The Problem
Almost all recovery boilers that burn black liquor in a smelting furnace at Kraft pulp mills have installed the BLRBAC-recommended Emergency Shutdown Procedure (ESP) rapid drain system. These are designed to minimize the chance of smelt-water explosions should a tube leak occur where water could penetrate the smelt bed. The rapid drain system is actually a quick blowdown system, and removes water and water pressure from behind the leaks.

On signal, the rapid drain valves open to blow down the boiler, depressurizing the affected tube(s) and rendering explosion less likely.

Recent initiatives by insurance carriers and industry groups have required more timely blowdown of the boiler, which has prompted some plants to resize their rapid drain lines.

Some original, older installations of rapid drain systems may require reassessment and check of their drain time original design and their actual field result. Also, because full boiler pressure sits against a single valve, leakage past rapid drain valves (traditionally Y or T globes), has been both troublesome and costly.

The Solution
Most rapid drain installations consist of a series of blowdown lines 1½", 2" or 2½". Each line contains a motor-actuated stop valve, normally closed during operation, and a manual block valve upstream, normally locked open. For system test, the block valve is closed and the MOV is stroked.

Since the valves perform strictly shutoff functions, and since flow capacity is an important parameter, the double-disc gate valve is an ideal replacement for the traditional globe valve.

As many of the existing valves are Y-Globes with motor actuators, the 1700 Series Gate Valve will be a competitive replacement, particularly where it will provide increased flow capacity (quicker drain time) without requiring a line upsize. Typical specs are given below.

Specifications (Typical)
Operating Conditions:  1200 psig/700°F
                      2000 psig/800°F

Line Size: 1½", 2", 2½"

Flowserve Anchor/Darling 1700 with Limitorque SMC-04-3

For all conditions consult factory.
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