California Boiler
Inspectors Association 2016

Guidelines for Preparing for a Temporary Steam Plant

Nationwide Boiler, Inc.
Agenda

• Level of Preparedness
• Reasons for Temporary Steam Plant
• Planning Stages
• Qualifying a Rental Boiler Company
• Common Questions

• Equipment Offerings
• Site Considerations
• Advantages
• Lessee/Lessor Scope
• 5 - Reasons
• Questions & Answers
Are You Prepared for Possible Steam Interruptions?

- Management expects 24/7 operations.
- Contingency plans in place?
- Temporary tie-ins installed?
- Adequate insurance coverage?
- What is the loss of production worth?
- How long can operations last without steam?
- Rental boiler company?
Reasons for a Temporary Steam Plant

- Unplanned Outages
- Planned Outages
- Peak Loads
- Delays Bringing New Plant On-line
Unplanned Outage: World Trade Center

• **Reason:** 20” main steam line severed as a result of WTC collapsing.

• **Problem:** Buildings nearby were left without heat.

• **Solution:** 2- 70,000 lb/hr trailer-mounted boilers and 140,000 lb/hr mobile feedwater van.

• **Timing:** Delivered, brought on-line, and operational in a matter of days.
Unplanned Outage: World Trade Center
Unplanned Outage: Ferndale, WA

- **Reason:** Freeze damage to boiler sensing lines and controls.

- **Problem:** Refinery operating with reduced capacity.

- **Solution:** 1- 120,000 lb/hr trailer-mounted boiler.

- **Timing:** 4-day delivery from CA, brought on-line, and operational in 10-days.
Unplanned Outage: Ferndale, WA
Planned Outages
Planned Outages
Increased Capacity: Seasonal Peak Load

Paper Mill - Pomona, CA

- 120,000 lb/hr Nebraska Boiler
- 400 psi design sat.
- Low NOx Burner
- CataStak™ SCR System
- 5 PPM NOx
Increased Capacity: Seasonal Peal Loads

District Heating - San Francisco, CA

- 70,000 lb/hr Nebraska Boiler
- 400 psi design sat.
- Low NOx Burner
- CataStak™ SCR System
- 5 PPM NOx
New Plant Delays (Antonov Delivery)

- **Reason**: New LNG plant in Australia
- **Problem**: Lost production
- **Solution**: 2 boilers needed for continued process steam
- **Timing**: 3 day delivery on the Antonov aircraft
Planning Stages

1. Identify Steam Requirements
   - capacity
   - operating press.
   - steam temp (saturated or superheat)
   - fuel type

2. Rental Duration
   - 1 month
   - 3 month
   - 6 month
   - 12 month plus

3. Delivery Timing
   - weekday vs. weekend
   - winter vs. summer months
Winter Installation:

Eielson AFB, Fairbanks, AK

140,000 lb/hr Temporary Steam Plant
## Planning Stages

<table>
<thead>
<tr>
<th>4. Locate Utility Tie-ins</th>
<th>5. Air Permits</th>
<th>continued</th>
</tr>
</thead>
<tbody>
<tr>
<td>• fuel</td>
<td>• varies with AQMD</td>
<td>• permit details: timing cost source test variances</td>
</tr>
<tr>
<td>• treated feedwater</td>
<td>• permit to construct</td>
<td></td>
</tr>
<tr>
<td>• boiler chemicals</td>
<td>• permit to operate</td>
<td></td>
</tr>
<tr>
<td>• electrical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• steam</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• blow downs</td>
<td></td>
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<tr>
<td>• instrument air</td>
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</tbody>
</table>
Planning Stages

6. Miscellaneous

- boiler placement and foundations
- review and implement a HAZOP procedure

continued

- request descriptions and drawings from equipment supplier

continued

- Implement a Master Rental Agreement between Lessor & Lessee
Qualifying a Rental Boiler Company

- How long have they been in business?
- Types of boilers offered?
- Do they offer rental / purchase / lease-buy?
- Availability and when can they deliver?
- Rental term / duration (price points)?
- Offer ancillary equipment?
- Offer turn-key services?
## Qualifying a Rental Boiler Company

<table>
<thead>
<tr>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ask for references?</td>
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<tr>
<td>Are there guarantees?</td>
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<tr>
<td>Where is the service support out of?</td>
</tr>
<tr>
<td>What is the age and condition of the rental boiler?</td>
</tr>
<tr>
<td>What is required from the Lessee to obtain a boiler rental?</td>
</tr>
<tr>
<td>Do the boilers meet Cal Code and ultra low Nox emission requirements?</td>
</tr>
</tbody>
</table>
Qualifying a Rental Boiler Company

Does the rental company have insurance coverage?

The size of the rental fleet?

What is their safety record?

Do they have any pre-permitted units?

