Marine

BONITRON

Centrifuges
Cranes
Drawworks
Propulsion & Thrusters
Pumps
Top Drives
Winches
+ More!

Why Bonitron?

- Decades of proven success
- Quick delivery and support
- Maximize uptime to increase ROI
- Strong reputation for quality

Marine Options

- Stainless Steel resistors
  - 306, 316, etc.
- Conformal coating option on electronics

Products

Braking Resistors
Braking Transistors
Common Bus Power Supplies
Line Regeneration
Uninterruptible Power for Drives

Propulsion & Thrusters

Untethered Rigs

- Platform barge must move with great precision
- Side thrusters stop or change direction quickly, causing the DC bus voltage level to rise

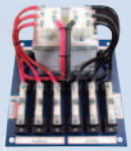
Requirement

- Requires overvoltage protection
- High power braking with varying duty cycles

Solution

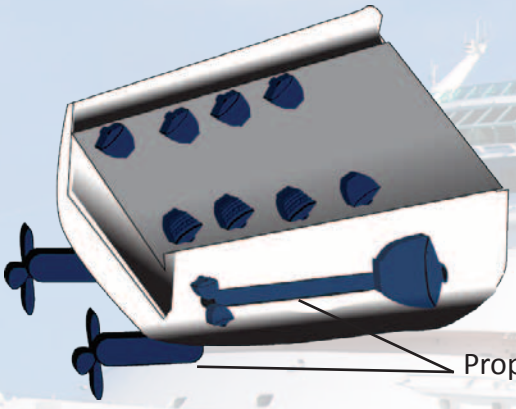
- Braking Transistor (M3452 or M3575T) and M3775R Braking Resistor

Bonitron Solutions



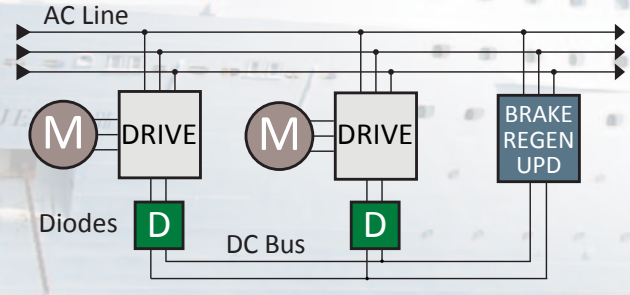
Common Bus Sharing Diodes

- M3345CBM
- Allows for shared power and components between drives on the DC bus
- Prevents potentially damaging circulating currents between drives



Common Bus Isolation Diodes

- M3460D
- Allows one-way flow of power
- Create a common DC Bus to share components while isolating the drives from each other



Diesel-electric propulsion systems are common in marine vessels and allow for improved maneuvering abilities and more efficient operation. A diesel-electric propulsion systems includes a diesel-driven generator, which provides electric power for propulsion, variable speed drives (VSD), and electric motors. The electric motors are able to change speed and direction rapidly, allowing for high precision movement.

VSDs in Diesel-electric propulsion systems are susceptible to overvoltage trips. When the ship stops or makes quick changes in directions, the DC bus voltage rises, causing the overvoltage trip on the drive. A typical offshore oil platform barge may see many of these overvoltage situations while maintaining position in the ocean. Also, systems with multiple motors and drives require more wiring and equipment.

Bonitron Overvoltage Solutions regulate the drive's DC bus voltage during overvoltage situations so that the propulsion system will operate without interruption. For systems with multiple drives, a Bonitron Common Bus solution will reduce wiring and save space. Bonitron's Sharing Diodes allow for the regenerative power from one drive to be shared with another drive on the shared DC bus. If isolation is required, Bonitron's Isolation Diodes allow only a **one-way flow of power** and do not allow drives to share power with each other, completely isolating the drives from each other, while sharing components.

