



BHI energy

Specialty Coatings Services



SPECIALTY COATINGS SOLUTIONS, CONTAMINATION CONTROLS, WATERPROOFING

Potable & Wastewater Applications

High-Build Epoxies for Structural Rehabilitation & Superior Corrosion Control

Flexible Grouts for Cracks & Expansion Joints, Carbon Fiber Reinforced Polymer Systems (CFRP)

Thermal Spray (Metalizing) Systems, CIPP, Spin Cast, Infusion Liner & Pull-In-Place Systems

Flooring Grouts & Mastics, Pipe & Tank Coating Restoration

Buried Piping & Storm Drain Inspection Services, CCTV Inspections

*Pursuing Excellence
through*
**THE GOLD
STANDARD**

Safety First
First Time Quality
Innovation
Partnership
Accountability



BHI energy

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CONTAMINATION CONTROL COATINGS & SERVICES

POLYMERIC BARRIER SYSTEM (PBS)

PBS is a non-hazardous, non-toxic, waterbased solution which forms a pore-free barrier between hazardous or contaminated materials and the environment.

For over two decades, PBS has been commonly used on any surface to stabilize large plant components, concrete, valves, and other problematic radioactive waste equipment prior to shipment.

PBS is also used to control environmental contamination and soil erosion, providing a far superior alternative to the traditional approach of plastic sheeting or tarpaulins. PBS reduces the risk of tearing and avoids the generation of large amounts of additional waste.

Easily applied in the field, PBS is ideal for:

- Minimizing dispersion of contaminants
- Covering contaminated soil, debris or asbestos materials
- Protecting equipment
- Stabilizing trench soils
- Pile Management
- Confining spills
- Coating asbestos materials

Advantages of PBS

- Quick & easy application using industrial airless sprayer, paint roller or brush
- Cures within 2 - 24 hours depending on thickness of application and ambient conditions like humidity
- Cost effective solution for contamination control
- Approved for use in transport as a strong tight container



STRIPCOAT TLC FREE™

Designed to serve as a barrier to prevent contamination or as a covering to contain contamination of floors, walls and equipment, StripCoat's chemical composition also makes it ideal for system components including reactor cavities, glove boxes or hot cells.

Stripcoat can prevent areas and equipment from becoming contaminated during maintenance activities. While curing, Stripcoat mechanically and chemically entraps contamination. After curing, the coating strips off, along with loose surface contamination.

Advantages of StripCoat TLC Free™

- Water based, for easy cleanup
- Applies quickly and easily with an industrial airless sprayer, paint roller, or brush
- Does not need a specific application thickness
- Easily removed in large sheets
- Does not stick to steel, wood, asphalt pavement or concrete
- Can be temporarily immersed
- Significant reductions in outage time and labor needs
- Non-toxic/non-carcinogenic
- Approved for use in transport as a strong tight container
- Effective for locking down loose contamination
- Available in 5- or 55-gallon quantities



USED FOR 2 DECADES, STRIPCOAT HAS BEEN EXTENSIVELY EVALUATED BY THE DEPARTMENT OF ENERGY AND HAS PROVEN TO BE THEIR DESIRED PRODUCT WHERE THE HIGHEST LEVEL OF PROTECTION IS REQUIRED

WATERPROOFING & CORROSION PROTECTION SOLUTIONS

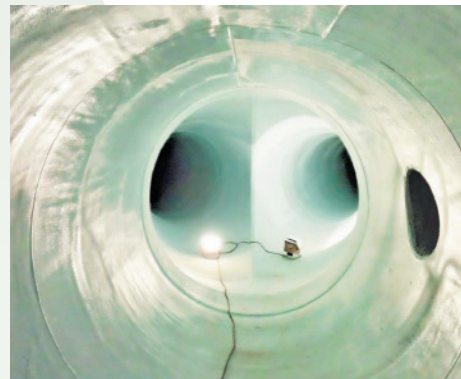
WARREN 301 SERIES HIGH PERFORMANCE STRUCTURAL EPOXIES

The product line of specialty epoxies (100% solids, zero VOCs) are formulated to enhance contamination and corrosion protection, resist water intrusion and provide chemical resistance and bond strength.

