

Brass. A hard, strong, corrosion-resistant *alloy* made by combining copper and zinc. See also *naval brass*.

Breadboard. In electronics, a surface upon which to build and test a *prototype circuit*. May be as simple as a piece of plywood or as complex as a commercially available circuit prototyping station.

Breadboarding. The process of assembling a *prototype circuit* for testing. See also *breadboard*.

Breaking wave. See *surf*.

British Thermal Units (BTU). An *imperial* unit of *energy*. One BTU = about 1055 *joules*.

Bronze. A hard, strong, corrosion-resistant *alloy* made by combining copper and (usually) tin.

Brushed direct current (BDC) motor. A type of *DC motor* that relies on a mechanical *commutator*. The name derives from the fact that these commutators have spring-loaded, electrically-conductive pads or contacts, called “brushes,” which transfer *electrical current* from the non-moving *stator* to the spinning *rotor*.

Brushed motor controller. A *motor controller* designed for use with *brushed DC motors*.

Brushless direct current (BLDC) motor. A type of *DC motor* that relies on a solid-state electrical *commutator*, which may be located inside the motor but is frequently located outside the motor in a separate circuit. A *BLDC* lacks the “brushes” found in the commutator of a typical *brushed DC motor*.

Brushless motor controller. A *motor controller* designed for use with *brushless DC motors*.

Bulkhead. A sturdy wall or partition in a ship, *submarine*, or airplane to provide structural support and/or separate the space. On ships and submarines, they are often designed to be very strong and are equipped with water-tight doors and *penetrators*, so that sections of the vessel can be sealed off from the others in the event of a serious hull breach or other flooding.

Bulkhead penetrator. A *penetrator* designed to seal a hole in a *bulkhead* or other flat wall. Commonly used to pass electrical *power* or *signals* through the *endcap* of a *pressure canister*.

Buoyancy. The overall tendency of an object to float in a fluid. Buoyancy is a *force* that depends on both the *weight* of the object and on the *buoyant force* acting on the object. It is exactly the opposite of a quantity called the *effective weight*.

Buoyant force. The upward *force* exerted by a *fluid* on an object that is partially or completely immersed in it. Affects the *buoyancy* of the object by partially or completely offsetting the object's *weight*.

Byte. A set of eight *bits*.

C

Cable. In an electrical context, two or more *wires* bundled together for transmission of electrical *power* or information.

Cable-controlled Undersea Recovery Vehicle (CURV). One of the earliest types of *ROVs*. Developed by the US Navy in the 1950's to recover valuable military ordnance (weapons) lost at sea.

Caisson disease. See *decompression sickness*.

Calorie (Spelled with capital “C”). A *metric* unit of *energy* equal to one *kilocalorie*, or 1000 calories. Same as the dietary *Calorie* often used on food labels.

calorie (Spelled with lower-case “c”). A *metric* unit for *energy* defined as the amount of heat energy it takes to raise the *temperature* of one gram of pure liquid water by one degree centigrade. One calorie is equivalent to about 4.184 *joules*. Note that 1 Calorie = 1000 calories, so you must be extremely careful about capitalization of this word.

Camera. A device for recording light-based images. See also *board camera*, *CCD camera*, *CCD image sensor*, *CCD video camera*, *IP camera*, and *web camera*.

Camera port. A *viewport* designed specifically for a camera.

Can. See *pressure canister*.

Canister. See *pressure canister*.

Capacitor. An electronic component that stores *energy* in the form of an *electric field*.

Capture frame. A type of *LARS* in which the vehicle is securely held in an elevator-like system that moves along a set of vertical tracks or rails. Constrains the *ROV's* movements so that it cannot damage itself or the launch *platform* during the transition through surface *waves* and swell. Also called a *cursor system*.

Card cage. A rack or similar frame-like structure that supports *printed circuit boards* or other electronic components inside a *pressure canister* and can be slid out of the *canister* to simplify accessing and servicing of the circuits.

Casting. A shape formed by pouring molten *metal*, polymer resins, or other liquids into a mold, then allowing the liquid to harden.

Caterpillar drive. See *magnetohydrodynamic drive*.

Cathode. The *wire*, electrode, or other *conductor* on a polarized electrical device through which *electrical current* flows out of the device. See also *anode*.

Cathodic protection. A method of protecting *metal* from *corrosion* by making sure the *metal* you want to protect is the *cathode* in any corrosive electrochemical reactions that might be taking place. There are various ways to do this, including *sacrificial anodes* and externally imposed electrical *voltages*.

CB. See *center of buoyancy*.

CCD camera. A camera, either still or video, that uses a *CCD image sensor* to convert a light image into electrical signals, which can be recorded or transmitted.

CCD image sensor. A type of electronic image *sensor* commonly used in video cameras and digital still cameras. Consists of an array of light-sensitive pixels that accumulate *charge* at a rate dependent on light intensity, then transfer that charge via a charge coupled device (hence “CCD”) to circuitry that processes the information into a standard still image or video frame format. Compare *CMOS image sensor*.

CCD video camera. See *CCD camera*.

Center of buoyancy (CB). A single point in or near each partially or completely submerged object that is effectively the *center of gravity* of the *mass of liquid* displaced by the object. Useful as a concept, because many physics and engineering problems involving the *buoyant forces* acting on complex, three-dimensional objects (like *ROVs*) can be solved more easily by assuming that all of the buoyant forces acting on the individual parts of the object can be treated as if they all acted together at the *center of buoyancy*.

Center of gravity (CG). A single point in or near each object that is effectively the average location of that object's *mass*. Useful as a