

# POWERSOURCE

A publication of John Deere Power Systems

Summer 2015

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# CONNOISSEURS OF CONCRETE

MAGNUM CREWS  
ARE MASTERS AT  
WELL CEMENTING

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## ON THE COVER

Magnum Cementing Services operates a fleet of pump trucks dedicated to primary and remedial cementing.

# POWERSOURCE

## COVER STORY

- 6 When it's time to cement an oil or gas well, you need a company with the expertise, equipment, and willingness to do the job right. That's why more and more oil and gas companies in western Canada call on Magnum Cementing Services to perform the work. The Strathmore, Alberta-based company operates a fleet of John Deere-powered pump trucks that are ready to roll onto the jobsite and start pumping a custom cement blend wherever and whenever you need it.

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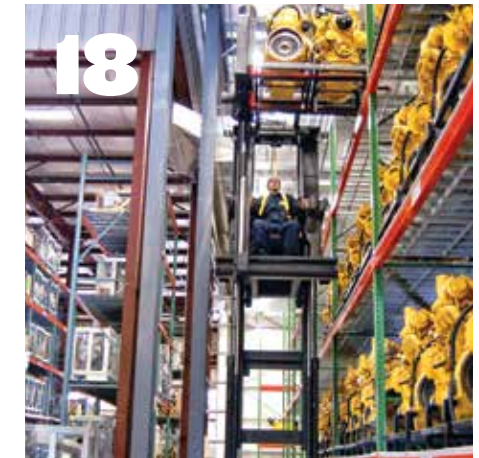
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To learn more about John Deere engines and drivetrain components, visit [www.JohnDeere.com/jdpower](http://www.JohnDeere.com/jdpower).



# TURN UP THE HEAT

## Astro Thermal Tec develops a more efficient way to heat water for hydraulic fracturing

**W**hile oil and water don't usually mix, for those in the business of hydraulic fracturing, the two go hand in hand.

Hydraulic fracturing, or "fracking," requires large volumes of water. In cold climates, such as the oil sands of Alberta, Canada, or the Bakken oilfield in North Dakota, the water must be heated to optimal temperature in order to mix small amounts of specialized chemicals to create fracturing fluid.

One Canadian company offers a way to heat large volumes of water quickly and efficiently. Astro Thermal Tec Ltd. of Brooks, Alberta, manufactures portable high-volume water heaters that can achieve a 30-degree Celsius (86-degree Fahrenheit) temperature rise at a flow rate of 3 cubic meters (20 barrels) per minute.

Not only does it warm a lot of water fast, this will impress you even more: These 25-million BTU, non-pressurized units heat water with 95 percent efficiency. "We knew there had to be a more efficient way to heat water, and we found it," says Lloyd Burt, general manager.

Astro Thermal Tec heaters use technologically advanced burners that apply heat directly to the water in a sealed, non-pressurized vessel.

The heaters' patented waste-heat-collection system captures exhaust and transfers it to the water as an additional heating element to increase efficiency. In fact, the process is so efficient that the unit's stack temperature is only slightly higher than the inlet water temperature.

### **SAVE MONEY; EARN CARBON CREDITS.**

This heat efficiency also translates to fuel efficiency. Astro Thermal Tec heaters consume a maximum of 454 liters (120 gallons) of fuel per hour, nearly 25 percent less fuel than a hot oiler or boiler will consume to achieve the same temperature rise. "In fuel savings alone, you can save around \$600,000 based on 100 continuous days of operation," states Burt. The heaters also produce less exhaust, giving companies the opportunity to earn carbon credits.

When Astro Thermal Tec came to the market with its portable heaters four years ago, the company chose to power the heaters with John Deere-powered gen-sets engineered and packaged by Frontier Power Products. The John Deere engine distributorship in Calgary, Alberta, supplies the gen-sets in three power nodes: a 60-kWe gen-



set powered by a PowerTech E 4.5L engine, a 125-kWe gen-set driven by a PowerTech Plus 4.5L engine, and a 200-kWe gen-set with a PowerTech Plus 6.8L engine.

Astro Thermal Tec receives the gen-sets as complete, skid-mounted packages. "We can install the generator set in four to five hours. Hook up the power leads and fuel lines, and away you go. It's quite easy."

