td>
<td>HEX NUT</td>
<td>FIG. 146</td>
</tr>
<tr>
<td>1 1/2</td>
<td>1/2</td>
<td>FIG. 55</td>
<td>FIG. 289</td>
<td>HEX NUT</td>
<td>FIG. 146</td>
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<tr>
<td>2</td>
<td>1/2</td>
<td>FIG. 55</td>
<td>FIG. 289</td>
<td>HEX NUT</td>
<td>FIG. 146</td>
</tr>
<tr>
<td>2 1/2</td>
<td>1/2</td>
<td>FIG. 55</td>
<td>FIG. 289</td>
<td>HEX NUT</td>
<td>FIG. 146</td>
</tr>
<tr>
<td>3</td>
<td>1/2</td>
<td>FIG. 55</td>
<td>FIG. 289</td>
<td>HEX NUT</td>
<td>FIG. 146</td>
</tr>
<tr>
<td>3 1/2</td>
<td>1/2</td>
<td>FIG. 55</td>
<td>FIG. 289</td>
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<td>FIG. 146</td>
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<tr>
<td>4</td>
<td>3/4</td>
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<td>FIG. 289</td>
<td>HEX NUT</td>
<td>FIG. 146</td>
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<tr>
<td>5</td>
<td>3/4</td>
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<td>FIG. 289</td>
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<td>FIG. 146</td>
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<tr>
<td>6</td>
<td>3/4</td>
<td>FIG. 55</td>
<td>FIG. 289</td>
<td>HEX NUT</td>
<td>FIG. 146</td>
</tr>
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</table>

**Typical Pipe Support Mark No.**

<table>
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<tr>
<th>RH</th>
<th>TR</th>
<th>A</th>
<th>36</th>
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</table>

**Family** | **Group** | **Detail** | **L** | **H** | **Red** | **Dia.**
**Pipe Support Design Process**

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**Sample Support Data Sheets**
Pipe Support Design Process
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Pipe gets routed → Based on standard span lengths support location are identified → Based on project design requirements support types are identified → Support types are selected from a catalog of standard support types

Non-Stress Analyzed Systems

Hanger drawings created by vendor and supports fabricated → Hanger list along with typical details issues to support vendor → Interference check performed Isometric dwgs are issued → Based on support selected, designer locks space in 3D model
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Solution for the Design of a Support Hanger Assembly

- Need a software that would perform the following functions:
  - Design of support assemblies in terms of load capacities, compatibility of components and space restrictions
  - Drafting of support assemblies with complete BOM, detailed data for setting springs in the shop, installation details in terms of field welds, offsets, location of supports etc.
  - Populating of support assembly in 3D environment with exact dimensions and not blocking of arbitrary spaces
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Savings can be Realized by Utilizing Hanger Design Tool
LICAD

- Total design hours in designing individual supports for the project
- Total drafting hours for individual support assemblies
- Total modeling hours for locating supports in 3D model and performing interference checks
- Simple and consistent designs save hours in designing, fabrication and installation of supports
- Overall total man hours (schedule) are reduced thereby assuring minimal cost over runs and assured Pipe Support deliveries to site
Pipe Support Design Process
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Savings can be Realized by Utilizing Hanger Design Tool

Pipe gets routed → Pipe gets stress analyzed → Support locations/ types are identified wrt to space and structural attachment points → Support design information is passed on to the designer / vendor for designing/selection of supports

Use of hanger design tool that will streamline the design of supports → Supports can be designed/selected by stress engineer → Designed supports are able to be exported into 3D model → Hanger drawings are automatically produced by the use of this tool

Hanger List

Stress Analyzed Systems or High Energy Systems

Hanger Drawings sent to Vendor for fabrication → Interference check performed by designers
Pipe Support Design Process
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Savings can be Realized by Utilizing Hanger Design Tool

