

Pioneering Hydroelectric Innovation

with Bauer Gear Motor, Ameridrives,
Marathon Motors & Emrgy “Distributed
Hydropower” Startup



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Together, a Bauer Gear Motor’s BG gearbox with C adapter, an Ameridrives Universal Joint, and a Marathon motor comprise the drivetrain for renewable energy’s next big thing: hydroelectric turbines designed for canals.

About 25 miles northwest of Denver lies the Ralston Reservoir, an 86-year-old, 10,776-acre-foot body of water. About 8 miles upstream lies a 1930s-era canal.

To the average passerby, the canal may appear an unassuming waterway – wholly unrelated to the power source 8 miles south. But that’s not what the team at Emrgy Inc. sees.

“Across America, there are thousands of miles of underutilized water infrastructure,” Emrgy’s Director of Strategic Growth Sean Kenney said. “These waterflows have embedded energy to be harvested, in a quick, modular way. The canal characteristics can accommodate an array of turbines for megawatt-scale power generation projects.”

In 2022, Emrgy installed four more turbines into the canal at Denver Water, a water utility in Arvada Colorado. Emrgy’s installations are made up of turbine modules that each generate 5-25 kilowatts. The power normally offsets individual consumers or is delivered directly to the local electrical grid.

In all, Emrgy’s proprietary turbine design relies on three Regal Rexnord components:

- Bauer Gear Motor BG gearbox
- Ameridrives Universal Joint
- Marathon AC motor

And the Colorado turbines are just the beginning. Thanks to an influx of well-timed government funds, Emrgy is scaling its hydrokinetic turbine business; another 4 turbines have been installed in a canal in California, and two international projects are underway in New Zealand and Italy.

A growing partnership: How Regal Rexnord helped Emrgy build distributed hydropower

Because Emrgy projects deliver power over a 20-year period or more, turbine designs require gearboxes that are rugged, reliable, and water-resistant; able to withstand long periods of time without maintenance checks.

“This is an infrastructure project, a long-term project,” Kenney said. “We are evaluating equipment design based on operating expenses and product lifecycle. Minimizing project downtime with lasting equipment makes for much better project.”

Famous for being rugged and reliable, Bauer Gear Motor’s gearboxes fit the bill.

Emrgy engineers contacted Bauer Gear’s Jeffrey Wolowitz in 2020 to begin customizing a BG gearbox with a C adapter for the turbine powertrain.

“The Bauer product is famous for robustness, longevity for life, long service intervals between changes,” he said. “The Bauer product plays very friendly with water.”

Thanks to high precision machining and helical style gearing, the BG gearbox is 99 percent efficient, another key value proposition for Emrgy; the engineers hoped for fewer mechanical losses through their system, to maximize power generation.

In addition to gearboxes, Emrgy required an ultra-high efficient permanent magnet motor and a Universal Joint coupling. For these components, the company partnered with fellow Regal Rexnord brands Marathon and Ameridrives.

“One of the benefits of being part of a large company is that we can offer small startups like Emrgy entire powertrain solutions, not just single one-off drivetrain components,” Wolowitz said.

Kenney said another benefit to partnering with a company like Bauer was “speed to deployment” Where having the right equipment partner ensures projects are developed and deliver value to customers quickly.

While Bauer Gear Motor is headquartered in Germany, the company serves many customers in North America. To meet those customers’ needs quickly, Bauer staffs a facility in Charlotte, North Carolina, where custom gearboxes are built and shipped in three weeks or less.

“The ‘need for clean power hasn’t been higher’ demand we’re seeing out there pushes us to act fast and having suppliers share that same tenet is awesome,” Kenney said. “Not too many energy-generating assets can go from a customer conversation to generating electrons for a consumer in a 6-month period, or even shorter.” Bauer plays a role in that meaningful claim.

‘Distributed hydropower’ – how does it work?

Founded in 2014, Emrgy has developed its unique product and is quickly commercializing the offering. Unlike conventional hydropower, which requires gravity drop and head pressure for effective operation, Emrgy’s technology optimizes only on the kinetic energy or velocity of the volume of water flowing through a channel.

Emrgy is excited to pioneer the movement away from large hydroelectric dams to smaller systems that add scalability and speed to hydroelectric generation without ecological impacts.

Kenney thanked the Bauer team for being an early supporter. “Bauer has stayed with us for quite some time,” he said. “When we look at our company lifespan ... not just our shorter commercial years ... Bauer has been a part of all of that. That early investment is huge, when a startup is looking at who is providing equipment.” Wolowitz said partnering with Emrgy was an easy decision, given Bauer’s commitment to renewable energy as a key industry.

“I’ve been involved with prototypes that actually had a paddle wheel mounted on a pontoon boat that was tied off to trees in a local stream to generate electricity,” Wolowitz said. “This distributed-hydropower technology has been around for quite some time, but Emrgy is a successful, scalable startup.”

Learn more about Emrgy by visiting their [website](#). Visit the [EPA website](#) to learn more about distributed generation technology and its environmental benefits.



Bauer Gear Gearboxes with C Adapter Motor Connection For Distributed Hydropower and Hydropower Applications



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