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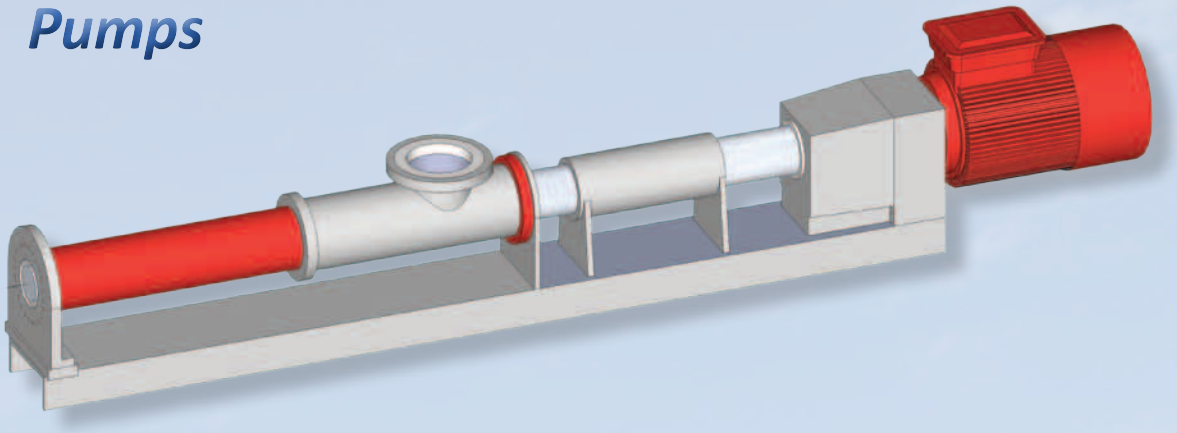
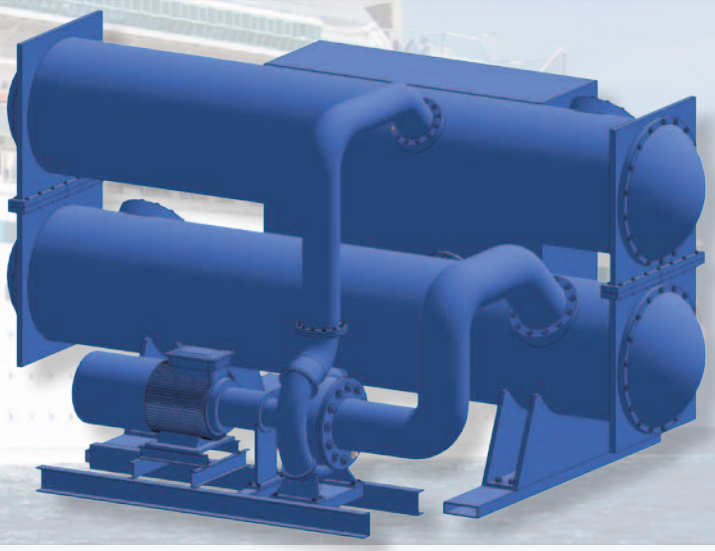
Pumps



Ships house many types of pumps, including mud pumps and process cooling pumps. It is critical for these pump applications to have constant, uninterrupted power. If the drive running the cooling pump loses power and trips on an undervoltage condition, the process may overheat and experience several hours of downtime. The mud used in oil drilling on offshore oil platforms is required to lubricate the drill bit. If a drive trip due to undervoltage stops the mud pump's operation, the drilling operation is brought to a stop. The Bonitron Uninterruptible Power for Drives (UPD) System prevents these undervoltage drive trips, resulting in more uptime for ship operations.



Bonitron Solutions

UPD Uninterruptible Power for Drives

- Protect from power sags and outages
- S3460 and S3534 Series
- Various sizes and durations available

