QUALITY MAINTENANCE SERVICES
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Compressed Air Audit Services

Compressed Air System Reconfiguration Project Worksheet

Note: Complete those areas on which you have ready information. The balance will be completed during the reconfiguration audit process as applicable.

Plant Name: Date:
Address:

Completed By: Job Title:
Phone Number: E-Mail:

1. Define current problems;
   - ___Inadequate pressure. Current high___, Current low___, Desired___
   - ___Excessive compressor horsepower at current load.____hp.
   - ___Insufficient air to meet process demand
   - ___Unacceptable leak rate
   - ___Contamination: ___water; ___ oil; ___particulates; ___ other
   - ___Compressor maintenance problems
   - ___ High energy costs

2. Define acceptable standards;
   a. Minimum pressure____
   b. Minimum flow in ACFM___
   c. Special point of use demands;
   i. Point_____ at ____cfm at ___psi at ___degrees dew point
   ii. Point_____ at ____cfm at ___psi at ___degrees dew point
   iii. Point_____ at ____cfm at ___psi at ___degrees dew point

   d. Maximum hydrocarbons allowable_____ppm at ___microns
   e. Particulates _____microns
3. Shift loading
   a. 1st shift ____max. acfm at ____psig
   b. 1st shift_____min. acfm at ____psig
   c. 2nd shift____max. acfm at ____psig
   d. 2nd shift ____min. acfm at ____psig
   e. 3rd shift ____max. acfm at ____psig
   f. 3rd shift ____min. acfm at ____psig

Please describe any unique situations you feel applicable:

_____
_____
_____
_____

4. Describe to the best of your ability:

    a. % of unregulated points of use by volume_____
    b. % of regulated points of use where regulators are within 10% of overhead pressure____
    c. System throttling band: Highest pressure for all compressors_____ PSIG, Lowest pressure for all compressors_____ PSIG.
    d. Highest pressure point of use application in the process line equipment_____PSIG
    e. Lowest pressure point of use application in the process line equipment _____PSIG
    f. What is the overhead transmission pressure maintained at off shift?_____PSIG
    g. Does the plant ever shut down cold and allow the system to go to zero PSIG? _____Yes; _____No
    h. If "g" is "yes", when? _____

5. Site conditions:
    a. Summer-Highest ambient temperature_____ degrees F
    b. Summer-Lowest ambient temperature _____ degrees F
    c. Summer-Highest wet bulb temperature _____ degrees F
    d. Summer-Barometric pressure _____PSIA
    e. Summer-Highest relative humidity _____ RH
    f. Summer-Highest cooling water temperature _____degrees F
    g. Summer-Cooling water source_____
    h. Summer-Alternate cooling water source_____
    i. Winter- Lowest ambient temperature _____degrees F
    j. Winter- Highest ambient temperature_____ degrees F
    k. Winter- Barometric pressure _____PSIA
    l. Winter- Highest humidity_____ RH
    m. Winter- Highest cooling water temperature _____degrees F
    n. Winter- Lowest cooling water temperature _____ degrees F
    o. Winter- Cooling water source _____
    p. Winter- Alternate cooling water source _____

6. Water system:
    a. Describe water for cooling:
    i. _____ City at _____ degrees F
    ii. _____ Well at _____ degrees F
    iii. _____ Pond at _____ degrees F
    iv. _____ Tower at _____ degrees F

v. Other_____
vi. Water treatment requirements_____
_____
vii. Are there any special requirements or limitations on cooling water disposal? _____
viii. Are there any special requirements or limitations in disposal of contaminants removed from the compressed air system? _____
ix. Does your facility experience any problems associated with water quality problems such as fouled heat exchangers, entrained sand or silt?_____

7. Do you currently use waste heat from:
   a. _____Air compressors _____BTU/hr
   b. _____ Dryers _____BTU/hr
   c. _____ Cooling towers _____BTU/hr

8. Possible uses for heat recovery:
   a. _____Space heating part load factor _____:1
   b. _____ Make up air part load factor _____:1
   c. _____ Preheating water part load factor _____:1
   d. _____ Cogeneration part load factor _____:1
   e. _____ Other _____