They have been used to rehabilitate and protect deteriorating infrastructure for over 25 years in some of the harshest corrosive and chemical conditions. 301 Series Epoxies set hard when cured with a compressive strength of 12,000 psi and can be combined with S-glass or carbon fibers for added structural integrity. They will not present additional problems during demolition: hard to cut, loss of adhesion, fractures with the substrate, etc.

Advantages of 301 Series Epoxies

- Superior adherence to dry or wet concrete, brick and steel
- Applies & cures under extreme conditions (hot, freeze/thaw, rain/snow)
- Non-toxic and non-carcinogenic
- Non-leaching and low-flammability
- Long working time relative to cure time
- Excellent water & chemical resistance with ambient cure
- Superior structural values for increased strength
- Zero VOC application for superior confined space safety
- Single coat, high build applications for reduced down time (up to 500 mils in single coat) and eliminates risk of intercoat delamination
- NSF compliant for potable water applications



Warren epoxies are non-hazardous and aquatic safe. They are free of VOCs, solvents, styrene, and isocyanates - which eliminates the risk of explosion, fire, and extreme health issues.

EPOXIES FOR FLEX AND MOVEMENT

ULTRAFLEX AND DURAFLEX EPOXIES

For concrete stabilization, contamination encapsulation, water intrusion resistance and equipment protection, these epoxy based products offer enhanced flexibility for applications that require high performance within a wide temperature range. These products are two part, 100% solids, room temperature curing, flexible hybrid epoxy systems that both offer superior surface bonding to dry and wet material and set pliable when cured, with a Shore D Hardness of 55.

Ultraflex has low viscosity and high flexibility, while Duraflex has medium viscosity and medium flexibility.

Advantages of Ultraflex & Duraflex

- Minimal surface preparation & no thinning required
- Applies and cures under extreme conditions (hot, freeze/thaw, rain/snow)
- Non-toxic & non-carcinogenic
- Non-leaching & low-flammability
- Protects new & deteriorated surfaces
- Long working time relative to cure time
- Excellent water & chemical resistance
- Corrosion resistant
- Superior structural values for increased strength
- Zero VOC for superior confined space safety
- Single coat, high build applications for rapid return to service



WARREN STRUCTURAL EPOXIES HAVE A SUPERIOR SERVICE RECORD WITH OVER 25 YEARS OF WORLDWIDE APPLICATIONS IN THE NUCLEAR WATER AND DRAIN INDUSTRY, PRIVATE INDUSTRY APPLICATIONS AND PUBLIC UTILITIES

THERMAL SPRAY COATINGS

SUPERIOR BONDING AND CORROSION PROTECTION

BHI utilizes electric arc wire thermal spray with the advantages of having the highest deposition rates on almost any substrate with no risk of metallurgical degradation of the surface, faster turn times and superior corrosion protection and bonding. Thermal Spray coatings last much longer, offering significantly decreased maintenance expense and downtime in a wide range of operating temperatures, and provides sacrificial anode effect on steel.

Applications include piping, cyclical services, tanks, vessels, flare stacks, silencers, chemical reactors, heat exchangers, corrosion under insulation (CUI), and most areas where antislip, anti-skid and anti-corrosion are beneficial.

Thermal sprayed Aluminum offers superior protection against CUI. Studies have been conducted by major petrochemical and energy companies showing that thermal spray is at least twice more effective in combating CUI compared with liquid applied coatings.



THERMAL SPRAY APPLICATIONS

Anti-Corrosion

One of the most economical ways of protecting steel against corrosion is by applying a sacrificial coating. Offering superior life cycles, this coating can withstand not only specific environmental conditions but also fulfill certain mechanical properties. For these reasons, the most widely used corrosion resistant materials include metals such as zinc and aluminum.