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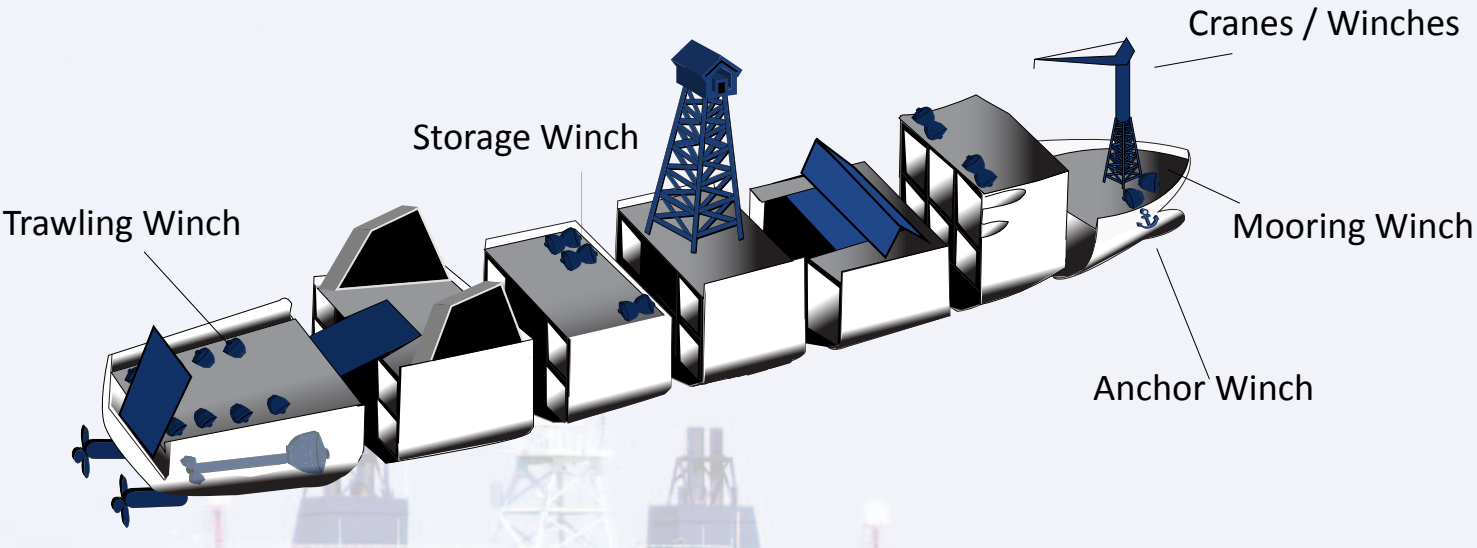
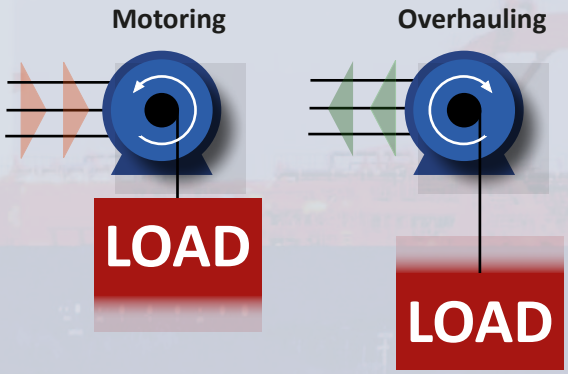
Winches



Winches are used to mechanically pull in, let out, or adjust the tension of a cable, chain, or rope. They are used in many different ways in a ship, including raising and lowering the anchor, mooring, and deploying equipment. Winches are commonly powered by a variable frequency drive and three-phase motor. When lowering a load or keeping tension on a cable, regenerative energy is created. This energy could cause overvoltage faults on the drive and bring the operation to a stop.

Bonitron offers Braking Transistors, Resistors, and Line Regeneration units to absorb the excess regenerative energy created. Many applications allow the regenerative energy to be placed back on the available AC line, which can be done with our Line Regeneration units.If the application prevents use of a Line Regen because of the size of a generator, a Transistor and Resistor are available to protect the generator from energy feeding back into the generator. Please contact Bonitron before sizing or using a Line Regen on a generator powered system.



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Centrifuges

Bonitron Solutions

Line Regeneration

- No resistor necessary
- 150% overload for 60 seconds
- Simple hook-up with no software setup
- Over 99% efficient

M3545

- Single or 3-Phase
- 208 - 480VAC support
- Single Phase - 5A cont. each
- 3-Phase - 15A cont. each

M3645

- 208 - 600VAC support
- 100A continuous each
- Digital display with event logging

