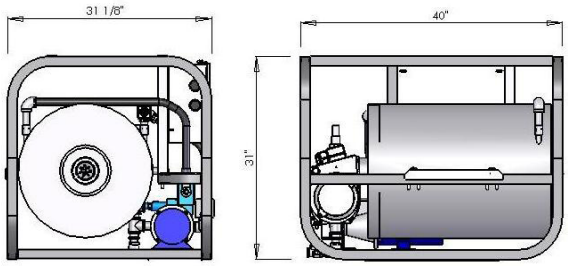
WATER HEATER FOR MOBILE MIXERS

SIOUX
Model M-415

Superior Concrete and Better Profits



HOT WATER ON THE GO

Sioux manufactures a mobile water heater, the M-415. The M-415 is easily mounted on mobile concrete mixer trucks for hot water on the go! Heating with a Sioux water heater is five times more efficient than heating the aggregates.
Pouring concrete at a precise temperature produces higher quality concrete which leads to higher profits.

FEATURES

- 415,000 BTU/hr; heats 500 gallons 100°F in one hour
- Heavy-duty, horizontally mounted 7/8” steel tubing heat exchanger
- Standard 12 volt DC or optional 120 volt AC
- Honeywell Protectorelay with flame monitoring burner control
- Rotary gear type pump with stainless steel shaft
- Fully enclosed TEFC 1/2 HP motor
- In-line temperature gauge with adjustable tank temperature control and pressure gauge
- Preset high temperature limit switch and low flow cut off switch
- Electrical controls with on/off switch for water circulation pump and burner
- Stainless steel or brass fittings, valves, and plumbing on inlet and outlet of coil and pump
- Oil fired burner with fuel consumption of 3.5 GPH
- Approximate shipping dimensions; 52”L x 38”W x 38”H
- Approximate shipping weight: 520 lbs.

COLD WEATHER CONCRETE

Overview

Concrete is a universal construction material used all over the world in almost every type of environment and condition. With the constant demand for concrete, construction companies produce concrete year round.

Cold weather pouring can sometimes create a challenge in the concrete industry. Cold weather has generally been defined as a period of three or more days, midnight to midnight, during which the temperature stays below 40°F. Due to demand, major companies continue concrete placements during cold weather months.

Searching for methods to continue year-round operations is common practice. Reducing the "in place" cost of concrete production is of utmost importance in the industry. With constant, regulated water temperature, high-grade concrete can still be placed.

What does cold weather do to concrete? There are several issues that concrete producers may have to deal with when pouring in cold weather. These may include but are not limited to the following: freezing temperatures, imposed loads during construction, and high thermal stress, all of which may lead to cracking and reduced strength.

Mixing the concrete with cold water or in nearly freezing temperatures reduces the compression strength up to 50% and increases set up time.

Solutions

How can producers deal with Mother Nature? Even with the harsh and sometimes bitter cold, there are many things producers can do.

Considerations include providing sufficient insulation blankets on heaters, using insulated forms (don't place concrete on frozen sub grade), and using heated enclosures to block wind and conserve heat.

Another option is to use heat in accelerating early concrete strength. By using hot water in the mix, producers can batch mix, transport, place, cure and protect concrete efficiently and effectively during freezing temperatures. Instantaneous water heaters allow batch plants to heat the water, which is five times more effective than heating the aggregate.

Circulating water through a heating coil at 50-100 PSI, fired by either an oil or gas burner, water heaters provide an instant and continuous supply of hot water at the job site.

Water heaters can be used for once through applications with temperatures up to 195°F. or with a storage tank system where a large mass of hot water in an insulated tank can be maintained at a temperature of up to 190°F. . The storage tank system meets the needs of a larger number of customers and a larger on-demand application.

Benefits

Using the proper water temperature increases strength and greatly reduces cracking due to shrinkage. For this reason, many federal, state and local municipalities are now specifying exact pouring temperatures. An instantaneous water heater can help meet these specifications. Using hot water eliminates chemicals and allows faster screeding, creating a better finish. Overall, this process will increase production and profits, while reducing labor costs.

According to the American Concrete Institute, "Under certain conditions, chemical additives such as calcium chloride should not be used to accelerate setting and hardening, because of the increased chance of corrosion of metals embedded in the concrete, or other adverse effects." Problems such as this, as well as "leopard spotting" or darkening are greatly reduced by using the proper water temperature rather than using chemicals.

Concrete Curing

Heat hydration is also a significant contributor to concrete curing-cycle efficiency. In the curing process, there are two critical elements. One is to maintain the correct moisture content and the other is to maintain a favorable concrete temperature for a definite period of time. Concrete strength increases with age as long as these conditions are present for hydration.

Hydration rates are slower during cold weather. A steam generator is a perfect solution to provide good curing during winter months. The steam generator provides low-pressure steam to speed up the curing process in ready-mix, precast, pipe, vault, prestress and block operations. Low-pressure steam curing improves two important factors, moisture and heat, which accelerate the curing process.

Proper curing enhances durability, strength and impermeability. By using a steam generator, the curing area is saturated with 100% pure steam vapor at 100% humidity and the temperature is increased, therefore uniformly heating the concrete and speeding up the curing process, while maintaining optimum humidity.

Steaming can be performed under a tarp or in an enclosed room. Customers report that maintaining a relative humidity between 75-90% and applying a gradual temperature rise of not more than 40°F/hr up to a maximum temperature of 120-140°F achieve the best results. Benefits are increased output and faster turnover of forms. A steam generator unit is also ideal for overflow production, outlying areas, as well as thawing and de-icing aggregates. Using steam generators has allowed precast concrete producers to double or triple form turnover per day, greatly increasing profitability using the same number of forms and workers.

This article was written by Shelby Docken, Service Manager and former Market Segment Manager for the Ready-Mix and Precast Concrete Industry.

Shelby Docken has over 25 years of experience at Sioux Corporation. Sioux has been manufacturing water heaters and steam generators for the concrete industry for over 75 years. Sioux also manufactures a full line of pressure washers, steam cleaners and custom application-specific equipment for various markets. More information on Sioux's line of equipment visit www.sioux.com or call (877) 763-4032.