

Big Thinking, Big Solution

A Partnership to Change the World: Fluid Management Specialists Tackle Biofuel Startup's Tallest Order

An industry-leading renewable energy startup in Cambridge, MA, had a tall order—literally. For producing and storing their biomass-free ethanol, they needed cone-bottom cylindrical storage and mixing tanks sized up to four times the height of a grown man and precisely outfitted with openings and fixtures. The task called for ingenuity, precision, and engineering expertise—specifically with plastics. This innovative business makes biofuel by mixing specially engineered photosynthetic bacteria with water and waste carbon dioxide and exposing it to sunlight.

The company had previously called on Terracon to develop some laboratory bench trays in the first days of their novel biofuel venture. Knowing Terracon's solid reputation for customized fluid management solutions, they were 100% confident in reaching out when they opened a pilot plant in Texas, which had the open space and good sun exposure needed for the process.

Challenge

Aside from their unusual size and precise form, the containers needed highly specific components to manage the proprietary fluid mix within them. A cylindrical cone-bottom shape was essential to the fuel-producing process, as was having the storage tanks be made of plastic to let in sunlight while protecting the contents from contamination. Other critical factors were the location and design of the fittings and fixtures needed for the specific functions, and the ability to clean the tanks on-site.

When their pilot plant became a success within two years, they looked to build a biofuel demonstration site in Hobbs, New Mexico. It was a big idea with an even bigger challenge: this time the storage and mixing tanks had to be immense, with the largest capacity 62,000 liters, and Terracon had to get those huge containers to the client's site, meaning days of trucking. State highway regulations banning nighttime or weekend travel for such large cargo added another wrinkle.

Solution

Terracon's accomplished team designed and built the plastic mixing and storage tanks—the largest roto-molded containers in the U.S.—to spec, and then trucked them west. Now, those containers play a most crucial role in the creation of renewable energy using limited space and no biomass.

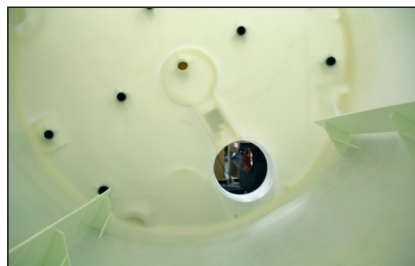
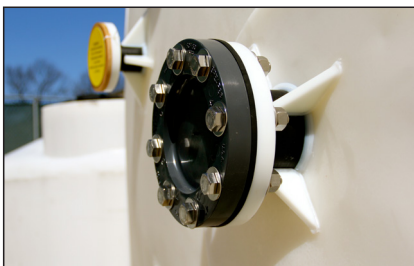


"From idea to solution, Terracon thinks big. This solution is another example of how we grow with you from startup to success. We are proud to be part of a renewable energy solution. Alternative energy is an important issue for our country, and to be the go-to partner to help make this idea a reality in the United States is exciting and very rewarding for our team."

Rob Jewett
PRESIDENT AND CEO
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Specifics of the Solution:

- In October 2009, Terracon developed lab bench-top trays for growing ethanol-producing bacteria for its client's initial concept at its Cambridge, MA, location.
- To get the Texas pilot plant operating in March 2010, Terracon designed six storage tanks (large-scale reservoirs) and three cylindrical mixing tanks, from which the slurry is pumped to a network of solar panels for exposure to fuel the process. These cylindrical cone-bottom tanks ranged in capacity from 65 to 1,400 gallons.
- After the success of the Texas plant, Terracon delivered five much larger storage tanks and mixing tanks for the client's demonstration plant in New Mexico. The largest holds 16,500 gallons, or 62,000 liters, with dimensions of 21 feet in height and 12 feet in diameter. That's BIG, to say the least.

The Impact

In working with Terracon, the renewable energy company found a trusted plastics engineering partner that could work with them right from the beginning, providing increasingly complex solutions as they grow. The startup recently got a huge boost when it partnered with Audi: the German automaker will take on testing and validation of the biofuel for use in cars. No one prior to this had come up with a fully scalable biofuel creation process that requires neither biomass or large land areas. As the company grows and perfects its product, the impact it will have on sustainable alternative energy will be felt around the world.

Fluid Management Solutions for the Toughest Challenges

Here at Terracon, we are problem solvers.

When it comes to challenges related to transferring, mixing or storing fluids, we are your one-stop shop for integrated fluid management solutions.

If your requirements include repeatable cleanability, sanitary processing and/or high purity solutions, our team at Terracon can help. The more complex your need, the more we can help design and manufacture a solution that is cost-effective and works.

Call or e-mail Terracon today for additional information.

Terracon's Core Capabilities:

Innovation & insight – We creatively and cost-effectively solve your fluid management challenges.

Design expertise – Involve us early in the process to save time and money. We focus on bringing new products to market to address the toughest challenges in fluid management.

Engineering know-how – Our team is committed to creative solutions that meet your requirements and exceed expectations.

Manufacturing – From prototypes to production, we offer full-service solutions to get the job done well. We are the leading manufacturer for bringing to market “build to spec” and “build to application” plastic vessels and accessories.

Terracon's fluid management solutions are distributed directly to OEMs via our sales team as well as through resellers and representatives.

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