Anti-Slip/Anti-Corrosion

Thermal non-skid products are used to achieve long lasting, affordable and attractive solutions for improved safety and superb corrosion protection of steel/aluminum surfaces. This coating system is resistant to wear, cracking and impact, resists oils and fuels, has a wide range of textures, will withstand flexing and is unaffected by weather or sun.

Hardfacing and Machine Element

For superior wear resistant characteristics, hard surfacing or engineered coatings work in several key areas to offer protection against:

- Abrasion/Wear
- Corrosion
- Hot ash
- Oxidation
- Sulfidation
- High temperatures
- Cavitation

BHI'S THERMAL SPRAY COATINGS OFFER SUPERIOR CORROSION PROTECTION & BONDING,
LONGER LIFETIMES AND DECREASED MAINTENANCE

CARBON FIBER REINFORCED POLYMERS REPAIR METHOD (CFRP)

STRONG AND LIGHT

Non-metallic repairs with composite Carbon Fiber are an approved, engineered solution for tank and pipe repairs in Nuclear and Oil & Gas industries.

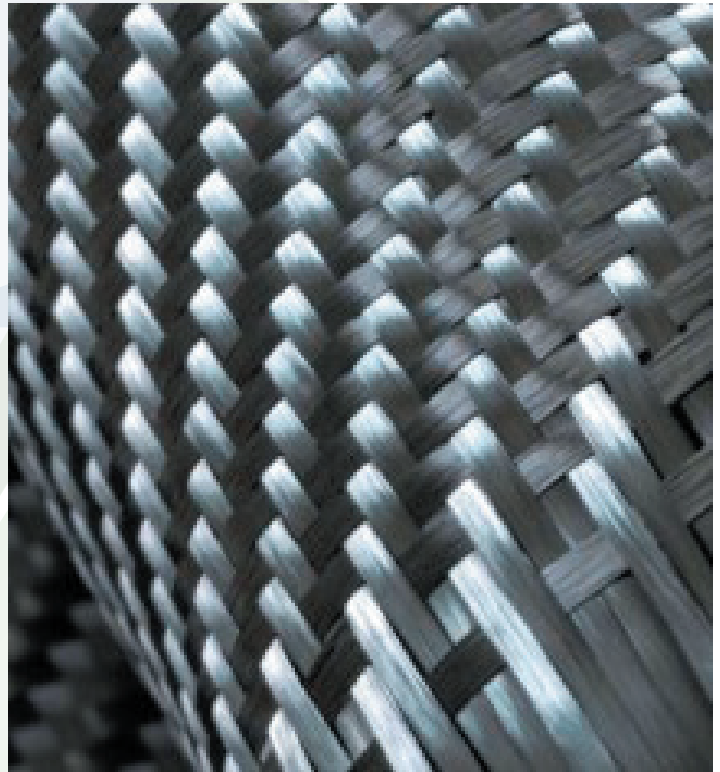
Providing excellent fatigue resistance, the result is extremely strong and light: 120 mils of Carbon Fiber Composite has the same flexural strength as ¼ inch of steel.

CFRP does not corrode like metallic substrates and easily conforms to any shape or size, while composite repairs can be applied quickly and economically. One product works for every tank & pipe size and geometry.

Our product can be quantitatively inspected with NDE tools (when applied over conductive surfaces), saving our clients time and money with added quality and superb structural integrity.

The application is quicker, easier and more cost effective than an equipment replacement, with extended service lifetimes.

Applications include internal and external reinforcement of tanks and pipes to prevent corrosion, abrasion, cracking and leaks.



CARBON FIBER REINFORCED POLYMERS EXAMPLES

A through-wall leak on a carbon steel circulating water line caused an outage.



Significant corrosion and pitting on a tank put the unit in jeopardy.



Badly corroded elbow pipe with flow meter is rebuilt rather than replaced.