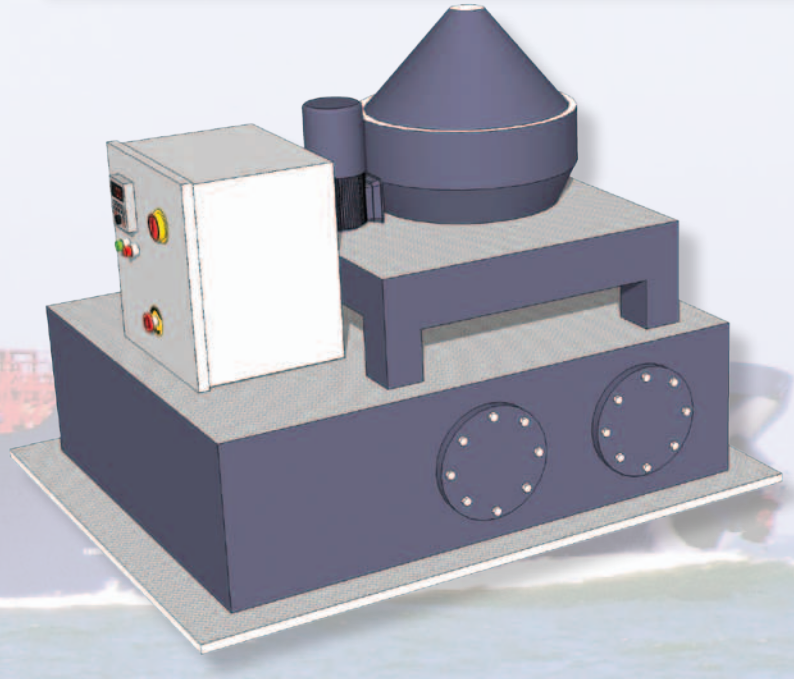
- Generally used for removing water from fuel or hydraulic fluid or lubrication oil

Requirement

- Requires a brake to quickly slow/stop to prevent delays by coasting to a stop

Solution

- Braking Transistor - M3452 Heavy Duty or M3575T Standard Duty
- M3775R Resistive Load Bank
- M3545 and M3645 Line Regeneration Unit



Braking Transistor

- M3452 or M3575T
- Up to 1600A per unit (Master/Slave Capable)
- Local and remote status monitoring
- System can be reconfigured on-the-fly

Resistive Load Banks

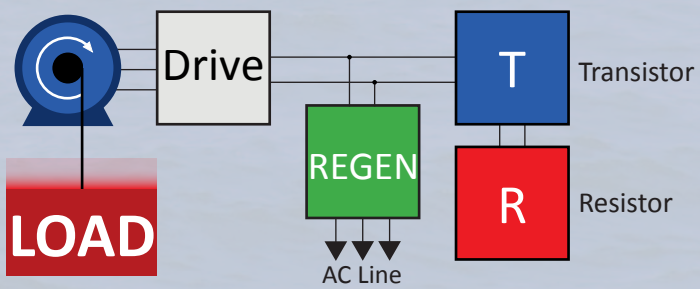
- M3575R or M3775R
- Ratings up to MegaWatts
- Galvanized steel enclosure
- NEMA-3R and stainless steel options

Common Bus Power Supply

- M3712, M3713
- Power 3-Phase drives from single or 3-phase source
- Create a common DC Bus

Combination

A regen is most effective for frequent or continuous braking up to 300A, while a transistor/resistor is more suited to higher peak loads for shorter durations, such as emergency stops. If necessary, transistor/resistor and regen units can be used together for a more efficient solution where the ***regen handles continuous braking needs and the dynamic brake activates when the regen's capacity is surpassed.***