1. Pipe gets Routed
2. Based on standard, span lengths support location are identified
3. Based on project design requirements support types are identified
4. Support design information is passed on to the designer/vendor for designing/selection of supports
5. Use of hanger design tool that will streamline the design of supports
6. Designed supports are able to be exported into 3D model
7. Hanger drawings are automatically produced by the use of this tool
8. Interference check performed by designers
9. Hanger Drawings sent to Vendor for immediate fabrication

Non-Stress Analyzed Systems or Cold systems

Hanger List
Pipe Support Design Process

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Example of Pipe Support Design Process

- Pipe has been routed

- Piping layout handed over to Piping Engineer for qualifying the piping system to meet B31.3 or B31.1 code requirements and to come up with supporting scheme that meets these requirements

- Caesar II program is utilized to (stress) analyze the piping system

- Support types and locations are part of geometry input into Caesar and supports get selected in Caesar model to qualify the system
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Example of Caesar Model and Supports Selected

- Support at node 3485 is a spring hanger and can be modeled as
  - Top supported close to the beam
  - Top Supported with spring can in the middle to avoid interference
  - Top supported Trapeze due to limited head room
  - Bottom supported spring can
Selection of Spring Hangers within Caesar

- Caesar has a built-in Lisega variable and constant hanger library (as well as other vendors suppliers)
- Hanger Design Control Data form is utilized for selection of springs within Caesar to apply to the entire system. Some parameters used for this are:
  - Allowable Load Variation
  - Hanger Table : 5 – Lisega
  - Multiple Load case Design Options
  - Etc.
Selection of Spring Hangers within Caesar II

- Selection of springs within Caesar on an individual basis is carried out by selecting the following:
  - Hanger Table: 5 – Lisega
  - Available Space
  - Allowable Load Variation
  - No. Hangers at Location
  - Hanger hardware weight (tare weight) input field to correctly pick the right size of spring
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**Example of Caesar Output Hanger Load Summary**

LOAD CASE DEFINITION KEY

CASE 4 (OPE) W+T1+P1+H  
CASE 5 (SUS) W+P1+H  
CASE 6 (EXP) L6=L4-L5

<table>
<thead>
<tr>
<th>NODE</th>
<th>Load Case</th>
<th>FX lb.</th>
<th>FY lb.</th>
<th>FZ lb.</th>
<th>MX ft.lb.</th>
<th>MY ft.lb.</th>
<th>MZ ft.lb.</th>
<th>DX in.</th>
<th>DY in.</th>
<th>DZ in.</th>
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<td>3485</td>
<td>Prog Design</td>
<td>VSH</td>
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<td>0</td>
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<td>-0.4422</td>
<td>0.4595</td>
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<tr>
<td></td>
<td>5(SUS)</td>
<td>0</td>
<td>-5266</td>
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<td>MAX</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>2.7455/L4</td>
<td>-0.4422/L4</td>
<td>0.4779/L6</td>
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</table>

Z Axial  
X Lateral  
Y Vertical
### Pipe Support Design Process

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#### Example of Caesar Output Spring Hanger Selection

**CAESAR II Ver.5.20.1, (Build 090904) Date: FEB 7, 2011 Time: 13:37**  
Job: C:\DOCUMENTS AND SETTING\RAMIS-ENG\DE...\LICAD PRESENTATION  
Licensed To: LISEGA, INC. -- ID #28215

<table>
<thead>
<tr>
<th>NO.</th>
<th>FIG.</th>
<th>VERTICAL</th>
<th>HOT</th>
<th>INSTALLED</th>
<th>THEORETICAL</th>
<th>ACTUAL</th>
<th>LOAD RATE</th>
<th>MOVEMENT</th>
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<tbody>
<tr>
<td>NODE REQD</td>
<td>NO. SIZE MOVEMENT</td>
<td>LOAD</td>
<td>LOAD</td>
<td>INSTALLED</td>
<td>SPRING</td>
<td>HORIZONTAL</td>
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<td>4743</td>
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<td>3045</td>
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**LISEGA**  
LOAD VARIATION = 12%

