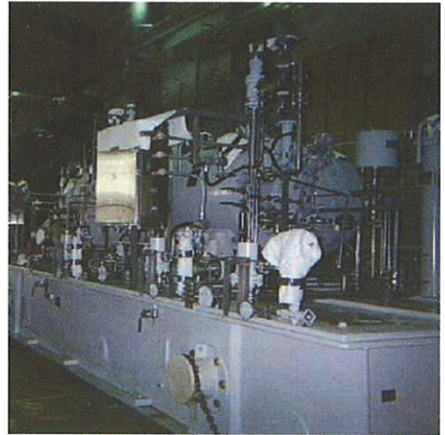




FIVE STAR PRODUCTS SOLUTIONS

The Longest Pour Epoxy Grout Placement

The Gulfstream Natural Gas Compressor Station is located in Coden, Alabama. A portion of the natural gas collected from the gas fields off coastal Alabama and Mississippi will be transported via pipeline to this compressor station. At the station, three Rolls Royce gas turbine compressors (38,000 HP/Ea.) will compress the gas for transmission across 480 miles of the Gulf of Mexico to its destination near Tampa, Florida.



**Rolls Royce Gas Turbine
Compressor**

One of the challenging aspects of the project was the epoxy grouting of these turbines. Epoxy grout is a three-part system — resin, hardener and aggregate. After aligning the turbine, the minimum height of grout to be placed was 1½ inches. The turbine was split into two skids, one 40 feet long, and one 20 feet long, both 14 feet wide.

Only a small section of the skid had intermediate inspection ports. The lack of inspection ports and the construction of the equipment required a one-sided, 14-foot long epoxy grout place-

ment to assure the elimination of air pockets.

Because the equipment was in place and could not be moved, the placement of the grout had to be correct the first time. Harmony Corporation, the general contractor, asked Boh Bros. Construction Co., LLC, the project foundation contractor, to place the grout.

Gulfstream provided the opportunity for three epoxy grout manufacturers to present their epoxy products for consideration. Harmony Corporation and Boh Bros. participated in

the selection process. The manufacturers were concerned with the thickness and length of the placement. All products were represented to meet the compressive strength requirements of 12,000 psi and increase flowability by decreasing the aggregate content of their product.



Test pour at 12 feet

The construction team proposed performing a test to establish the suitability of the products for this application. After pricing was received, two products were selected for testing. Boh Bros. Construction Co. designed and constructed a test pour to reasonably simulate the conditions under which the grout would be placed.

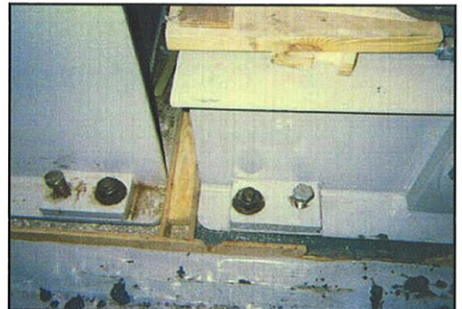
The test pour setup consisted of a cement board base to simulate the concrete foundation, a masonite top to simulate the steel plate covering the bottom of the equipment for the first four feet, and ten feet of a Plexiglas top to allow measurement of the flow rate. Lumber was used to construct the two, 1½ inch high by 12-inch wide by 14-foot long side-by-side test channels. A simple head box was constructed to the dimensions requested by the grout manufacturers.

The building, products and the placement equipment were all preconditioned to the manufacturer's recommended temperature of 76 degrees. Four 250,000 BTU propane heaters were used to heat the 4,500 sq. ft. building. Boh Bros. personnel administered and conducted the test with the assistance of the manufacturer's representatives. Five Star® DP Epoxy Grout outperformed the competitive product in both flow and compressive strength and was the selected product.



Mixed Five Star DP Epoxy Grout

After evaluating the test data and consulting with Rolls Royce, it was determined that the 40-foot long skid would be divided into three placements, and the 20-foot long skid divided into two placements. Temporary construction joints were installed to control the width of the pours.



Temporary Construction Joint

Forms were placed two inches from the skid on three sides, and head boxes equal to the pour width were constructed on the fourth side.



Filling Headbox

The data obtained during the test was used in determining the placement logistics: the required number of mixers, the required height of product in the head box, the quantity of material to be mixed, the rate of flow, and the working life of the material.



**Completed Pour After Flowing
14 Feet**

On the first day, the middle placement and two end placements were made. The next day, the temporary construction joints were removed, and the intermediate placements completed. It

took 40 minutes from the time grout was placed in the head box until it reached the far side of the equipment. A total of 231 cubic feet were used in the placement.



**Finished Chamfered Edge After
Removing Form**

The efforts of Gulfstream Natural Gas, Harmony Construction, Five Star Products, Inc., Ladd Supply, and Boh Bros. Construction Co., LLC resulted in the success of the longest 1½ inch gravity epoxy grout placement known to any of the participants.

To learn more about other Five Star Products and how Five Star can assist you with your next project, visit us at www.fivestarproducts.com or call our Engineering and Technical Center at 203-336-7900.

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