

Emergency response

Ranch Cryogenics, Inc is providing vital service, from building ASUs amid a high demand for oxygen caused by Covid-19 hospitalizations to weather-related repairs

By Agnes H. Baker

With headquarters in Blackstone Illinois, Ranch Cryogenics, Inc. (RCI) is a one-of-kind company that provides turnkey services for the construction, maintenance, refurbishment, and operation of industrial gas production plants and equipment. RCI works with industrial gas producers of all sizes, including the Majors. Founded in 1987 by the late Mike Duffy Sr., today this family-owned company is led by Mike Duffy Jr., as President and Mike Duffy III (Trey) as Vice-President.

A year of special response

RCI built its reputation on its ability to provide turnkey services for plant construction and relocations. That reputation brought a lot of business their way over the past 18 months as the pandemic drove demand for liquid oxygen beyond existing plant capacities.

During the pandemic, RCI built six ASUs. Three of these were new plants and three were relocated plants. Several plants had to be completed on accelerated time lines.

“When traditional oxygen suppliers were unable to keep up with demand, we had to speed up our time line on a couple of our oxygen plant projects,” Trey told *gasworld*.

“Plants that were supposed to be built on a typical Monday through Friday, 7am to 3pm schedule, became around the clock projects.”

According to RCI, high demand for oxygen continues as the Delta variant spikes Covid cases. RCI was recently contacted by the city of Miami. Trey reported: “Miami is running out of oxygen and we are putting a team together to fix some cold box problems and start up some plants that haven’t been active in years.”

In addition to new plant builds, RCI has been asked to do a lot of emergency cold box repair work during the pandemic. For example, the company recently helped get a 2,500 ton plant back on line on the East Coast. The RCI crew worked continuously for three weeks to make this happen.

A lack of oxygen plants is not the only problem keeping RCI busy. As one of the few companies in the US that provides plant troubleshooting and support, RCI has been involved in many weather-related relief efforts. As damaging storms hit the US with greater frequency, demand for RCI’s repair capabilities rises.

A turnkey approach

Ranch Cryogenics is a specialty

contractor with a special emphasis on gas processing and industrial gases. Through its five divisions, RCI provides plant fabrication, repair and renovation, full construction and relocation or disassembly. It repairs Brazed Aluminum Heat Exchangers (BAHX), and fabricates cryogenic piping, manifolds and skid mounted units. This breadth of services makes RCI unique in the world of industrial gas plant companies.

RCI’s **Cold Box Specialist and BAHX Repair Services** is its most up and coming division and represents about 25% of its business. When RCI builds a cold box in its Illinois shop it involves every facet of the company. Known for its ability to innovate, RCI recently completed a unique type of repair on a cold box in the Midwest that had a ruptured vessel. Trey explained: “We had to go in and cut half of the cold box off and bring it to the ground as it was beyond repair. This was the first time I have ever seen this done. To fix the problem we remanufactured the cryogenic vessels with heat exchangers in the vessels, installed them in a cold box, and then reinstalled the two cold boxes together.”

While the Cold Box division provides all cryogenic services, RCI Mechanical supports the “warm end” of the plant.



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From its mechanical and shop facilities in Blackstone, Illinois, this division provides pipe and equipment skid fabrication. Here, RCI maintains a staff of qualified and certified pipe fitters and welders for carbon steel, stainless steel and aluminum, TIG and MIG. A critical part of RCI operations, this division represents about 25% of company revenues.

Plant Operations and Troubleshooting is a third division of RCI and one that helps make the company especially unique. Its staff, with years of field experience, solves plant problems

around the world. Trey related, “Our most inexperienced plant operator has 20 years of experience!”

Equipment and Plant Sales represents a fourth division. The equipment for sale is mostly used. While 50% of RCI’s overall business is with the majors, the company also specializes in building plants for other concerns, many of them smaller customers.

