



BILL SPITZER & ASSOCIATES

O: (713) 937-8977

<http://www.billspitzerassoc.com/>



Cold Weather Epoxy Grouting Three 751hp Pumps, with Rain & High Wind Gusts

Location: Southern Louisiana

Date: January 2021

Grout: Escoweld 7505E/7530

Size: 184 units or 405ft³

Equipment: API Centrifugal

Avg Lock in Pour Depth: 2.5"

Avg Fill Pour Depth: 8"

Avg Cap Pour Depth: 4"

Avg Concrete Temp: 74°F

Avg Low Tent Ambient: 76°F

Avg High Tent Ambient: 87°F

Avg Low Ambient: 47°F

Avg High Ambient: 61°F

Max Wind Gusts: 18 mph

Avg Dew Point: 44°F

Avg Resin Temp: 59°F

Avg Aggregate Temp: 52°F

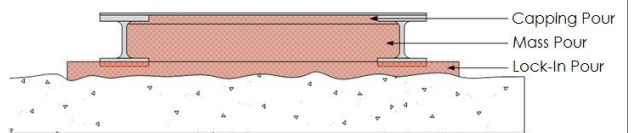
Avg Mixed Epoxy Grout Temp: 60°F



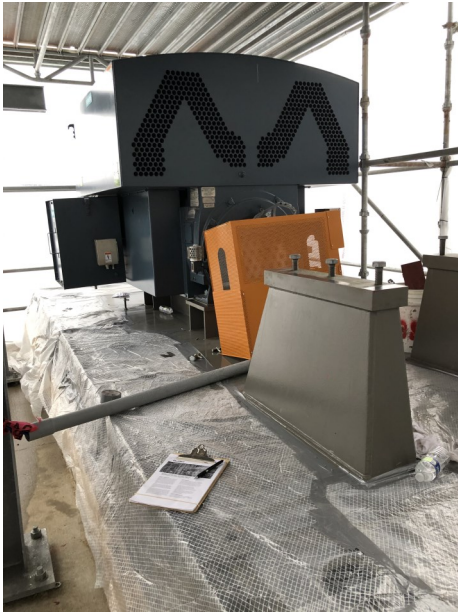
Overview: Bill Spitzer & Associates (BSA) was selected for epoxy grout at the facility for all rotating and reciprocating machinery for a capital project expansion. As subject matter experts, BSA was needed to manage the epoxy grouting procedure because of technical aptitude and experience for cold weather circumstances. Additionally, almost 1" of precipitation occurred the day before grouting that created some site specific considerations. Generally, epoxy grouting temperatures should range between 55°F to 95°F without the concerns for proper polymerization and exothermic reaction of the epoxy technology to thermoset.

Cold Weather Key Decision-Making & On-Site Guidance

- Overall Constructability
- Flowability to Temperature Reactivity
- Epoxy Grout Viscosity to Flow Effectiveness
- Proper heating of equipment, grout, and environments
- Verification of concrete preparation, formwork rigidity & leak prevention, anchor bolt protection, clean & dry contact surfaces, proper jack bolts, expansion joints, grout conditioning, and adequate manpower



Client: A Fortune 500 global manufacturer of transportation fuels, other petrochemical products, renewables, and power. This publicly traded company employs over 10,000 people and was founded over 40 years ago.

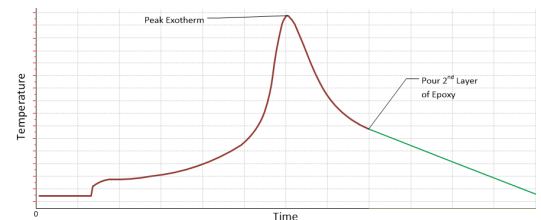


3-Day On-Site Technical Guidance

- Crew had been previously trained at the site for cohesive grout team capabilities
- Discovered a leak in hooch that allowed water into the grouting area
 - * Used heat, fans, & rags to evaporate & soak up water and moisture
- Found missing bond prevention measures on the 3 pumps leveling screws
 - * Reapplied antiseize
- Secured constructability
- Advised and instructed how to prep, mix, pour, and protect epoxy grout in cold weather
- Analyzed and monitored project parameters, temperatures, wetness, & obstacles
- Constantly calculated units needed to finish pours to be pulled from heated hooch
- Supervised grouting process and sequencing
- Implemented appropriate post-condition procedures for epoxy grout
- Prevented overrun costs of a 4th day of grouting by beneficial project management

Escoweld® 7505/7530 Epoxy Grout:

- 3-Component, 100% Solids, & Versatile Epoxy Grout
- Meets or exceeds American Concrete Institute (ACI) 351, American Petroleum Institute (API) 686, & Process Industry Practices (PIP) STS03601 specifications
- Excellent bondability to itself without surface preparation
- Similar Coefficient of Linear Thermal Expansion as Steel ($14.6 \times 10^{-6} / ^\circ\text{F}$) & Concrete ($5.9 \times 10^{-6} / ^\circ\text{F}$)
 - * Escoweld® $14.6 \times 10^{-6} / ^\circ\text{F}$ at 32°F to 140°F
- 2.4 ft³ (68 L) Unit Coverage or Yield
- 2 Hour Pot Life at 77°F (25°C)



