



US DRIVES, INC.

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US Drives, Inc. Industry Experience Making Reliable Inverters

The Engineering/Design group of US Drives, Inc. came from the AC Drive Research and Design group of the former Emerson Industrial Controls located in Grand Island, NY. US Drives, Inc. engineers have many years of experience in designing very reliable inverters. US Drives, Inc. was formed in 1995.

US Drives, Inc. started manufacturing the Phoenix line of inverters in 1996. The drives were designed to fulfill a need of a very rugged inverter for very high performance applications.

US Drives, Inc. manufactures standard inverters from 3HP to 3000HP, with voltage ratings of 240/480/600VAC, which are used to control AC motors for all kind of industries and applications.

US Drives, Inc. also manufactures a line of AC Regenerative inverters. These inverters are specifically designed to send the regenerative energy from an AC motor to the AC grid. US Drives, Inc. has supplied these AC Regenerative inverters to almost all major AC Drives manufacturers. Some of the major Drive Manufacturers refer their distributors and customers to US Drives, Inc. for AC Regenerative inverters.

US Drives, Inc. engineers have been designing High Carrier PWM inverters since the early 1980's when the power transistor block was invented. The high level of our inverter reliability was achieved by incrementally improving our designs. We believe in incremental changes made to proven designs. Most of our changes have to be tested at selected beta sites before the changes go into production. Every customer's feedback is taken seriously and reviewed by the design group, unlike most companies where customer feedback never reaches the design engineers.

US Drives, Inc. has products still running in the field that were produced in 1996. We know that because many of our customers call us to report a message displayed after 100,000 hours of runtime. This runtime timer was added for users to view and program for their own applications. We have found that most users did not know or did not use this feature. Consequently, when after 100,000 hours of inverter runtime, the inverter displays a message (without affecting the operation of the system), the customer calls inquiring about this message.

In our designs, we limit the number of different components used by not creating new ones. We do this mainly to cut production costs and limit errors during production by limiting the number of different components. This has a positive side effect on reliability. Any new component no matter how small has to be approved before adding it the comprehensive master list.

We have many customers that have switched to using US Drives, Inc. inverters, after having problems with inverters from some of the larger inverter manufacturers. In one case, an internationally known company switched to using US Drives, Inc. inverters after having inverter reliability issues with those supplied by a larger inverter manufacturer. The internationally known company, that made the switch, has a very tough environment in their production facilities. The very first US Drives, Inc. inverter supplied to them was a 500HP unit that was shipped by a chartered airplane as an emergency breakdown replacement.

We do not sacrifice reliability by cutting costs to improve sales. We have seen in the industry, many if not all competitors, cutting the size of the capacitor bank to improve cost at the expense of product life and reliability. We have sized our capacitor bank in most our products to be at least double that commonly used in the industry.

We do not compete with cost as a main factor. Most of our inverters are sold due to performance, reliability and customer support long after the sale. Cost alone is not the determining factor. US Drives, Inc. never compromises reliability for cost reduction.

Almost all of our inverters end up in applications where high performance and high reliability is a must.

Below is a small sample of the applications that US Drives, Inc. has supplied Inverters for:

- **PCP Regenerative Inverter with Backspin Flycatcher for the oil industry. Example: 200 HP with input AC line harmonic filter and output sine wave filter. Customer: Cameron (Venezuela).**



- **Grid-tie Solar Inverters for Nextronex, Inc. under an exclusive supply agreement. Nextronex, Inc. has an installed base of 50 MW of these grid-tie solar inverters.**



- **ESP Inverters for the oil industry (Middle East). Example: 1350 HP 18-pulse inverter with sine wave output filters driving medium voltage AC motors. Customer: Wood Group ESP**