**VARIABLE SUPPORT SPRING DESIGNED**  
SHORT RANGE

**MAXIMUM TABLE DISPLACEMENT RANGE**  
(in.) 7.800

**MINIMUM ALLOWED SINGLE SPRING LOAD**  
(lb.) 3000.000

**MAXIMUM ALLOWED SINGLE SPRING LOAD**  
(lb.) 9000.000

**RECOMMENDED INSTALLATION CLEARANCE**  
(in.) 9.560

| 3485 | 1 | 2162 | -0.442 | 5383 | 4710 | 0 | 1522 | 2.784 |

**LISEGA**  
LOAD VARIATION = 13%

**VARIABLE SUPPORT SPRING DESIGNED**  
MID RANGE

**MAXIMUM TABLE DISPLACEMENT RANGE**  
(in.) 7.800

**MINIMUM ALLOWED SINGLE SPRING LOAD**  
(lb.) 3000.000

**MAXIMUM ALLOWED SINGLE SPRING LOAD**  
(lb.) 9000.000

**RECOMMENDED INSTALLATION CLEARANCE**  
(in.) 14.040

| 4029 | 1 | 2161 | -0.260 | 6516 | 5725 | 0 | 3045 | 2.616 |

**LISEGA**  
LOAD VARIATION = 12%

**VARIABLE SUPPORT SPRING DESIGNED**  
SHORT RANGE

**MAXIMUM TABLE DISPLACEMENT RANGE**  
(in.) 7.800

**MINIMUM ALLOWED SINGLE SPRING LOAD**  
(lb.) 3000.000

**MAXIMUM ALLOWED SINGLE SPRING LOAD**  
(lb.) 9000.000

**RECOMMENDED INSTALLATION CLEARANCE**  
(in.) 9.560
## Pipe Support Design Process

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**LISEGА Catalog Selection of Spring Hanger**

### Spring hangers type 21, Spring hangers type 25, Spring supports type 29, Angulating spring supports type 20

<table>
<thead>
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<th>Travel range</th>
<th>Type number</th>
<th>Load (lbs)</th>
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<tr>
<td></td>
<td>21 C2 29</td>
<td>21 D. 29</td>
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<tr>
<td></td>
<td>25 D. 19</td>
<td>25 1. 18</td>
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<tr>
<td>29 C2 19</td>
<td>29 D. 19</td>
<td>29 1. 18</td>
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<td>20 42. 14</td>
<td>20 42. 14</td>
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<td>20 52. 14</td>
<td>20 52. 14</td>
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<td>20 62. 14</td>
<td>20 72. 14</td>
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### Working travel (inch)

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<td>0</td>
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<td>50.8</td>
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<tr>
<td>53.8</td>
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<td>56.0</td>
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### Spring rate c (lbs/inch)

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<th>Spring rate c (lbs/inch)</th>
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<tr>
<td>190</td>
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<td>190</td>
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<td>190</td>
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<td>190</td>
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</tbody>
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---

*LISEGA* Catalog Selection of Spring Hanger

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*LISEGА* Catalog Selection of Spring Hanger
Pipe Support Design Process
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Example of Caesar Output Spring Hanger Selection

Computations of Angularity and Tri-Travel

<table>
<thead>
<tr>
<th>3485</th>
<th>Prog Design</th>
<th>VSH</th>
</tr>
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<tbody>
<tr>
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<tr>
<td>0</td>
<td>-2.7455</td>
<td>-0.4422</td>
</tr>
<tr>
<td>0.4595</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**VARIABLE SUPPORT SPRING DESIGNED**
- MAXIMUM TABLE DISPLACEMENT RANGE = 7.800 in
- MINIMUM ALLOWED SINGLE SPRING LOAD = 3000.000 lb
- MAXIMUM ALLOWED SINGLE SPRING LOAD = 9000.000 lb
- RECOMMENDED INSTALLATION CLEARANCE = 14.040 in