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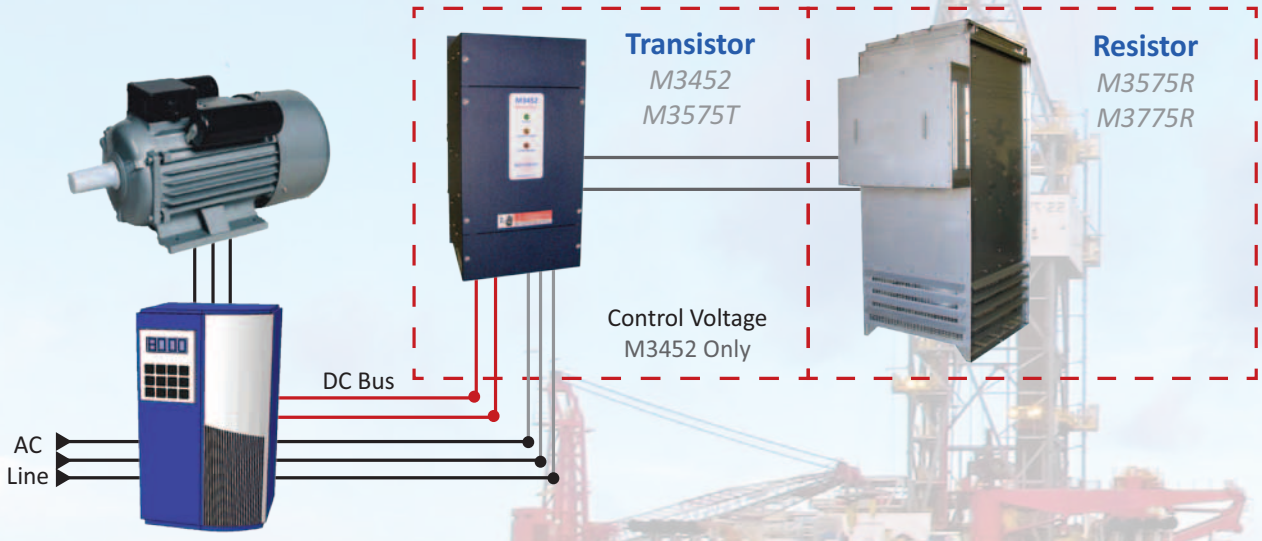
Draw-works / Rotary Table / Top Drive

Draw-works and Top Drive/Rotary Table drilling rigs drill holes into the earth in order to extract petroleum. Most of these rigs utilize variable speed drives (VSDs) to control the AC motors that raise and lower the travelling block (done via draw-works), as well as the spinning of the drill bit (done via top drive or rotary table).

Time is money in the oil industry. The faster the draw-works lowers (referred to as "tripping in") the drill string back into the borehole after adding an extension, the better. The drill string is dropped and then slowed rapidly before coming to a stop. This rapid deceleration produces regenerative energy from the AC motors and requires drive overvoltage protection, commonly in the form of a Braking Transistor and Resistor.

A Top Drive or Rotary Table spins the drill string. Drill strings can be thousands of feet in length, so it is common for one end of the string to be spinning faster or slower than the other end (just as if you were to spin on end of a shoe string). Overvoltage protection on the top drive or rotary table is necessary in these cases to control torque on the drill string.



Bonitron Solutions

Braking Transistor

- M3452 or M3575T
- Up to 1600A per unit (Master/Slave Capable)
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Resistive Load Banks

- M3575R or M3775R
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Draw-works

