

OPTION CHECKLIST NO. 9: STEAM DISTRIBUTION & UTILIZATION

<ul style="list-style-type: none"> • Fix steam leaks and condensate leaks.
<ul style="list-style-type: none"> • (A 3 mm diameter hole on a pipe line carrying 7 Kg/cm² steam would waste 33 Kilo litres of fuel oil per year).
<ul style="list-style-type: none"> • Accumulate work orders for repair of steam leaks that can't be fixed during the heating season due to system shutdown requirements. Tag each such leak with a durable tag with a good description.
<ul style="list-style-type: none"> • Use back pressure steam turbines to produce lower steam pressures.
<ul style="list-style-type: none"> • Use more-efficient steam desuperheating methods.
<ul style="list-style-type: none"> • Ensure process temperatures are correctly controlled.
<ul style="list-style-type: none"> • Maintain lowest acceptable process steam pressures.
<ul style="list-style-type: none"> • Reduce hot water wastage to drain.
<ul style="list-style-type: none"> • Remove or blank off all redundant steam piping.
<ul style="list-style-type: none"> • Ensure condensate is returned or re-used in the process. (6 C⁰ raise in feed water temperature by economiser/condensate recovery corresponds to a 1% saving in fuel consumption, in boiler).
<ul style="list-style-type: none"> • Preheat boiler feed-water.
<ul style="list-style-type: none"> • Recover boiler blowdown.
<ul style="list-style-type: none"> • Check operation of steam traps.
<ul style="list-style-type: none"> • Remove air from indirect steam using equipment.
<ul style="list-style-type: none"> • (0.25 mm thick air film offers the same resistance to heat transfer as a 330 mm thick copper wall).
<ul style="list-style-type: none"> • Inspect steam traps regularly and repair malfunctioning traps promptly.
<ul style="list-style-type: none"> • Consider recovery of vent steam (e.g. -- on large flash tanks).
<ul style="list-style-type: none"> • Use waste steam for water heating.
<ul style="list-style-type: none"> • Use an absorption chiller to condense exhaust steam before returning the condensate to the boiler.
<ul style="list-style-type: none"> • Use electric pumps instead of steam ejectors when cost benefits permit.
<ul style="list-style-type: none"> • Establish a steam efficiency-maintenance program. Start with an energy audit and follow-up, then make a steam efficiency-maintenance program a part of your continuous energy management program.

方案列表 9: 蒸汽分配和利用

<ul style="list-style-type: none"> • 修理蒸汽泄漏和冷凝水泄漏。
<ul style="list-style-type: none"> • (输送量的7 Kg/cm² 的运输管道上一个直径3mm的孔每年能够浪费掉33公斤的燃油)。
<ul style="list-style-type: none"> • 由于需要停机而在供暖季不能维修的蒸汽泄漏点，可以用醒目、耐久的标记标出。
<ul style="list-style-type: none"> • 用反压力汽轮机产生较低的蒸汽压力。
<ul style="list-style-type: none"> • 采用效率更高的使过热蒸汽降温的方法。
<ul style="list-style-type: none"> • 正确控制过程温度。
<ul style="list-style-type: none"> • 维持最低限度过程用汽压力。
<ul style="list-style-type: none"> • 减少从排水系统浪费掉的热水。
<ul style="list-style-type: none"> • 拆除或封闭所有多余的蒸汽管道。
<ul style="list-style-type: none"> • 确保过程中的冷凝水能够回收利用（通过节能设施/冷凝水回收而使给水温度每上升6⁰ C，就能让锅炉节约1%的燃料）。
<ul style="list-style-type: none"> • 预先加热锅炉给水。
<ul style="list-style-type: none"> • 回收锅炉排放的废水。
<ul style="list-style-type: none"> • 检查蒸汽疏水阀的运行状况。
<ul style="list-style-type: none"> • 出去间接使用蒸汽的设备中的空气。
<ul style="list-style-type: none"> • (0.25 mm厚的空气膜对热传到的阻碍作用相当于330 mm厚的铜墙)。
<ul style="list-style-type: none"> • 定期检查蒸汽疏水阀，发现有故障的疏水阀立刻修复。
<ul style="list-style-type: none"> • 考虑回收出口处的蒸汽（例如，用大型扩容器回收）。
<ul style="list-style-type: none"> • 用废蒸汽加热水。
<ul style="list-style-type: none"> • 在将冷凝水输送回锅炉前，用吸收式冷却器回收废蒸汽。
<ul style="list-style-type: none"> • 在成本允许的情况下，用电子泵代替蒸汽喷射器。
<ul style="list-style-type: none"> • 建立一个蒸汽效率保持项目。首先进行一个能源监督，然后使蒸汽效率保持项目成为长期的能源管理项目的一部分。