

AUSPREG UV CASE STUDY

A Manufacturing plant uses large scale gas fired industrial ovens to evaporate liquid solvents from polyester substrates. It was found that considerable heat was lost through heating pipes filled with boiling hot oil and attempts at keeping layers of insulation on the pipes was unsuccessful due to high levels of heat as well as vibrations coming from the equipment while in use.



Figure 1 – Wide shot of current insulation mounted over hot oil pipes



Figure 2 – Auspreg UV #946 is applied in strips

A UV Curable resin impregnated fibreglass from Australian Composites, article #946 was used as a means of long term structural reinforcement to secure fibreglass insulation to the pipes that provides additional heat retention and insulation properties and secures the insulation to the pipes.

The material was chosen as it is easily applied, light weight, can be cured with light in a matter of minutes, does not require any ovens or refrigeration, and was supplied in narrow width rolls to make application very simple.



Figure 3. – A technician applies the UV curable pre-preg in small over lapping strips over existing fibreglass.

Because the product has limited styrene emissions and a pre-applied set resin content, the prepreg is applied to the pipes without requiring any additional resins to be spackled on.



Figure 4 – Shrink wrapping the pre-preg in anticipation for the vacuum process

Once the UV curable prepreg was applied to the whole pipe structure, it was covered in plastic. The plastic was then heated and shrunk to pressurise the prepreg and squeeze out any tiny air bubbles. This ensures that the prepreg adheres to itself and all surfaces with no potential areas for air to collect which creates vulnerable structural points.



Figure 5. Shrink wrapping the pre-prep to ensure air removal from the prepreg layers

High intensity (1000w) commercially available lighting was then set up to cure the prepreg while it was in the shrink wrap. Lighting was kept on for approximately 5 minutes while the prepreg cured and hardened. A simple test is available to determine cure, simply touch the product and if it is dry, the product is likely cured. No further curing or post curing is necessary. The product cannot be over cured so there is no concern for having too much light or too long an exposure to light.



Figure 6. Lighting in the 360-420 lumen, visible light range is applied via a 1000w commercially available work light



Figure 6. Once cured, the plastic wrap is removed

After several minutes of exposure to light and after determining the prepreg has cured, the plastic wrap can be removed by hand.



Figure 7. – The completed UV curable pre-prep wrapped oil pipe

With the procedure completed, it is expected that the company will receive the following benefits from the process:

- Substantial reduction in heat loss
- Reduced energy costs due to greater insulation
- No need to replace fibre glass
- Increased strength of pipes
- Increased safety due to pipe reinforcement
- Reduced maintenance costs - once the pre-preg is installed, no further maintenance is required

Auspreg UV pipe wrap prepregs can be used for corrosion protection, pipe repair, pipe insulation, and pipe support.

For more Information about UV Curable prepregs, contact:

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