**Burt says the gen-sets are a good fit for the portable water heaters, offering ample power in a compact package. "The gen-set package had to fit inside an 8.5-foot-wide (2.6-meter-wide) trailer, and there needed to be enough room to service it. John Deere gives us horsepower in a smaller engine, which helps us."**

Even more important, the gen-sets supply a steady source of electricity. "We pump water at a specified rate using an electric motor with a variable-frequency drive. We need a steady power source for those drives, and John Deere engines respond quickly to the extra load so the unit can maintain a steady load rating."

After four years running, Burt says he's impressed with the gen-sets' performance, too. "The gen-sets work in cold climates, working 24/7. They start up and may not shut down for eight days. The dependability of the gen-sets has been fantastic. In the four years we've been building these heaters, we've never replaced a single generator set. If we do have a problem with an engine, Frontier Power is quick to respond. They understand that every hour in this business is lost money. For example, when our customer made a mistake and blew out a fuel pump, Frontier Power had them up and running the next morning.

"We've used other engine brands and have had problems in the past," says Burt. "When we find an engine that works, we stick with it."

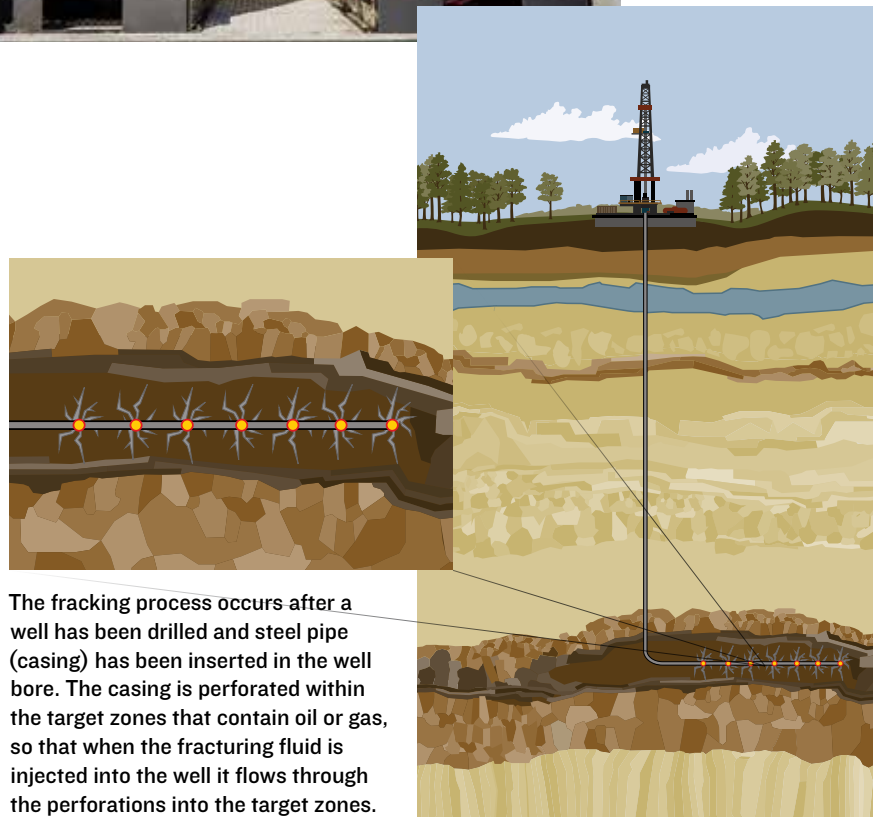
 Engine distributor: Frontier Power Products, Calgary, Alberta, [www.frontierpower.com](http://www.frontierpower.com)



Frontier Power Products supplies the gen-sets as complete skid-mounted power units, ready for installation.



Two 125-kWe gen-sets with PowerTech Plus 4.5L engines supply power to an Astro Thermal Tec non-pressurized water heater. The truck-mounted system is used in the oil and gas sector to heat frack water.



The fracking process occurs after a well has been drilled and steel pipe (casing) has been inserted in the well bore. The casing is perforated within the target zones that contain oil or gas, so that when the fracturing fluid is injected into the well it flows through the perforations into the target zones.