Munich RE

The Locomotive

The Proper Use and Maintenance of Water Softeners

Introduction

Hartford Steam Boiler investigates many claims in which scale build-up leads to leaks in boiler tubes. In one incident, the insured blamed a water treatment company for faulty treatment. A review found that some time before the incident, the insured had altered the feedwater train through the softeners. The softener piping was changed so that the units operated in series instead of in parallel.

The only advantage gained by operating the units in series would be longer times between regenerations. However, since both beds would be spent, the system would have to be shut down completely for regeneration unless an adequate supply of condensate was available. Operating the softeners in series allowed the hardness into the system that contributed to the scale build-up.

Lessons Learned

The softeners should be operated as designed — in parallel, not in series. One vessel should be operated to 80 percent of its softening capacity and then removed from service and regenerated while the other unit is put into service. The quickest way to determine the softening capacity of a vessel is to meter the amount of water that the vessel can soften before hardness begins to leak through. This requires the hardness be checked every 15 to 20 minutes to find the breakthrough point.

Once that point is determined, a timer or flow meter should be set to allow 80 percent of that amount through. When 80 percent capacity is reached, the vessel should automatically shut down and begin regeneration. The capacity of the resin will decrease slowly over the life of the resin (10 to 15 years), so the capacity should be checked annually by a qualified technician.

Water Softeners Need Maintenance

Although regenerations are completely automated on most softeners, water softeners do require some maintenance. A qualified technician should test effluent for hardness on a frequency that depends highly on service and the regeneration cycle. The boiler in this claim, for instance, was used for process steam with high quantities of makeup water and should have been monitored daily. For tight systems weekly or monthly testing and regeneration may be appropriate. The technician should also make sure the brine tank has sufficient salt. Whenever hardness is detected, take appropriate steps such as regenerating the vessel.

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