



Installation Story #17 Foamfrax® Insulation

Industry: Steel
Location: Midwest United States
Installation Date: April 2002
Operating Temperature: 2400°F (1316°C)
Scope of Job: Batch Forge Furnace Roof Section
12" (305mm) Foamfrax Grade II Fiber Full Thickness Installation



Due to excessive shrinkage and lining degradation in this demanding application, a section of the stackbonded roof had fallen into disrepair and required replacement. Once the existing lining section was removed, plastic spider netting was adhered to the roof casing plate and Fiberwall® studs, Inconel 601, 9" (229mm) long were welded in place on 12" (305mm) staggered centers. The alloy grade of the Fiberwall stud is determined by the operating temperature of the furnace, and is specified in the *Foamfrax Insulation Installation Guidelines*.



An initial thickness of 4" (102mm) of Foamfrax Grade II Fiber was gunned onto the plastic spider netting. Foamfrax "X" anchors, SS-304 were installed using SS-304 speed clips to hold them in place. Note that to economize anchoring costs, SS-304 grade anchors and speed clips are always used for the initial set of "X" anchors.



After completing the installation of the first set of “X” anchors, an additional 4-1/2” (114mm) of Foamfrax Grade II Fiber was gunned in place and a second set of “X” anchors secured in place using a Fiberwall washer. Note that due to the operating temperature of the unit, the “X” anchors and washers used for the second layer of support were Inconel 601.



A final application of 3-1/2” (89mm) of Foamfrax Grade II Fiber was applied to insulate the anchoring hardware within the lining system. A foamy/low density skim coat of Foamfrax Insulation was applied to the hot face surface and the lining was troweled smooth. Score marks were made on 2’x2’ (610mm x 610mm) centers to control thermal shrinkage on the monolithic lining hot face. To complete the installation, a 2” (51mm) Foamfrax Grade II Fiber veneer was applied over the balance of the ceramic fiber stackbonded roof.

With the installation of Foamfrax Insulation, the following customer benefits were realized:

- **Turnkey Service**
 - A specially trained Unifrax distributor contractor was able to supply materials, equipment, and installation as a complete package.
- **Extended Service Life**
 - The Foamfrax Insulation veneer upgrade over the existing stackbonded roof sections provided extended service life for the furnace and avoided a complete lining replacement and additional downtime.
- **Installation Speed**
 - The entire Foamfrax installation was completed in one eight hour shift resulting in reduced unit downtime and increased productivity. This is approximately half the amount of downtime when compared to other traditional methods of ceramic fiber installation.