HPC® PRODUCT LINE
Maximize energy efficiency with a coating designed to insulate every surface.

HPC® PRODUCT LINE
- REPLACES WRAP AND JACKETING
- ELIMINATES CUI
- EASY TO REPAIR
- PROTECTS PERSONNEL
- NO SHUTDOWN REQUIRED

HPC® COATING
APPLIED WHILE OPERATING UP TO 500 °F (260 °C)

HPC® HT COATING
APPLIED WHILE OPERATING UP TO 1,112 °F (600 °C)

HPC® COATING provides a “true insulation benefit” by holding the heat inside of the coated vessel and increasing the internal temperature/pressure if the energy source is not changed. As a result, energy costs can be saved by reducing the energy requirement to maintain the original temperature or the manufacturing process can be improved by increasing the internal temperature of the vessel to achieve a more efficient and effective process.

HPC® COATING does not degrade when exposed to environmental factors and maintains a constant level of performance throughout the lifespan of the coating/project - no decrease in effectiveness or efficiency.
For industries that depend on optimum heating systems, HPC® / HPC®-HT Coating presents an innovative and efficient solution. HPC® / HPC®-HT Coating are formulated to prevent the loss of conductive and convective heat from pipe and vessel surfaces. This capability maintains the overall heat of any fluid or gas within a pipe or vessel and allows the process to operate more efficiently. HPC® / HPC®-HT Coating will hold heat in a “transmission pipe” for longer distances than traditional insulation systems and will effectively maintain interior temperatures and reduce emissions for personnel protection.

HPC® / HPC®-HT Coating can be applied to a variety of surfaces with interior temperatures up to 600˚C, such as steam pipes, hot gas pipes, hot storage tanks and oil or gas transmission pipes. HPC® / HPC®-HT Coating replaces fibrous wraps and blankets and stops CUI from ever developing.

In today’s age of increasing energy efficiencies, industries need innovative, high-heat solutions that will stand the test of time. Implement the performance capabilities of HPC® / HPC®-HT Coating in your systems today and see why so many industries are choosing to switch to HPC® / HPC®-HT Coating to reduce energy and maintenance costs for the foreseeable future.

HPC® / HPC®-HT Coating were designed with lightweight, low-density ceramics developed in cooperation with NASA in the early ‘90s. These unique materials give HPC® / HPC®-HT Coating the ability to reduce heat loss in a variety of industries that depend on high-heat efficiency. Traditional pipe insulation presents numerous inefficiencies and only slows the conductive heat transfer process because it contains small pockets of air. With HPC® / HPC®-HT Coating, heat loss is controlled by the light weight, low-density ceramics which results in more heat being held on the surface and increased temperature/pressure inside the pipe or vessel.

Traditional Pipe Insulation continually suffers from costly maintenance in large industrial piping systems. By absorbing air and moisture, traditional pipe insulation systems deteriorate rapidly, lose insulation performance, and cause CUI (reason for name CUI.). In addition, the inability of traditional pipe insulation to cover and seal the valves, joints and elbows of various systems also creates gaps in protection for industries that depend on high heat efficiency.

**REPLACE WRAP AND JACKETING WITH HPC® PRODUCT LINE AND ELIMINATE CUI**

<table>
<thead>
<tr>
<th></th>
<th>Rockwool/Fiberglass</th>
<th>HPC® / HPC®-HT Coating</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Installation</strong></td>
<td>Shutdown during install and repair</td>
<td>Applied while operating; no shutdown required.</td>
</tr>
<tr>
<td><strong>Insulation Effect</strong></td>
<td>Deteriorates when wet. Valves and elbows not wrapped effectively</td>
<td>Does not deteriorate in normal usage. Insulates valves and elbows.</td>
</tr>
<tr>
<td><strong>Crack Detection</strong></td>
<td>Entire jacket must be removed.</td>
<td>Inspected directly on spot; easily repaired.</td>
</tr>
<tr>
<td><strong>Condensation</strong></td>
<td>High absorption and trapping of moisture</td>
<td>No condensation with HPC® / HPC®-HT Coating.</td>
</tr>
<tr>
<td><strong>Corrosion</strong></td>
<td>Allows air and moisture penetration; CUI develops rapidly.</td>
<td>Applies directly over hot surfaces creating a “fully adhered” casting which eliminates CUI.</td>
</tr>
<tr>
<td><strong>Repair and Maintenance</strong></td>
<td>High maintenance, must shutdown; high cost of repair and loss of production time.</td>
<td>Low maintenance; inspections performed without shutdowns; easy to maintain and repair.</td>
</tr>
</tbody>
</table>
**HPC® COATING CASE STORY**

Italian Petrochemical Plant

Exposed traditional wrap and cladding insulation

Pipe system before HPC® Coating application, showing extensive CUI

Temperature on the pipe before HPC® Coating was 213°C (415.4°F)

Phase of HPC® Coating application

Finished HPC® Coating application

Temperature after HPC® Coating application was 53.4°C (128.12°F)
HPC® COATING IN ACTION

HPC® Coating is being used all over the world across a wide variety of industries. The results are immediate with HPC® Coating because the application process is quick and easy. With HPC® Coating, you can refurbish and renew systems in need of serious repair.