CARBON FIBER HAS EXCELLENT FATIGUE RESISTANCE, EASILY CONFORMS TO ANY SHAPE AND IS QUICKER, EASIER AND LESS COSTLY THAN REPLACEMENT

BURIED PIPING AND STORM DRAIN INSPECTION SERVICES

OVERVIEW OF VISUAL INSPECTION

BHI's visual inspection systems are designed to accommodate various pipe sizes in challenging terrains.

Our common objective for the inspection of station storm drain networks is to determine the integrity of the system, identify debris, line breaks, and discontinuity that would contribute to an unplanned and or unmonitored release to the groundwater.

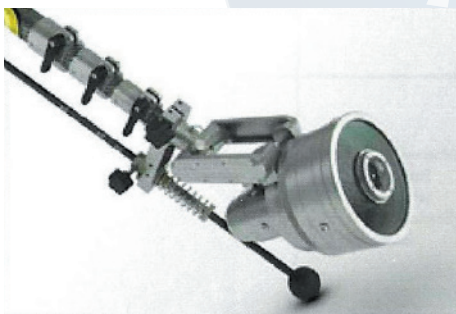
Shown are two of our camera systems. Both systems can be integrated with our radiological detection probe.

The robotic crawler system is outfitted with a rotating camera head, adjustable wheels and an elevator for surveying in rough terrain and various diameter piping systems. This crawler is capable of surveying up to 1000 feet in each direction and is waterproof to 2 ATMs.



QUICKVIEW INSPECTION SYSTEM

BHI's QuickView system uses Haloptic Technology to see and record deep into pipelines when it's not feasible or necessary to perform crawler inspections, saving our clients time and money while satisfying the requirements of inspection.



Quickview has a visual range of over 220 feet and will record stills or movies of the inspection. There is no need for confined space entry into manways, pipes or enclosures.

Quickview will record in minutes after setup, saving time and manpower. QuickView's ability to record both below ground and above to a depth and reach of 24 feet allows quick inspections of critical systems without extra equipment.

Some of the applications QuickView has been used for include pipe inspections, bridge inspections and Busbar inspections.

REPORTING & DATA VALIDATION

Daily validation and reporting is performed upon completion of each survey unit by the BHI Engineer. Upon completion of the survey activities the data gathered will be tabulated and inventoried for efficient retrieval of survey information.



BHI OFFERS SEVERAL VISUAL INSPECTION SYSTEMS DESIGNED FOR CHALLENGING TERRAIN AND VARIOUS DIAMETER PIPING

PIPE LINING & COATING RESTORATION SERVICES

CURED IN-PLACE PIPELINING METHOD (CIPP)

A process by which a resin soaked liner is placed in a pipe, an inside bladder is inflated, held against the pipe walls by either air, steam or water, and allowed to cure.

After removal of the inflated bladder, the liner forms a new pipe within the existing pipe, thereby eliminating leaks and future corrosion. This trenchless technology allows for minimal disruption to the plant during the rehabilitation process.

Cured-in-place is typically used in low pressure lines such as storm water lines, sanitary sewers, process lines and force mains. Generally this process applies to the repair of shorter sections of pipe where structural integrity has been jeopardized; however, it can also be used for longer pipe runs with minimal lateral bisections.



COATING SPRAY-ON METHOD

Using the Warren Environmental patented process and equipment, our unique meter/mix spray equipment sets 301 Series Epoxies to a hard finish, while the Flex Epoxies will yield a tough flexible tack free system. Our technique will perform within the temperature range of -10°C to + 110°C and can be applied in thicknesses of greater than 1 inch on vertical surfaces in a single lay-up.