Are renting boilers their primary business, or just a sideline activity?
Common Questions

- How long since the boiler was last inspected and tested?
- When do rental charges begin and end?
- Are rental charges suspended if the boiler fails?
- What equipment and supplies are included in rental charges?
- Are start up charges included or additional?
- Certificates of Insurance?
## Common Questions (continued)

<table>
<thead>
<tr>
<th>Question</th>
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</thead>
<tbody>
<tr>
<td>Who provides the oil pump/tanks?</td>
</tr>
<tr>
<td>Who supplies the gas regulator?</td>
</tr>
<tr>
<td>Who provides the forced draft fan?</td>
</tr>
<tr>
<td>Who provides the smokestacks / EPA ports?</td>
</tr>
<tr>
<td>Who pays the freight?</td>
</tr>
<tr>
<td>Who makes freight arrangements?</td>
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</tbody>
</table>
Common Questions (continued)

<table>
<thead>
<tr>
<th>Question</th>
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</thead>
<tbody>
<tr>
<td>Who provides the hookup?</td>
</tr>
<tr>
<td>Who supplies the utilities?</td>
</tr>
<tr>
<td>What about feedwater treatment?</td>
</tr>
<tr>
<td>How should boilers be operated?</td>
</tr>
<tr>
<td>How about disconnecting?</td>
</tr>
<tr>
<td>How is boiler to be prepared for shipment?</td>
</tr>
<tr>
<td>Who pays for the loading / unloading?</td>
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</tbody>
</table>
Equipment Offerings

• Mobile / Stationary Steam Plants
• Trailer-Mounted Watertube Boilers
• Package Boilers In Stock
• Water Treatment Equipment
• Environmental Solutions
  – CataStak™ SCR Systems
• Heat Recovery Solutions
  – EconoStak Economizers
Equipment Offerings (continued)
Equipment Offerings (continued)

World’s Largest Trailer-Mounted Boiler
Equipment Offerings (continued)

- Deaerators
- Feedwater Pumps
- Demineralizers, Water Softeners, Chemical FS
- Blowdown Tanks

- Diesel Generators
- Air Compressors
- Valves
- Controls
- Potable Hot Water Systems
Site Considerations

- Personnel Protection: Hot Piping
- Freeze Protection
- Fencing / Barriers
## Site Considerations (continued)

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<tr>
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<tbody>
<tr>
<td>100 HP</td>
<td>8’ x 14’ x 30’</td>
<td>30K lbs</td>
<td>45K lbs</td>
</tr>
<tr>
<td>200-300 HP</td>
<td>8’ x 14’ x 30’</td>
<td>45K lbs</td>
<td>60K lbs</td>
</tr>
<tr>
<td>350-600 HP</td>
<td>8’ x 14’ x 30’</td>
<td>50K lbs</td>
<td>65K lbs</td>
</tr>
<tr>
<td>20-40K lb/hr</td>
<td>10’ x 14’ x 50’</td>
<td>60K lbs</td>
<td>80K lbs</td>
</tr>
<tr>
<td>40-60K lb/hr</td>
<td>10’ x 14’ x 50’</td>
<td>80K lbs</td>
<td>100K lbs</td>
</tr>
<tr>
<td>75-100K lb/hr</td>
<td>12’ x 14’ x 30’</td>
<td>100K lbs</td>
<td>125K lbs</td>
</tr>
<tr>
<td>150K lb/hr</td>
<td>10’ x 16’ x 40’</td>
<td>130K lbs</td>
<td>160K lbs</td>
</tr>
<tr>
<td>250K lb/hr</td>
<td>13’ x 18’ x 50’</td>
<td>255K lbs</td>
<td>302K lbs</td>
</tr>
</tbody>
</table>
Site Considerations (continued)

- MIN: Engineered Fill
- OK: Asphalt Pad
- BEST: Concrete Pad

FOUNDATION REQUIREMENTS
Site Considerations (continued)

engineered fill & concrete

asphalt

concrete
Site Considerations (continued)

All weight must be off running gear on mobile boiler rooms and trailer-mounted boilers during operation!

NOTE: some sites require seismic tie-downs.
Advantages of Trailer-Mounted Boilers

- Up to 1,000 HP
- Self-contained
- Fast, easy hook-up
- Secure
- Aesthetical pleasing
- Convenient
Advantages of Trailer-Mounted Boilers

- Up to 125,000 lb/hr
- Quick response
- No cranes or rigging required
- Simple to position/install
- Fast, easy start-up
Advantages of Trailer-Mounted Boilers

- Faster delivery vs. rail car shipments
- Removable gooseneck
- Hydraulic ram / foot for assisting in leveling and blocking
Advantages of Trailer-Mounted Boilers

- Removable 3-axle deck to shorten boiler footprint.
- Or rear deck can be utilized for an operator platform.
- Rear air-bags: leveling
Advantages of Mobile Boiler Rooms

• Typical storage when removed from boiler / trailer frame
Top 5 Reasons as to “How a Rental Job Can Go Bad?”

1. Inadequate Planning and Budget Allotment
2. Non-engineered Installation
3. Lack of Qualified Operators
4. Poor or Lack of Water Treatment
5. Lack of Maintenance
Partial Customer List

- Tesoro
- Chevron
- Phillips 66
- Southern California Edison
- Sempra
- San Onofre
- Weyerhaeuser
- Georgia-Pacific
- Newark Paperboard
- International Paper
- Smurfit Newsprint
Partial Customer List

- City of Los Angeles
- East Mesa Detention Center
- County of San Diego
- Southwest Marine
- NASCO
- NAS Coronado
- EJ Gallo
- JG Boswell
- Chicken of the Sea Tuna
- Circle Foods
- Del Monte Foods
WHAT YOU WANT TO AVOID
Guidelines for Preparing a Temporary Steam Plant

Questions & Answers

Michael Medina & Jim Lieskovan
1-800-227-1966
info@nationwideboiler.com

www.nationwideboiler.com
www.catastak.com

Emergency Preparedness Guide:
http://www.nationwideboiler.com/literature_media/publications.html