

Magnetic Mounted Potshell Insulation Blanket

- Reduce potshell heat loss in local areas
- Reduce thickness of frozen bath ledge in corners

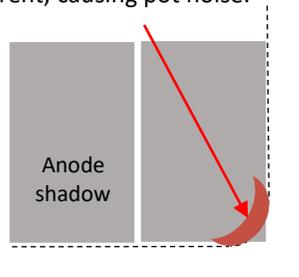


Frozen bath in the corners of reduction cells may cause two problems for operations and potlife. Anodes may become frozen in bath against the sidewall, which affects anode beam motion and hampers anode replacement. Also, the electric current passing around the extended bath toe includes a horizontal vector that may cause MHD induced metal pad turbulence and pot-noise. The electrical current concentrating around the bath 'toe' may have a very high current density that can accelerate cathode corrosion and therefore shorten potlife. The images below illustrate the cathode corrosion.

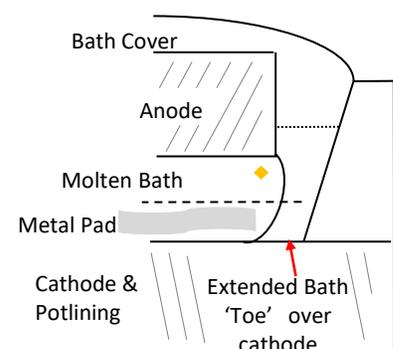


Localized cathode corrosion evident at pot corner from extended bath toe

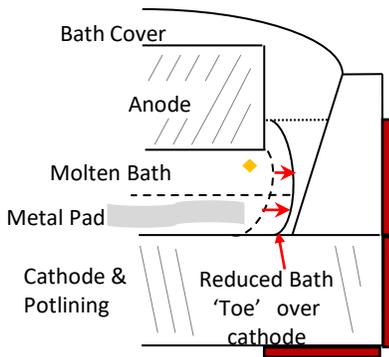
Cold pot corners have extended bath ledge that concentrates current, causing pot noise.



Plan view of frozen in corner anode

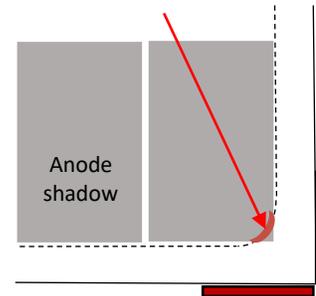


Elevation view at pot corner



Elevation view of reduced bath toe & ledge when using insulation blanket

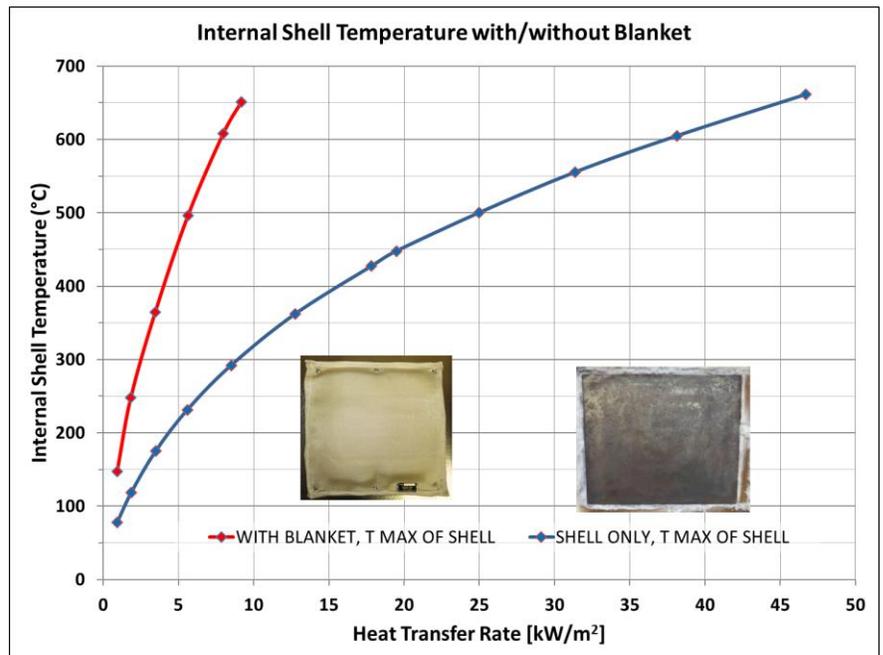
Insulating the pot corners can reduce the corner bath ledge.



Plan view of reduced bath toe when using insulation blanket

The blanket reduces natural convection cooling of the steel potshell to the environment. The graph shows measured heat transfer rates of insulation blankets with 25 mm insulation, versus bare steel with natural convection cooling in ambient air of 20 °C.

The blankets are made of pre-shrunk silica cloth, with e-glass fibreglass insulation, and high temperature magnets. The blankets are affixed to the potshell manually.



Two standard sizes of blankets are available, 150 x 300 mm, and 300 x 300 mm, which can be connected. Custom shapes and sizes are also available for a tailored fit. Different insulation thickness is available.

Warning: Potshell temperatures will vary significantly and repeatedly each anode rotation due to anode setting, ambient temperature, anode effect, etc. Bath superheat and ledge thickness is dependent on heat generation and bath chemistry (bath ratio). The blankets are intended only to insulate cold external surfaces that start below 150 °C when uncovered. The use of 25 mm thick blankets may double the steel temperature. Steel temperature should not be allowed to exceed 400° C, to reduce the risk of metal tapout. Use potshell blankets at own risk.