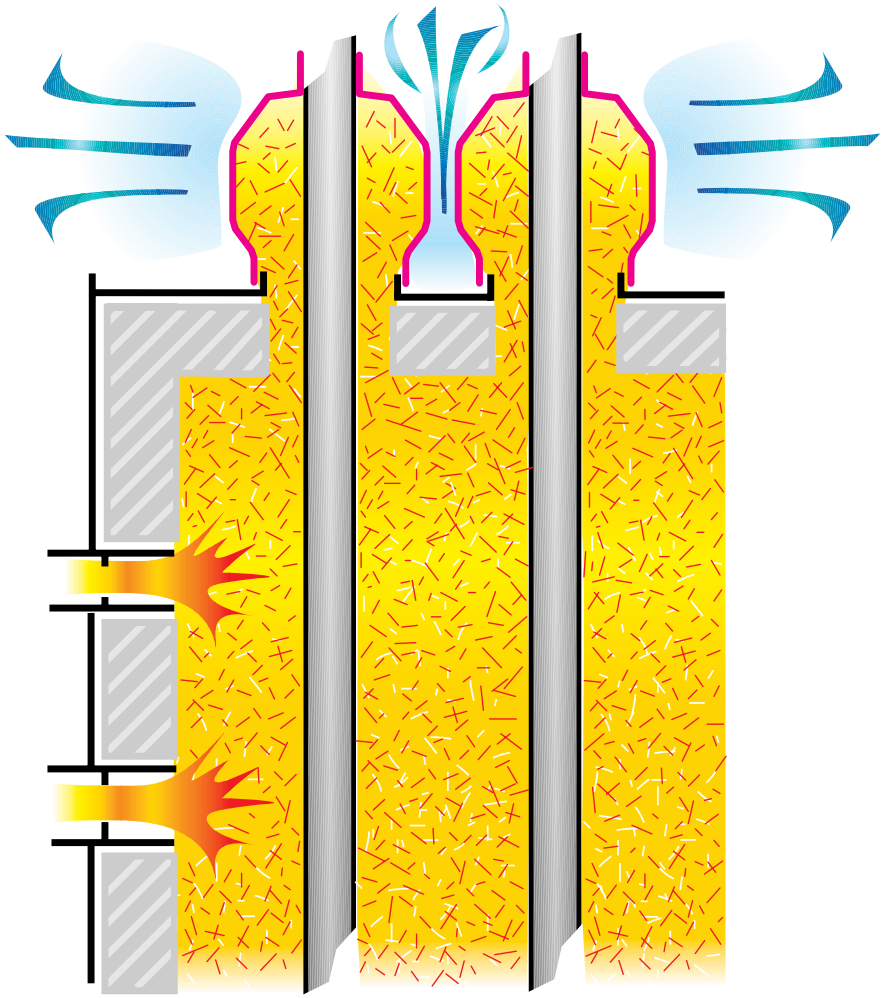
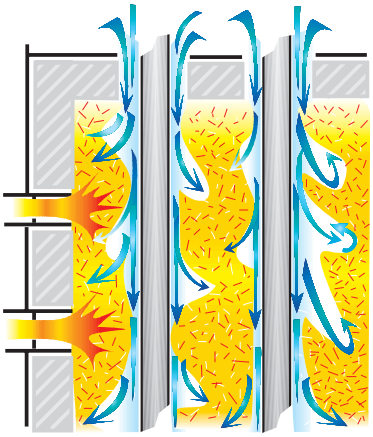
Nextel™ Ceramic Textiles for Tube Seal Applications

3M™ Nextel™ Ceramic Textiles have been used by major corporations in refinery applications for nearly two decades. These ceramic fabrics retain their strength and flexibility even after prolonged exposure to temperatures in excess of 2000°F. They are ideal for use as a barrier to ingress air and egress heat. They have an industry track record of high performance and quick payback.

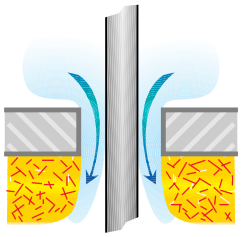


This is a process heater outfitted with tube seals made using Nextel ceramic textiles. They prevent the ingress of tramp air and save money by decreasing fuel consumption, reducing heat losses and controlling excess oxygen.

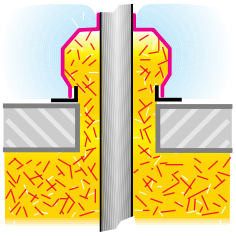


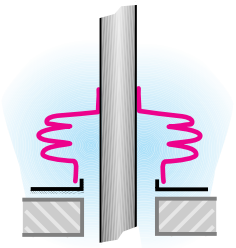
Tube seals are designed to stop the ingress of cold air into a furnace heater box.

Draft fan induced, negative pressure process heaters, such as steam methane reformers, ethylene heaters and ammonia reformers, draw in air through the openings around each tube penetration. This cold air is an added load. The money spent heating this may be recovered in less than six months with the successful installation of a tube seal made using 3M™ Nextel™ Ceramic Textiles.

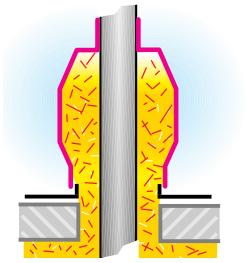


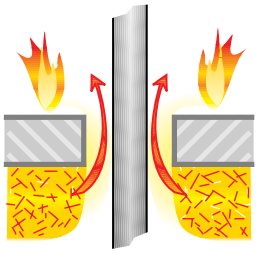
A draft fan ΔP of 0.35" of water draws outside air through a nominal 1 ft^2 gap at a rate of 1.92 lbs/sec., every day, every month, every year. Tube seals made using Nextel ceramic textiles help stop the ingress of air.



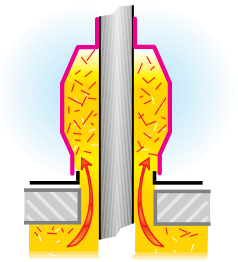


Tube seals are designed to flex to allow for the expansion of the process tube relative to the furnace roof. Tube seals made using Nextel ceramic textiles remain flexible for years of continuous operation up to 2200°F.





The temperatures inside a process heater can reach 2000°F and above. In instances of draft fan failures, this heat may cause extreme damage to a furnace penthouse. Nextel fiber can withstand direct flame impingement and prevent flame penetration.



3M

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