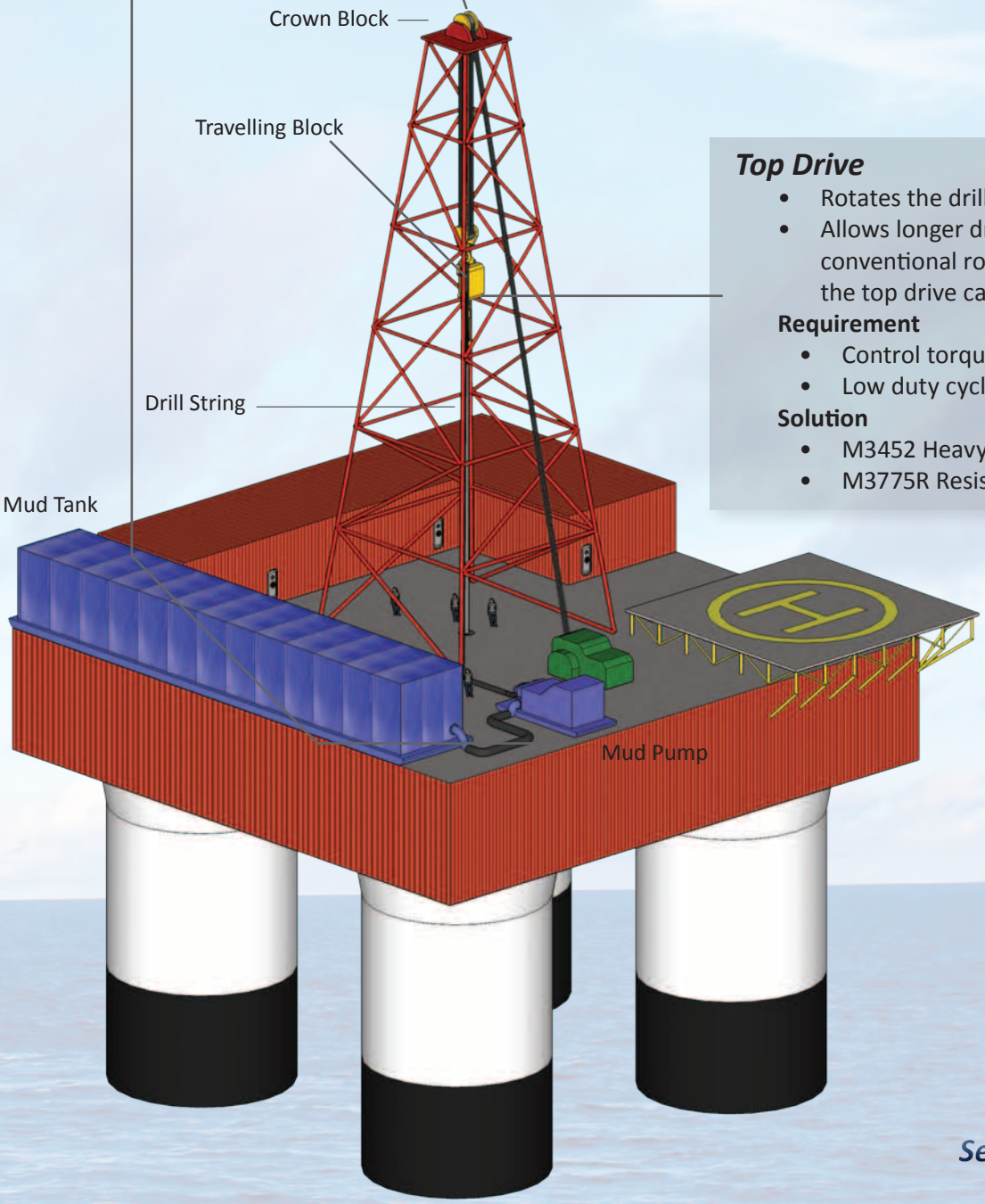
- Raises and lowers traveling block
- Lowers string into borehole as fast as possible without hitting drill bit at the bottom
- Stops the heavy drill string quickly (requiring overvoltage protection)

Requirement

- HIGH peak power
- Low duty cycle braking

Solution

- M3452 Heavy Duty Braking Transistor
- M3775R Resistive Load Bank



Top Drive

- Rotates the drill string
- Allows longer drill string sections than conventional rotary table style rigs, as the top drive can move up the rig

Requirement

- Control torque on drill string
- Low duty cycle braking

Solution

- M3452 Heavy Duty Braking Transistor
- M3775R Resistive Load Bank

bonitron.com/industry-oil.html

See our Oil & Gas Brochure for more information

Bonitron UPD Lite allows your process to move to a safe position in the event of a power failure

UPD Lite

- Cost effective emergency power system for processes that do no require uninterruptible power
- Sized to 10-20% of the drive HP
- Provides low speed, safe shutdown or reset to default position

Additional Solutions

bonitron.com/industry-marine.html

Scan the QR code to learn more about Bonitron Marine Industry Solutions

Connect to any brand VSD with DC bus connections

Common Bus
Single Phase Power Supplies
3-Phase Power Supplies
Common Bus Sharing Diodes
Isolation Diodes
Bus Filter Capacitance

Maintenance
Capacitor Formers
Capacitor Testers

Overvoltage
Braking Transistors
Braking Resistors
Line Regeneration
Braking for Servo Drives

Undervoltage
Uninterruptible Power for Drives (DC Bus Ride-Thru)
Voltage Regulators
Chargers and Dischargers
Energy Storage

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