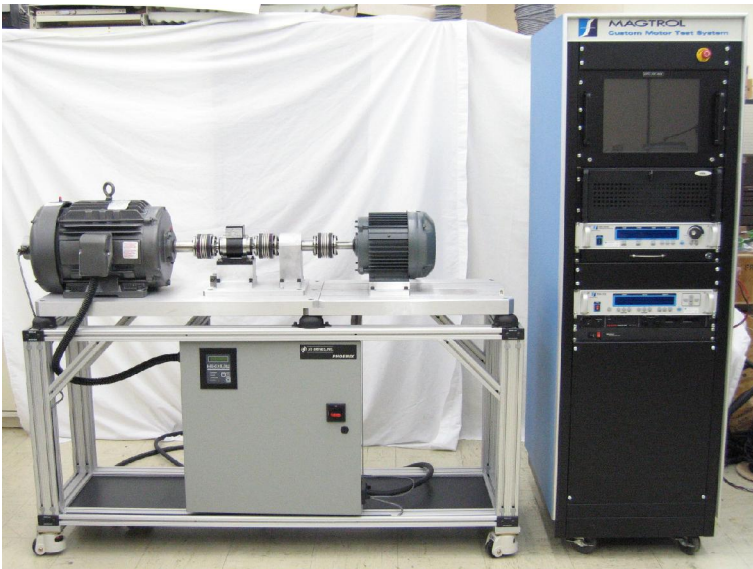
- **Deep Well Injection Regenerative Inverters with Power Recovery for Farm Irrigation. Example: 300 HP. Customer: Madison Farms**



- Prime Mover Inverters for Load Stands. Example: 2000 HP. Customer: Michigan Industrial Controls



- Regenerative Inverter for Dynamometer. Example 20 HP. Customer: Magtrol



- AC Regenerative Inverters for Motor Test Stands. Example: 400 HP. Customers: Regal-Beloit



- **Bow Thruster Inverters** ABS and DNV certified by our customers. **Example: 200 HP. Customers:** Thrustmaster of Texas, Keppel Amfels, Beeco Motors and Controls.



- **Irrigation Inverters for the Farming Industry.** 12-pulse inverters with step-down input transformers and step-up output transformers to control medium voltage AC motors. **Example: 900 HP, 1500 HP. Customer:** Priest Electric.



- **Irrigation Inverters, NEMA 3R Enclosed for the Farming Industry.** With input AC line harmonic filter. **Example: 250 HP. Customer:** Electric Motor Service.



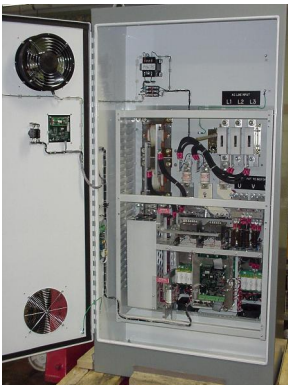
- **Rock Crusher and Vibratory Feeder Inverters for the Quarry and Mining industry. Example: 800 HP. Customer: Graymont Western, Electrical Control Techniques.**



- **Induced Draft Fan Inverters for Boiler Control. Example 400 HP. Customer: Clarage, USAF base, Eielson, Alaska**



- **Hot Fan Inverters for the glass industry. Example: 300 HP. Customers: Cardinal FG.**



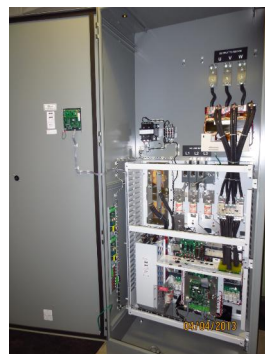
- **Natural Gas Compressor Inverters. Example: 800 HP. Customer: Johnstown Regional Energy.**



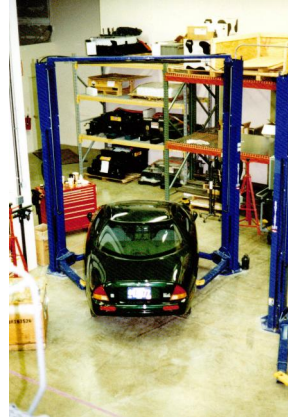
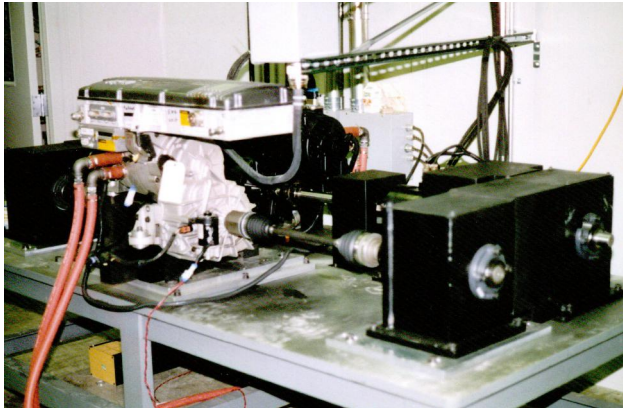
- **Autoclave Inverters for the Military and Commercial Aircraft Industry. Example: 300 HP. Customer: Taricco**



