

Composite layer prevents burns

INDUSTRIAL FIBERGLASS
Specialties Inc (IFS) has developed a hybrid steam manhole cover that includes an insulating layer of fibre reinforced polymer (FRP) composite to prevent burns.

"Engineers looked at cast iron with conventional insulation, but this did not provide enough reduction of heat transfer," says Ted Morton, President at IFS of Dayton, Ohio, USA. "The composite layer of the hybrid cover meets the need to reduce heat transfer. In addition to protecting against burns, the non-metallic composite layer is a deterrent to scrap metal thieves."

As well as making the surface safer to touch, the composite layer made with AOC's Vipel® vinyl ester resin is said to make the cover stronger.

The manufacturing process for the cover starts with grit-blasting a cast iron 'dish' to achieve a surface that provides excellent bonding between the composite and iron. The prepared surface is coated with Vipel impact-modified vinyl ester. Next, layers of Vipel resin-impregnated glass fibre are manually applied to build a structural composite.

Before the wet laminate cures into a solid state, the service provider's logo is moulded into the top of the cover. Finally, a skid-resistant coating is applied and a serial number is engraved into the surface.

The 0.25 in (6.4 mm) thick composite laminate adds 35 lb (15.8 kg) to the 255 lb (115.7 kg) cast iron dish for a final hybrid cover weight of 290 lb (131.5 kg). The hybrid manhole is 31.2 in (79.2 cm) in diameter.

Testing showed the steel and composite hybrid manhole covers can handle traffic loads up to 100 000 lb (45.4 tonnes). The American Association of State Highway and Transportation Officials (AASHTO) traffic standard specification is 25 000 lb (11.3 tonnes).

"Future versions of the cover under development will be based entirely on FRP," Morton says. "These all-FRP covers will be lighter weight, meet AASHTO requirements, and have even greater thermal insulating properties to protect people and animals from serious harm."

IFS; www.ifs-frp.com
AOC; www.corrosionresins.com



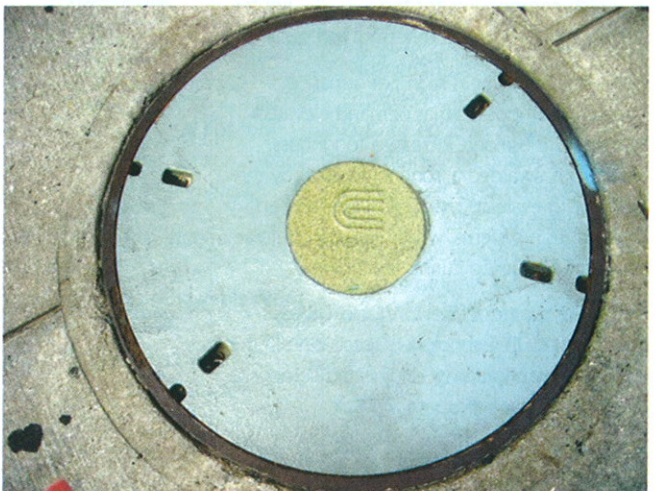
The composite cures into a high-strength, thermally-insulating layer.



A serial number is engraved into each part before shipping.



Production starts by grit-blasting a cast iron 'dish'.



An installed hybrid cover prevents burns and branding.