**DISPLACEMENTS**
- \( X = -2.7455 \) in
- \( Z = 0.4595 \) in
- \( R = \text{Caesar} \) 2.7837 in
- \( Y = \text{Caesar} \) -0.4422 in
- CVPD = 80.5000 in
- Angularity = 1.9805 deg
- HVPD = 80.9422 in
- HRPD = 80.9901 in
- Tri Travel (HRPD-CVPD) = -0.4901 in
Data Required to Complete the Support Design

- Load (Hot Load)  
Caesar
- Travel (Hot Displacements)  
Caesar
- Pipe Diameter/Insulation  
Caesar
- Design Temperature  
Caesar
- Support Configuration  
Typical
- Installation height  
Model
Pipe Support Design Process
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Spring Hanger Assembly Configuration Options

OPTION 01

OPTION 02

OPTION 03
Pipe Support Design Process
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Manual Selection of Spring Hanger Assembly

- Top Attachment
  - Selection based upon load, spring size and/or rod size

- Spring
  - Select spring based upon Hot Load and Movement from Stress Analysis + computation of tare weight
  - Calculate Cold load, Variability and Take-out Dimension

- Threaded Rod
  - Selection based upon load, spring size and/or rod size and HL

- Clamp Attachment
  - Selection based upon load, clamp size and/or rod size

- Clamp
  - Select type of clamp based upon load, temperature and pipe diameter
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Role of Tare Weight in the Selection of Springs

OPTION 01

Pipe Support Design Process
Taking Advantage of Technology
Role of Tare Weight in the Selection of Springs

OPTION 01
Pipe Support Design Process
Taking Advantage of Technology

*Role of Tare Weight in the Selection of Springs*

<table>
<thead>
<tr>
<th>NO.</th>
<th>FIG NODE REQ'D NO.</th>
<th>SIZE</th>
<th>VERTICAL MOVEMENT</th>
<th>HOT LOAD</th>
<th>THEORETICAL INSTALLED LOAD</th>
<th>ACTUAL INSTALLED LOAD</th>
<th>SPING RATE LOAD VARIATION</th>
<th>HORIZONTAL MOVEMENT</th>
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<td>LICEGA</td>
<td>2162</td>
<td>-0.442</td>
<td>5383.4</td>
<td>4710.0</td>
<td>0.0</td>
<td>1522.2</td>
<td>2.784</td>
</tr>
</tbody>
</table>

** VARIABLE SUPPORT SPRING DESIGNED .................................. MID RANGE**

- MAXIMUM TABLE DISPLACEMENT RANGE .................... (in.) 7.800
- MINIMUM ALLOWED SINGLE SPRING LOAD ................ (lb.) 3000.000
- MAXIMUM ALLOWED SINGLE SPRING LOAD ................ (lb.) 9000.000
- RECOMMENDED INSTALLATION CLEARANCE ................ (in.) 14.040

---

Caesar Output

<table>
<thead>
<tr>
<th>6</th>
<th>Pipe clamp</th>
<th>446623</th>
<th>D19.0</th>
<th>1</th>
<th>77.16</th>
<th>16Mo3</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Clevis with pin</td>
<td>616922</td>
<td>1</td>
<td>5.95</td>
<td>Carbon St</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Var. spring hanger</td>
<td>216228</td>
<td>1</td>
<td>88.10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

LICAD Output

OPTION 01
Pipe Support Design Process
Taking Advantage of Technology

Solution for the Design of a Support Hanger Assembly

- Manual Selection of proper hanger components and arranging them together to meet the design and dimensional requirements of space available

  Time consuming task which can eat up mega project budget hours

- Lisega software LICAD allows the designer to utilize design data from Caesar and typical support configuration details to generate pipe support drawings within a few minutes

  Huge savings in costs and project budget hours
Pipe Support Design Process
Taking Advantage of Technology