9. Transmission system storage:
   a. Receivers:
      1. _____gal/ft3 at _____PSIG
      2. _____gal/ft3 at _____PSIG
      3. _____gal/ft3 at _____PSIG
      4. _____gal/ft3 at _____PSIG
      5. _____gal/ft3 at _____PSIG
      6. _____gal/ft3 at _____PSIG

   b. Piping:
      1. _____ft _____Inch at _____PSIG
      2. _____ft _____Inch at _____PSIG
      3. _____ft _____Inch at _____PSIG
      4. _____ft _____Inch at _____PSIG
      5. _____ft _____Inch at _____PSIG
      6. _____ft _____Inch at _____PSIG
      7. Pressure at point of generation _____PSIG
      8. Pressure at farthest point from compressors_____PSIG
   c. Local dedicated storage:
      1. _____gal/ft3 at _____(equip. point)
      2. _____gal/ft3 at _____(equip. point)
      3. _____gal/ft3 at _____(equip. point)
      4. _____gal/ft3 at _____(equip. point)
      5. _____gal/ft3 at _____(equip. point)
      6. _____gal/ft3 at _____(equip. point)

Total capacity_____gal/ft3.

10. Electrical system:
    a. Main incoming power supply _____vac at ____phase
    b. Supply at powerhouse _____vac at ___phase
    c. KW/hr consumed by compressors_____
    d. KW/hr consumed by aftercoolers_____
    e. KW/hr consumed by dryers _____
    f. KW/hr consumed by CW transfer pumps_____
    g. KW/hr consumed by tower fans _____
    h. Utility cost/KW/hr normal_____
    i. Utility cost/KW/hr peak _____
    j. Hours/year on standard rate_____
    k. Hours/year on peak rate_____
    l. Historical highest voltage_____
    m. Historical lowest voltage _____
    n. Phase protection ___Yes, ___No
    o. Type of overload protection _____

11. Compressor population
    a. How many compressors normally operate on line in the plant?_____
    b. How many compressors on standby?_____
    c. Motor voltage _____

Type Cent./Screw/ Recip.?	HP	Design Pres.	Operating Pres.	Full Load Amps	ACFM	Motor Eff.

c. Current compressor control type:_____

d. How are motors timed out?_____
    1. ___Anti recycle
    2. ___First in cools down
    3. ___Motors not shut off
    4. ___Rotated on starts

5. ___Rotated on timer
6. ___Maintenance schedule_____

Describe maintenance, i.e. preventive, predictive, time based, etc.

Are motors maintained as separate discipline from compressors?___Yes, ___No

Starters

Brand	Type	HP	Other

Aftercoolers

Type Air/Water	Mfg	CFM	PSI In	PSI Out	Air T In	Air T Out

Dryers

Type	MFG	CFM	PSI In	PSI Out	Air T In	Air T Out

Drainage Type on:

Compressors:_____
Aftercoolers: _____
Dryers: _____
Receivers: _____
Elsewhere downstream_____

12. Define and describe your plant's priorities and consensus status with respect to compressed air utilization in the eyes of management, maintenance, and production:

    Prioritize by numbering the below issues;

    _____Cost of energy
    _____Maintainability
    _____Quality of air
    _____Quality of product made with pneumatic equipment
    _____Production throughput rate
    _____Plant safety
    _____Total investment
    _____Business interruption issues
    _____Green operations
    _____Carbon footprint issues

    Does your facility wish to incorporate your local utilities supplier's energy reduction incentives program in this audit study scope of work? ____Yes____No____N/A

    If so, please name the Utility and if possible, the name of the representative and provide a contact phone and or e-mail.

    Utility:_____

    Rep:_____

    Phone: _____

    E-Mail: _____

13. System leak rate identification and repair program:
    a. ___No program in place at this time
    b. ___Program in place: Describe intervals/time apportioned per week below

14. Metering-Flow monitoring
    a. ____Pressure Type:_____
    b. ____Temperature Type:_____
    c. ____Flow Type:_____
    d. ____Humidity Type:_____

e. ____KW
f. ____Amperage
g. ____ Power

15. Please clarify below any additional issues you wish to address during the audit process: