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Newly Revised and Expanded*

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Standard Dictionary of Electrical and Electronics Terms

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See: fuel cell. 223, 186

fuel-cell working voltage. The voltage at the terminals of a single fuel-cell delivering current into system auxiliaries and load. *See:* fuel cell. 223, 186

fuel-control mechanism (gas turbines). All devices, such as power-amplifying relays, servomotors, and interconnections required between the speed governor and the fuel-control valve. *See:* speed-governing system. 58

fuel-control system (gas turbines). Devices that include the fuel-control valve and all supplementary fuel-control devices and interconnections necessary for adequate control of the fuel entering the combustion system of the gas turbine. *Note:* The supplementary fuel-control devices may or may not be directly actuated by the fuel-control mechanism. *See:* speed-governing system. 58

fuel-control valve (gas turbines). A valve or any other device operating as a final fuel-metering element controlling fuel input to the gas turbine. *Notes:* (1) This valve or device may be directly or indirectly controlled by the fuel-control mechanism. (2) Variable-displacement pumps, or other devices that operate as the final fuel-control element in the fuel-control system, and that control fuel entering the combustion system are fuel-control valves. *See:* speed-governing system. 58

fuel economy. The ratio of the chemical energy input to a generating station to its net electric output. *Note:* Fuel economy is usually expressed in British thermal units per kilowatthour. *See:* generating station. 64

fuel elements, nuclear (nuclear power generating station). An assembly of rods, tubes, plates, or other geometrical forms into which nuclear fuel is contained for use in a reactor. 112

fuel-pressure electric gauge. A device that measures the fuel pressure (usually in pounds per square inch) at the carburetor of an aircraft engine. *Note:* It provides remote indication by means of a self-synchronous generator and motor. 328

fuel replacement energy (power operations). Energy generated to substitute for energy which would otherwise have been generated by a different fuel source. 516

fuel reprocessing, nuclear (nuclear power generating station). The processing of irradiated reactor fuel to recover the unused fissionable material, or fission products, or both. 112

fuel stop valve (gas turbines). A device that, when actuated, shuts off all fuel flow to the combustion system, including that provided by the minimum fuel limiter. *See:* speed-governing system. 58

fulguration. *See:* electrodesiccation.

full automatic plating. Mechanical plating in which the cathodes are automatically conveyed through successive cleaning and plating tanks. 328

full availability (telephone switching systems). Availability that is equal to the number of outlets in the desired group. 55

full-direct trunk group (telephone switching systems). A full trunk group between end offices. 55

full duplex (data transmission) (communication circuit) (telecommunication). Method of operation where each end can simultaneously transmit and receive. *Note:* Full duplex refers to a communications system or equipment capable of simultaneous transmission in two directions. 59

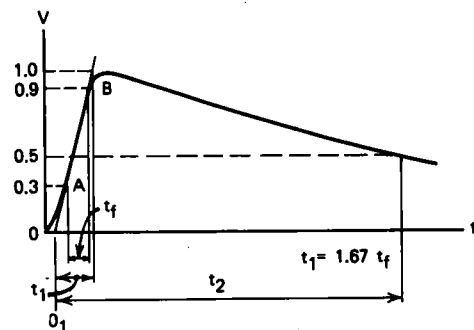
full energy peak (for a monoenergetic photon spectrum for a semiconductor spectrometer system) (X-ray energy spectrometers). The distribution of events within the peak of the pulse-height distribution spectrum representing response to the monoenergetic photon source. *Note:* Notwithstanding other definitions or procedures for subtracting background and other distortions, the full energy peak intensity is defined as not including any events which exceed a Gaussian distribution by more than a factor of two σ . 471

full energy peak efficiency (of a semiconductor radiation detector) (X-ray energy spectrometers). The ratio of the number of events in the full energy peak of the spectral distribution to the total number of photons incident on the active detector volume during the same time interval. 471

full-field relay (industrial control). A relay that functions to maintain full field excitation of a motor while accelerating on reduced armature voltage. *See:* relay. 206

full float operation (large lead storage batteries). Operation of a dc system with the battery, battery charger, and load all connected in parallel and with the battery charger supplying the normal dc load plus any self-discharge or charging current, or both, required by the battery. (The battery will deliver current only when the load exceeds the charger output.) 377

full impulse voltage. An aperiodic transient voltage that rises rapidly to a maximum value and falls, usually less rapidly, to zero. See the following figure. *See:* test voltage and current; full-wave voltage impulse.



Full impulse voltage.

full-impulse wave (surge arresters). An impulse wave in which there is no sudden collapse. 244, 62

full lightning impulse (high voltage testing) (lightning

gyro gain. The ratio of the output angle of the gimbal to the input angle of a rate integrating gyro at zero frequency. *Note:* It is numerically equal to the ratio of the rotor angular momentum to the damping coefficient. 46

gyro horizon electric indicator. An electrically driven device for use in aircraft to provide the pilot with a fixed artificial horizon. *Note:* It indicates deviation from level flight. 328

gyromagnetic effect (nonlinear, active, and nonreciprocal waveguide components). The phenomenon by which the magnetization of a material or medium, subjected to a magnetostatic field, upon disturbance relaxes back to equilibrium by damped precessional motion about the direction of that field. 530

gyromagnetic filter (garnet, YIG)(nonlinear, active, and nonreciprocal waveguide components). A filter whose operation depends on the gyromagnetic effect. 530

gyromagnetic limiter (ferrite, garnet, YIG)(nonlinear, active, and nonreciprocal waveguide components). A power limiter whose operation depends on saturation effects in a gyromagnetic material. 530

gyromagnetic material (medium)(nonlinear, active, and nonreciprocal waveguide components). A material (medium), such as ferrite or garnet, capable of exhibiting the gyromagnetic effect. 530

gyromagnetic permeability tensor (nonlinear, active, and nonreciprocal waveguide components). A tensor

used to describe the permeability properties exhibited by a gyromagnetic material, appropriate to electromagnetic wave propagation. *Syn:* Polder tensor. 530

gyromagnetic resonance absorption (nonlinear, active, and nonreciprocal waveguide components). That amount of power continuously absorbed in a gyromagnetic material subjected to a magnetostatic field when a disturbance causes a steady precession of the magnetization of that material at a rate near the gyromagnetic resonance frequency. 530

gyromagnetic resonance field (nonlinear, active, and nonreciprocal waveguide components). The magnetostatic field which, when applied to a gyromagnetic material, causes gyromagnetic resonance to occur at a particular frequency. 530

gyromagnetic resonance frequency (nonlinear, active, and nonreciprocal waveguide components). The damped natural frequency for precession of the magnetization of a gyromagnetic material subjected to a particular magnetostatic field. 530

gyromagnetic resonance linewidth (nonlinear, active, and nonreciprocal waveguide components). The difference between magnetostatic field levels slightly above and slightly below gyromagnetic resonance for which the gyromagnetic resonance absorption falls to half the peak value. This resonance occurs in a gyromagnetic material with uniformly precessing magnetization at a fixed frequency. 530

H

H (*H* beacon) (electronic navigation). A designation applied to two types of facilities: (1) A nondirectional radio beacon for homing by means of an airborne direction finder. (2) A radar air navigation system using an airborne interrogator to measure the distances from two ground transponders. *See:* navigation. 187, 13

halation (cathode-ray tube). An annular area surrounding a spot, that is due to the light emanating from the spot being reflected from the front and rear sides of the face plate. *See:* cathode-ray tubes. 244

half-adder. A combinational logic element having two outputs, *S* and *C*, and two inputs, *A* and *B*, such that the outputs are related to the inputs according to the following equations:

$$S = A \text{ OR } B \text{ (exclusive OR).}$$

$$C = A + B.$$

S denotes sum without carry, *C* denotes carry. Two half-adders may be used for performing binary addition. 77

half-amplitude recovery time (Geiger-Müller counters). The time interval from the start of a full-amplitude pulse to the instant a succeeding pulse can attain an amplitude of 50 percent of the maximum amplitude of a full-amplitude pulse. 96

half cell. An electrode immersed in a suitable electrolyte. *See:* electrolytic cell. 328

half coil. *See:* armature bar.

half duplex (communications) (data transmission). Pertaining to a transmission over a circuit capable of transmitting in either direction, but only one direction at a time. 59

half-duplex channel (half duplex operation) (data transmission). A channel of a duplex system arranged to permit operation in either direction but not in both directions simultaneously. 59

half-duplex operation (telegraph system). Operation of a duplex system arranged to permit operation in either direction but not in both directions simultaneously. *See:* telegraphy. 328

half-duplex repeater. A duplex telegraph repeater provided with interlocking arrangements that restrict the transmission of signals to one direction at a time. *See:* telegraphy. 328