LICAD – A State of Art Pipe Support Design Tool
LICAD has been a design tool since 1989 and has achieved industry recognition for its robust design and interface capabilities

- Material selections based upon load and temperature
- Over Sixty Support Assembly Configurations can be designed and drawings produced
- Able to export support information into 3rd party 2D & 3D programs including placing the hanger in the proper location in the 3D model
- Allows any combination of metric and UNC inputs as well as outputs
- Print option allows multiple (output) languages
Pipe Support Design Process
Taking Advantage of Technology

LICAD – Built-in Standard Support Configurations

7.2 The supports configurations (symbols)

7.2.1 Configurations in the static field

Nr. 01
Nr. 02
Nr. 03
Nr. 04
Nr. 05
Nr. 06
Nr. 07
Nr. 08
Nr. 09
Nr. 10
Nr. 11
Nr. 12
Pipe Support Design Process
Taking Advantage of Technology
*LICAD – Built-in Standard Support Configurations*
Pipe Support Design Process
Taking Advantage of Technology

LICAD – Built-in Standard Support Configurations
Pipe Support Design Process
Taking Advantage of Technology

LICAD – Built-in Standard Support Configurations
Pipe Support Design Process
Taking Advantage of Technology
LICAD – Built-in Standard Support Configurations

7.2 The supports configurations (symbols)
7.2.1 Configurations in the static field

- Nr. 01
- Nr. 02
- Nr. 03
- Nr. 04
- Nr. 05
- Nr. 06
- Nr. 07
- Nr. 08
- Nr. 09
- Nr. 10
- Nr. 11
- Nr. 12
Pipe Support Design Process
Taking Advantage of Technology

LICAD – Built-in Standard Support Configurations
Pipe Support Design Process

Taking Advantage of Technology

LICAD – Built-in Standard Support Configurations
LICAD program has the ability to build a project specific support design/drafting specification

Dual capability of designing supports on an individual basis or through import of Excel data sheet(s) containing support design data

Can compile a summary of all the parts and quantities including total weight for all the support drawings residing in a project system folder (HRH, CRH etc)

Can compile a summary of total price for all the supports drawings residing in a project system folder based on Lisega unit price list
## Pipe Support Design Process
### Taking Advantage of Technology
### LICAD – Demonstration

### Spring Hanger Design

<table>
<thead>
<tr>
<th>Support Data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Load (Hot Load)</td>
<td>5383 lbs</td>
</tr>
<tr>
<td>Travel (Hot Displ.) Lat. -2.75”, Axial 0.46”, Ver. -0.44”</td>
<td></td>
</tr>
<tr>
<td>Pipe Diameter/Insulation</td>
<td>18”/3.5”</td>
</tr>
<tr>
<td>Design Temperature</td>
<td>849 deg F</td>
</tr>
<tr>
<td>Support Configuration</td>
<td>Option 3</td>
</tr>
<tr>
<td>Installation height</td>
<td>7 ft</td>
</tr>
<tr>
<td>Distance between Cans</td>
<td>39.61”</td>
</tr>
<tr>
<td>Can Pre-welded to beam</td>
<td></td>
</tr>
</tbody>
</table>
LICAD Excel Interface

- Saves time from manual inputting of hanger design information
- Creates hangers from import of hanger data from Excel sheet
- Eliminates manual (design) entry errors
- Unlimited quantity of hangers (1 to ...
### Pipe Support Design Process

