Steam Accumulators

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Boiler Systems

Introduction
A steam accumulator is used to store steam for release when demand is greater than the capacity of a boiler system. They are typically installed in boiler systems used for batch processing to reduce the likelihood of carryover, wet steam, or low water shutdown due to large fluctuations in steam demand. Steam accumulators are commonly found in foam manufacturing, laundries, canning, hospital autoclaves, and brewing operations.

Operation
A steam accumulator is an insulated steel pressure tank containing hot water and steam under pressure. They allow a plant with a low load demand to inject surplus steam into a large amount of water which is under pressure. Over time, the stored water increases in temperature and pressure until it achieves the saturation temperature for the operating pressure of the boiler. When demand exceeds the capacity of the boiler, the resulting pressure drop inside the steam accumulator will cause some of the hot water to flash into steam. The steam is then used to meet the demand upon the system. The accumulator is recharged during the next period of time in which there is surplus steam due to demand which is lower than the boiler systems capacity.

Typical Steam Accumulator

In order to operate as designed, a steam accumulator must be fully charged at the beginning of a demand period. This means that the following conditions must be met:

1. There must be enough time between overload periods to recharge the accumulator.
2. During off-load periods the average steam demand must be sufficiently lower than the boiler capacity in order to insure enough boiler capacity is available to recharge the accumulator.