Making the full integration of plant services complete is RCI’s **Equipment Storage and Redeployment** division. The company stores plant related equipment and parts in its yard in Illinois for many of the Majors as well as for other companies. As a business that

specializes in plant relocation, this makes perfect sense. “From our central location in the US we can deploy parts readily to where they are needed,” explained Trey. “As an added bonus, we can also repair or upgrade plants and associated equipment while they are here. With access to 20 acres, I see storage and redeployment as one of our fastest growing divisions going forward.”

State of the business

RCI is one of the few companies in the world with turnkey services that can take a plant project, like the one described below, from commission through operations. In addition to its five integrated divisions, Ranch Cryogenics’



© Ranch Cryogenics, Inc | RCI Mechanical supports the “warm end” of the plant.



© Ranch Cryogenics, Inc | The company stores plant related equipment and parts in its yard in Illinois.

▶ deep list of trusted subcontractors brings tremendous value to an RCI project. “We can do everything from start to finish – including all the details in between,” said Trey. “There are other companies that do pieces of what we do but no one puts it all together like Ranch Cryogenics.”

Recently, RCI added live-streaming to its list of services. To accommodate customers during the lockdown days of the pandemic, RCI had to become adept at using Zoom and other digital platforms, like GoPro, to walk people through plant troubleshooting that otherwise would have been done in

person. Trey said, “We recently ran a project via Zoom for a client in France where we repaired a Brazed Aluminum Heat Exchanger while the client watched.”

The relocation of plants is how RCI got started and demand for those services remains strong. Building plants is also big business. While overseas work is down due to the pandemic, work at home is booming. RCI has about 2-3 more ASUs planned for this calendar year. “We used to build about one ASU a year,” Trey said. “Now it’s three a year. If I had 75 people I could put them to work.” Currently RCI has

about 45 people on staff.

Looking forward

Trey emphasizes that everything RCI offers is focused on providing the best and most comprehensive service to its customers: “My grandfather built this company by providing superior workmanship and with each customer’s unique needs in mind. As we grow, we keep that mission in mind.”

Being family-owned enables RCI to continue to deliver service as Mike Duffy Sr. intended it to be. Recently, a fourth-generation family member, Trey Duffy’s daughter, Marlana Ferrari, joined the team. She brings her talent and skills as a mechanical engineer to the company.

The RCI team is proud of all they have accomplished this past year under challenging circumstances, including the completion of six ASU projects. Trey said, “It has been a privilege to help get the supply of oxygen up during this pandemic. In the years ahead, we will continue to grow RCI’s five divisions. I am particularly excited about the potential of our Equipment Storage and Redeployment division to make our vertical integration of industrial gas plant offerings even stronger.” **SW**

TO ILLUSTRATE THE COMPLEXITY OF THE SERVICES THAT RANCH CRYOGENICS PROVIDES

RCI describes a project from start to finish, below.

We recently relocated a 325 ton oxygen plant from the United States to another country. We began by disassembling the plant in house then shipping it via barge to an ocean port. From there RCI loaded it onto another ship for transport to its end location.

While it was being moved, RCI worked on the upgrade of the plant’s 1990 computer control system. Working with our subcontracted computer integrator, we installed a 2021 state of the art control system.

RCI also had to plan to modify the plant to run at a higher elevation. The plant originally functioned at near sea level but would be operating at an elevation of 10,000 ft. in its new location. To do so effectively, the main air compressor needed modifications and a new motor. We calculated these changes internally and sent them to be done by one of our trusted vendors. All the machinery was refurbished.

Next, at the customer’s request, RCI had to design and fabricate a

pure argon column for the plant as it did not have one. We did this at our Illinois facility, shipped it to the site, and flew our people down to install it. Our mechanical crew delivered it, our plant operations crew oversaw that group’s work, and our aluminum crew built and installed the cold box.

The customer also wanted the plant to produce liquid oxygen and liquid nitrogen. To accomplish this, we procured a used liquefier from another vendor, upgraded it and oversaw its installation.