Features & Advantages

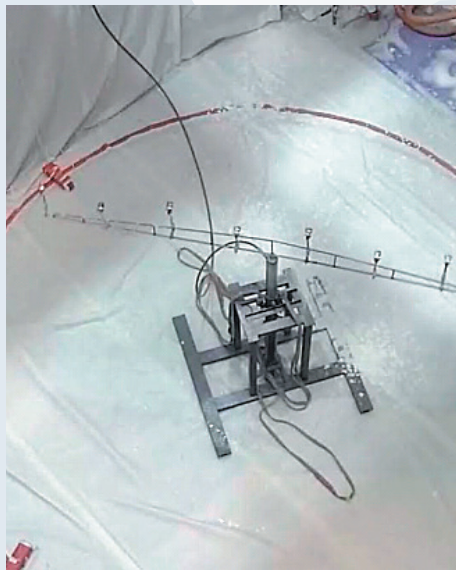
- Cures in 4–12 hours
- Low waste volumes
- Water-soluble for easy clean-up
- Excellent cure at low temperature
- Excellent cure at high humidity
- High-build thickness without sag

SPINCAST APPLICATION METHOD

A patented spinning applicator is pulled through the pipe using timed calibrations to apply an even distribution of epoxy with a regulated and consistent thickness on the pipe wall. The spinner can apply both 301 Series Epoxies (hard finish) or Flex Epoxies (flexible finish).

Features & Advantages

- Rapid return to service
- Low temp/high humidity curing
- Zero VOC's, 100% solids
- Long working time to cure time
- Excellent water and chemical resistance with ambient cure
- High-build thicknesses without sag



IN-PLACE PROCESS RESTORATION (IPPR) BLOWN-IN METHOD

A pipe lining process for ½in to 12in diameter pipes that involves blowing liquid epoxy resins into the pipe using high velocity air.

After cleaning with high pressure sand blasting or rotary abrasive tooling, the piping system is drained and temporary adapters are put into place for the IPPR process. Once prepped, a cone of air spins the epoxy into place at a maintained velocity to produce an even coating to the wall of the pipe.

BHI CURRENTLY OFFERS FOUR PIPE LINING METHODS FOR APPLICATION SERVICE; CURED IN-PLACE SPRAYED-ON, SPINCAST APPLICATION, AND BLOWN-IN (IN-PLACE PROCESS RESTORATION - IPPR)

OUR COATINGS CAPABILITIES

BHI Energy Specialty Coatings & Inspection Services offers an expert patented process and exceptional coatings products for decontamination, corrosion control, waterproofing and structural rehabilitation. With more than two decades of use, products like PBS and StripCoat TLC Free™ have been extensively evaluated by the DOE and proven to be their desired product for the highest level of protection. Our offering includes coatings approved for potable and wastewater applications, high-build epoxies for structural rehabilitation, coatings for contamination control, flexible grouts for cracks and expansion joints, Carbon Fiber Reinforced Polymer systems, Thermal Spray (Metalizing) systems, CIPP, Spin Cast, Infusion Liner, Pull-in-Place systems, and flooring grouts and mastics.

Our inspection services include buried piping, manhole and storm drain inspection services designed for challenging terrain and various diameter piping.

YOUR SOLUTIONS PARTNER

Building on our 40 years working in the US & Canadian markets, we put our experience to work for you. BHI is committed to your success, bringing our expertise in a wide range of specialty services & staffing solutions to fully partner with you in pursuit of your goals.



Maintenance & Modification Services



Transmission & Distribution Services



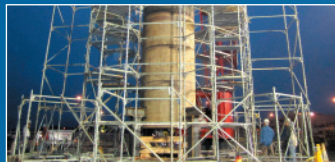
Professional Technical
Staff Augmentation



Specialty Welding & Machining



Radiation Protection, Radiological
Engineering & Related Services



Civil Maintenance & Scaffold Services



Wind Turbine Services



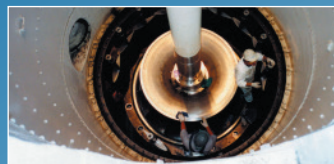
Decontamination & Decommissioning



Valve Services



Facility Maintenance Services



Hydroelectric Services



Instrumentation, Controls &
Electrical Services

TRANSMISSION & DISTRIBUTION • OIL & GAS • INDUSTRIAL • GOVERNMENT
POWER GENERATION: NUCLEAR, FOSSIL, HYDRO, SOLAR, WIND

Contact us now and put BHI Energy to work for you!

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