**Taking Advantage of Technology**

**LICAD – Demonstration**

**LICAD Excel Interface**

<table>
<thead>
<tr>
<th>Hanger mark</th>
<th>Config. No</th>
<th>DIM 1</th>
<th>Hydro Load</th>
<th>Insul Load</th>
<th>Move Z</th>
<th>Move X</th>
<th>Move Y</th>
<th>Pipe</th>
<th>Temp</th>
<th>Top Con</th>
<th>X_Coor</th>
<th>Y_Coor</th>
<th>Z_Coor</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1V</td>
<td>13</td>
<td>7'-0&quot;</td>
<td>0</td>
<td>3.5</td>
<td>5383</td>
<td>-0.44</td>
<td>0.46</td>
<td>-2.75</td>
<td>18</td>
<td>849</td>
<td>73</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>B1V2</td>
<td>13</td>
<td>4'-0&quot;</td>
<td>0</td>
<td>2</td>
<td>2525</td>
<td>-0.5</td>
<td>0.33</td>
<td>-1</td>
<td>14</td>
<td>650</td>
<td>73</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>B1V3</td>
<td>13</td>
<td>3'-0&quot;</td>
<td>0</td>
<td>1</td>
<td>1300</td>
<td>-0.75</td>
<td>0.25</td>
<td>0.38</td>
<td>4.5</td>
<td>500</td>
<td>73</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>B1V4</td>
<td>13</td>
<td>4'-6&quot;</td>
<td>100</td>
<td>1.5</td>
<td>1600</td>
<td>-0.56</td>
<td>0.25</td>
<td>0.5</td>
<td>6.625</td>
<td>450</td>
<td>75</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>B1V5</td>
<td>13</td>
<td>5'-0&quot;</td>
<td>300</td>
<td>2</td>
<td>1900</td>
<td>-0.75</td>
<td>0.5</td>
<td>1</td>
<td>8.625</td>
<td>950</td>
<td>73</td>
<td>0</td>
<td>0</td>
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</tbody>
</table>
Pipe Support Design Process
Taking Advantage of Technology

**LICAD – Demonstration**

Creating Project Specific Specification
# Pipe Support Design Process

**Taking Advantage of Technology**

**LICAD – Demonstration**

## Summary of All Parts and Quantities

![Summary of All Parts and Quantities](image)

---

<table>
<thead>
<tr>
<th>No.</th>
<th>PrgN.</th>
<th>Pos.N.</th>
<th>Pos. No.</th>
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<tbody>
<tr>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Qty</th>
<th>Weight</th>
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<tbody>
<tr>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Summary</th>
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<tbody>
<tr>
<td>21.70</td>
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<tr>
<td>763.19</td>
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</table>

---

**LISEGA**
Pipe Support Design Process
Taking Advantage of Technology

LICAD – Demonstration

Summary of Pricing per List Price -- Creating Project Budgets

![Image of software interface showing pricing details and project budget calculation]
Pipe Support Design Process
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Export LICAD information to 3rd Party 2D & 3D Programs
**Pipe Support Design Process**

*Taking Advantage of Technology*

**Export LICAD information to 3rd Party 2D & 3D Programs**

---

**LICAD Interfaces**

**2D application**
Via a DXF export file, the design gets transferred with bills of material, location plans and letter heads as an option, to various CAD programs, e.g. AutoCAD or MicroStation.

**3D application**
LICAD using defined interfaces
LICAD generated designs are transferred to 3D applications which are true to scale

- INTERGRAPH – SmartPlant and PDS
- AVEVA -- PDMS, CADCENTRE
- BENTLEY -- PlantSpace Support Modeler
- NAVISWORKS, LightWork Design
Pipe Support Design Process
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Demonstration - Exporting LICAD in 3D Models
Pipe Support Design Process
Taking Advantage of Technology

Demonstration - Exporting LICAD in 3D Models
Pipe Support Design Process
Taking Advantage of Technology
Demonstration - Exporting LICAD in 3D Models
The LICAD program, along with any interfaces, can be downloaded from the LISEGA website Free of Charge at www.lisega.com download section

Technical assistance: James Hill (865) 940-5200 ext. 325 e-mail: james.hill@us.lisega.com

Reference Information: The LICAD Quick set-up guide
Perwez D. Shaikh, P. E.
Director, Engineering and Technical Support

Robert John
Regional Account Manager

Town Center
2245 Texas Drive Suite 300
Sugar Land, Texas 77479

Tel: 281-566-2543~2544
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Question & Answer Session