See how the companies represented here have made simple improvements with HPC® Coating that continue to produce long-term benefits.

**Siberian Winter Experiments**
- Without coating, heat loss reached 3409 W/m.
- With HPC® Coating applied, heat loss diminished to 776 W/m, a decrease of 77.3%.

**Heat loss from un-insulated v. HPC® Coating insulated surface**

**Cold Testing**
- HPC® Coating was tested under rigorous exterior cold temperatures for 12 hours with holding the main heat source.

**Steel Factory Testing**
- Original interior temperatures before HPC® Coating, was estimated at 1200°F (649°C).
- After HPC® Coating was applied, pipe surface temperatures under the coating increased to approximately the interior temp of 1200°F (649°C). This shows how well HPC® Coating held the temperature on the surface of the pipe and increased the pipe surface and interior temperature. This is the amount of heat loss that traditional insulation would have allowed to quickly absorb, transfer from the surface and flow through the air pockets to escape. Losing 335°F is significant when the operation is based on certain heat levels being maintained. This is the point about using HPC® - HT Coating to replace traditional air pocket systems that lose heat at these high temperatures.

**Top Companies using HPC® Coating**
- LG Chemicals
- Drydocks World
- Vancouver Shipyards
- Gazprom Oil
- Ecopetrol
- Saipem, S.P.A.
- Pemex Oil
- Saudi Aramco Oil
- Formosa Plastics Corporation
- Georgia Pacific

**HPC® Product Line** has been designed with low-density ceramics developed in cooperation with NASA.
When we designed the HPC® Product Line, our goal was to address the concerns of Insulation, CUI and Personnel Protection, without shutting down equipment (and costing millions of dollars in the process). With HPC®, and now HPC®-HT, we have done just that. “This stuff works!” No shutdown is required.

**Insulation**
Our aim was to produce measurable insulation performance in the field. HPC® and HPC® - HT are insulators that cover every inch, every surface (elbows, valves, etc.) to give 100% coverage for optimum insulative effect.

Many coatings insulate under 160°C, but with the HPC® Product Line, we take insulation from 100° to 600°C, and can apply while operating, with measurable, immediate results.

**CUI**
The current talk of using “super hydrophobic” resins to impregnate existing materials only reduces the air space, which is the main insulation medium used. Reducing moisture is a plus. Any dry material is a better insulator than any wet material (example: if a screen is replacing jacketing, the screen conducts heat).

Adding structure can reduce the insulation effect. At the end of the day, it’s simple - and proven: HPC® and HPC® - HT effectively eliminate CUI without adding structure, while blocking humidity and air.

**Personnel Protection**
Our HPC® Product Line addresses personnel safety issues by using two formulas for differing levels of temperature exposure, both of which are water-based and loaded with specific ceramic compounds (chosen from thousands of compounds that were evaluated over a 30-year period) that block “heat load” and transfer (HPC®-HT part A has some solvent, but when mixed with part B, it is fully water based). These compounds are then blended into unique resin systems to carry the ceramics onto surfaces and hold them together in a mesh-like structure, without becoming a conduit for heat. HPC® was designed for surfaces up to 260°C. We use an overcoat to block moisture, air or weathering to prevent CUI. The HPC®-HT is an all-in-one coating for insulation, CUI elimination, and personnel protection up to 600°C (and beyond).

You need to cover all three points of concern: Insulation/ CUI/Personnel Protection. Why would you only settle for one point at a time, with 3 different products? Instead, address the issues with specific products designed for what you need. Major customers have already used the HPC® product technologies in the field for years. They work. They’re proven. They are the HPC® Product Line.
# SPI Products Safe-to-Touch Temperatures, DFT's and Time of Contact with coated surface