- **Ventilation Fan Inverters for the gold mining industry. Example: 150 HP, 350 HP Customer: Eptron, Inc.**



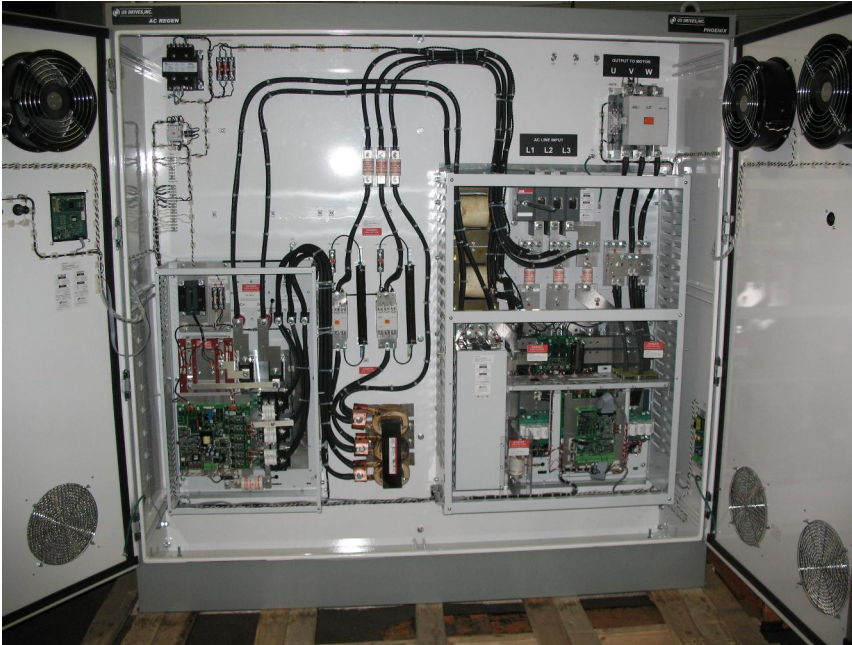
- **When GM introduced their first all electric car the EV1, US Drives, Inc. was asked to develop a test inverter to simulate real driving conditions and to life test the electric motor used in the electric car. Later on US Drives, Inc. also was asked to develop a test inverter for the hybrid car electric motor. The inverters were shipped after GM engineers witnessed the test and approved the inverters with their new hybrid engine.**



- **In the Buffalo area, National Grid, the electric utility only recommended and sent their customers who were using their 25 Hz power to US Drives, Inc. The 25 Hz power was being phased out to be replaced with standard 60Hz power. Their 25 Hz power customers were looking for some way to retain their 25 Hz switchgear and motors in their factories. US Drives, Inc. developed and supplied a special inverter / filter to convert 60Hz power to 25 Hz power for 25 Hz power users in Buffalo and Niagara Falls, Canada region.**



- **US Drives, Inc. has supplied the US military, Regenerative AC Drives to test helicopter engines and gearboxes.** These inverters have to meet very difficult specifications that others in the industry have failed to provide. **Example: 250 HP. Customer: Electrical Control Techniques**



- **Draw Works and Mud pump Inverters for the oil industry. Example: 1200 HP Regenerative Draw Works Inverter and 1000 HP Mud Pump Inverter with input power supplied by diesel generators.** Customers: Stewart & Stevenson, Estrella Servicios Petroleros S.A.



- **Customer Honeywell – Nema Type 4 Outdoor Application**



- **Stainless Steel Inverters for Food Industry in California**



- **Salt Lake City Drain Water Pumping/Recovery**



- **Extreme Water Tubing Ride 15HP, 25HP, & 75 HP**



- **GAO Building Washington DC (US Drives, Inc is the only approved inverter)**



- **Grand Canyon Pumping Station 800HP Inverter**



- Webco Industries, Cold Drawn Mechanical Tubing, 800HP Regenerative Closed Loop AC Drive