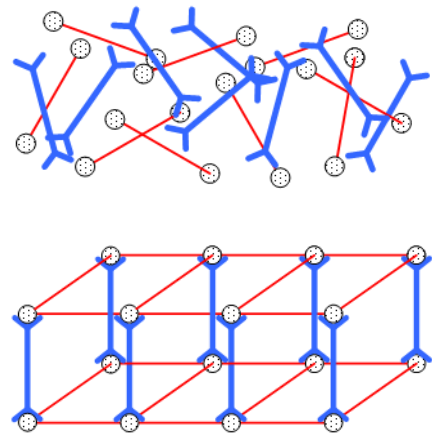


BSA also provided initial on-site contractor training & will continue to administer instruction for the remaining schedule of the project & new laborers.

Epoxy Grout & At or Below 50°F (10°C)

- The rate of build of glass transition temperatures (T_g) will be significantly slowed
- One study showed that based on Arrhenius Law, a thermosetting bisphenol epoxy system has shown a 30% reduction in elastic modulus and strength
 - * Might be from a decrease in plasticization
 - * Recovery could occur if dryness, time, and temperatures are appropriate for the specific circumstance

(Development of physical and mechanical properties of cold-curing structural adhesive in a wet bridge environment: Savvilotidou, Vassilopoulos, Frigione, & Keller, 2017)



Solutions: Bill Spitzer & Associates (BSA) created a customized process for efficiently pouring Escoweld® 7505/7530 over three days. The uniquely technical aspects of cold

weather epoxy grouting can be solved with BSA differentiated proficiency and aptitude. Furthermore, BSA advances engineers, owners, and contractors to become

more profitable, timely, and productive. BSA operates a client first mentality or specialization. BSA also provided initial on-site contractor training and continues to administer instruction for the remaining schedule of the project and new labor. BSA is with the client every step of the way to prevent minor mistakes creating major issues.



BILL SPITZER & ASSOCIATES

11530 Brittmooore Park Dr.
Houston, TX 77041
O: 713-937-8977 F: 713-937-1856

OTHER WAREHOUSES / BRANCHES

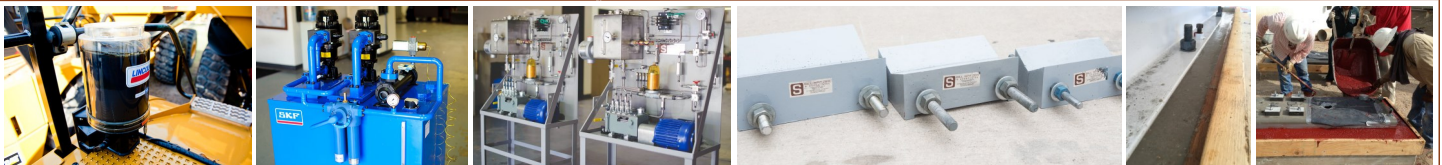
Baton Rouge, LA	(225) 456-0605
Beaumont, TX	(409) 351-2106
Corpus Christi, TX	(361) 944-9926
Dallas, TX	(281) 409-6845
Odessa, TX	(817) 456-7417



We exist to take care of customers

<http://www.billspitzerassoc.com/>

CORE PRODUCT PARTNERS:



Our Story

Bill Spitzer and Associates, Inc. (BSA) was founded in 1978 by Bill Spitzer, Shirley Spitzer, and Jim Mosebrook with a primary focus on servicing reciprocating compression equipment used in the pipeline, oil and gas, petrochemical, and refining markets. Lincoln Lubrication Systems, ITW foundation products (Previously Philadelphia Resins), and Spitzer Enterprises air filtration systems were the primary product lines. The addition of Alemite Oil Mist systems, Superbolt technologies, specialty ready mix concrete designs, industrial coatings, and anchor bolt

products created opportunities to expand into a wider variety of new markets: food and beverage, heavy and light manufacturing, construction, over the road equipment, liquified natural gas (LNG), oil well servicing equipment, pulp and paper, power generation, railways, and many more. We continue to support these markets with an evolving portfolio of products and services.

*We proudly serve NM, TX,
LA, MS, AL, GA, SC, & FL*

Currently, BSA still employs a small business mindset that started back in 1978; however, BSA has methodically grown and integrated competitive advantages, differentiation, modernization, and technological advancements. Connor Spitzer, 3rd generation, commenced his leadership in 2014 to merge an "old school" mentality with an improved focus continuous process improvement and strategic planning methods. All of these adaptations are performed with one goal in mind, ensuring customers receive the best possible service and support found or available everyday.