**Time of Contact by OSHA - 5 seconds with no burn.**

<table>
<thead>
<tr>
<th>Maximum Temperature</th>
<th>DFT of Super Therm®</th>
<th>Super Therm® Safe-to-Touch temperature</th>
<th>Time of hand contact on the Super Therm® surface</th>
</tr>
</thead>
<tbody>
<tr>
<td>°F</td>
<td>°C</td>
<td>μ</td>
<td>mils</td>
</tr>
<tr>
<td>140</td>
<td>60.0</td>
<td>250</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maximum Temperature</th>
<th>DFT of HSC®</th>
<th>HSC® Safe-to-Touch temperature</th>
<th>Time of hand contact on the HSC® surface</th>
</tr>
</thead>
<tbody>
<tr>
<td>°F</td>
<td>°C</td>
<td>mm</td>
<td>mils</td>
</tr>
<tr>
<td>140</td>
<td>60.0</td>
<td>1.25</td>
<td>50.0</td>
</tr>
<tr>
<td>200</td>
<td>93.3</td>
<td>1.5</td>
<td>60.0</td>
</tr>
<tr>
<td>250</td>
<td>121.1</td>
<td>1.5</td>
<td>60.0</td>
</tr>
<tr>
<td>300</td>
<td>148.9</td>
<td>2.0</td>
<td>80.0</td>
</tr>
<tr>
<td>350</td>
<td>176.7</td>
<td>4.0</td>
<td>160.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maximum Temperature</th>
<th>DFT of HPC®</th>
<th>HPC® Safe-to-Touch temperature</th>
<th>Time of hand contact on the HPC® surface</th>
</tr>
</thead>
<tbody>
<tr>
<td>°F</td>
<td>°C</td>
<td>mm</td>
<td>mils</td>
</tr>
<tr>
<td>400</td>
<td>204.4</td>
<td>2.5</td>
<td>100.0</td>
</tr>
<tr>
<td>450</td>
<td>232.2</td>
<td>2.5</td>
<td>100.0</td>
</tr>
<tr>
<td>450</td>
<td>232.2</td>
<td>5.0</td>
<td>200.0</td>
</tr>
<tr>
<td>482</td>
<td>250.0</td>
<td>5.0</td>
<td>200.0</td>
</tr>
<tr>
<td>482</td>
<td>250.0</td>
<td>10.0</td>
<td>400.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maximum Temperature</th>
<th>DFT of HPC® HT</th>
<th>HPC® HT Safe-to-Touch temperature</th>
<th>Time of hand contact on the HPC® HT surface</th>
</tr>
</thead>
<tbody>
<tr>
<td>°F</td>
<td>°C</td>
<td>mm</td>
<td>mils</td>
</tr>
<tr>
<td>500</td>
<td>260</td>
<td>32</td>
<td>1280.0</td>
</tr>
<tr>
<td>550</td>
<td>288</td>
<td>32</td>
<td>1280.0</td>
</tr>
<tr>
<td>600</td>
<td>316</td>
<td>32</td>
<td>1280.0</td>
</tr>
<tr>
<td>650</td>
<td>343</td>
<td>32</td>
<td>1280.0</td>
</tr>
<tr>
<td>700</td>
<td>371</td>
<td>32</td>
<td>1280.0</td>
</tr>
<tr>
<td>750</td>
<td>399</td>
<td>32</td>
<td>1280.0</td>
</tr>
<tr>
<td>800</td>
<td>427</td>
<td>45</td>
<td>1800.0</td>
</tr>
<tr>
<td>800</td>
<td>427</td>
<td>50</td>
<td>2000.0</td>
</tr>
<tr>
<td>900</td>
<td>482</td>
<td>57</td>
<td>2280.0</td>
</tr>
<tr>
<td>1000</td>
<td>538</td>
<td>57</td>
<td>2280.0</td>
</tr>
<tr>
<td>1100</td>
<td>593</td>
<td>57</td>
<td>2280.0</td>
</tr>
<tr>
<td>1200</td>
<td>649</td>
<td>57</td>
<td>2280.0</td>
</tr>
<tr>
<td>1220</td>
<td>660</td>
<td>60</td>
<td>2400.0</td>
</tr>
</tbody>
</table>

*Summary of the tests conducted in the SPI laboratory from 8-1-18 to 9-30-18

*Ambient temperature during the tests from 65°F(18°C) to 82°F(27°C), moderate air movement.

---

### SUPERIOR PRODUCTS INTERNATIONAL PRESENCE

**Asia**
- China
- India
- Indonesia
- Japan
- Korea
- Malaysia
- Singapore
- Taiwan

**Europe**
- Azerbaijan
- Belgium
- France
- Germany
- Greece
- Italy
- Netherlands
- Poland
- Russia
- Spain
- Turkey
- Ukraine

**Middle East**
- Oman
- Saudi Arabia
- UAE

**South America**
- Argentina
- Brazil
- Chile
- Colombia
- Venezuela

**Central America**
- Panama
- Puerto Rico

**Africa**
- Angola
- Egypt
- Nigeria
- South Africa
- Tanzania

**Australasia**
- Australia
- New Zealand

**North America**
- Canada
- Mexico
- U.S.A.