

IPREM



IREM

A RANGE OF SOLUTIONS FOR ELECTRICAL DISTURBANCES

**Electric power supply:
a mysterious element
with many variables:**

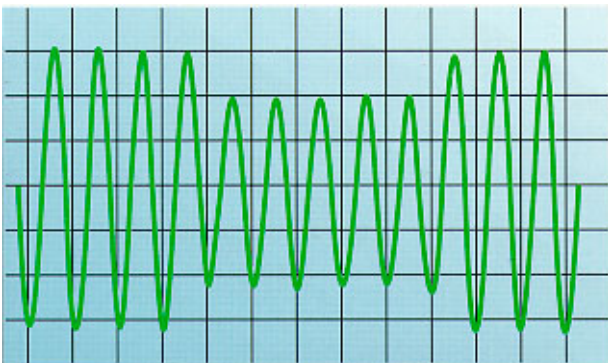
Electrical and electronic equipment are designed to properly operate from a clean and constant supply of AC voltage.

High deviation from the nominal value or a voltage that undergoes continual variations cause overheating, halts in production, machining defects, loss of data memory and programs, failures and so forth. The electricity board generates high quality electrical energy at its power stations, but cannot prevent it degrading along the distribution lines, which are subject to continual load variation and all kinds of interference.

It is therefore useful to know the more common electrical faults so as to apply the most adequate protections and avoid productivity drops. To protect sensitive equipment, several devices are available which, depending on their characteristics, complexity and cost ensure different levels of efficacy. The choice should be made by assessing the degree of protection required, the entity of the failures and the direct and indirect costs these may cause. In fact, an overall solution may call for an expenditure that is out of proportion to the value or the function of the equipment requiring a protection, whereas a more economical solution may not be reliable. It is therefore necessary to assess the characteristics of the protection, with the help of experts, or turn to a reputable company that can offer adequate technical support.

Electrical faults

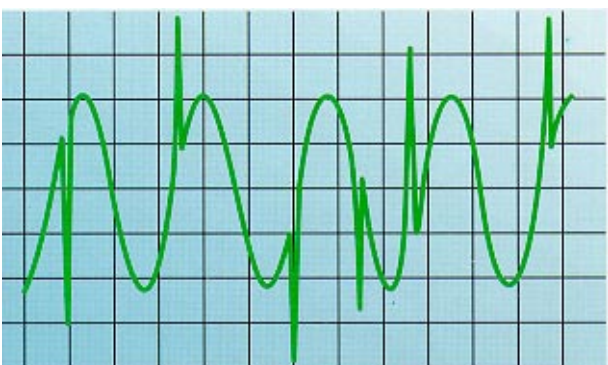
A – Voltage variations



Since they are subject to continual load variations, distribution lines are unable to supply perfectly even voltage levels. This is why electrical machinery is built to accept shifts of at least $\pm 5\%$ as to the nominal value. In fact, in their contracts the electricity boards provide for fluctuations of up to $\pm 10\%$. Furthermore, this limit is often exceeded due to “slow variations” (voltage drops caused by underdimensioned lines and/or overloads), “overvoltages” (considerable increases in the line value arising when industries drastically cut down their energy consumption), “fast variations” (drops caused by the connection of equipment such as: discharge lamps, punching

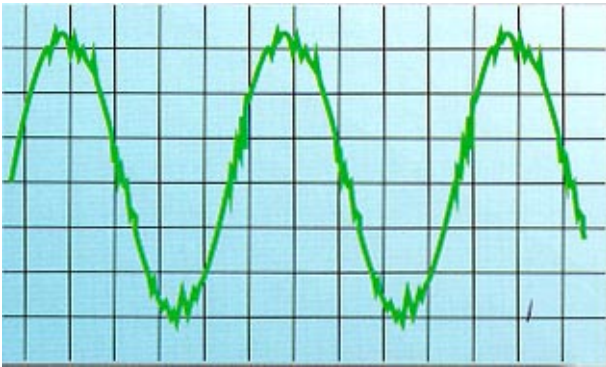
machines, electric motors etc.).

B – Voltage spikes



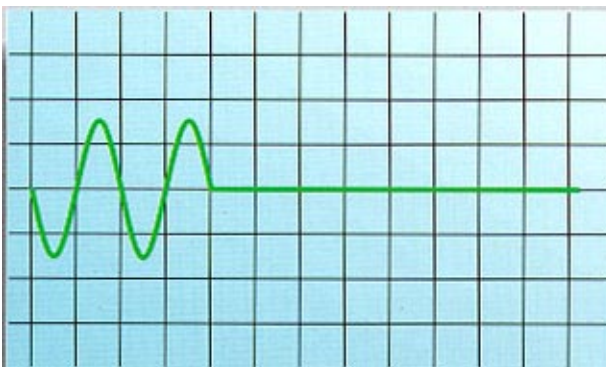
These are very brief pulse disturbances very dangerous for more sensitive equipment because the voltage values may reach thousands of volts. They are caused, not only by the switching of high voltage lines, connection of power factor correction capacitors, lightning, and the cutting off of loads with high reactive powers, but also by limited power loads such as photocopiers and air conditioners connected to the same line that feeds the sensitive equipment. Spikes are not detectable by means of an ordinary voltmeter given their brief duration; however they are one of the main causes of faults and malfunctions.

C – High frequency disturbances



They are very common and easily detected by anyone who watches television. These are the cause of the “snowstorm” effect and those fastidious lines that sometimes appear on the screen. They are caused by the sparks generated in the AC commutator motors, the “crown effect” on the high voltage lines, the igniters of luminous signs and burners, and the magnetic fields emitted by radio and television stations. Line disturbances, also known as HF noise do not usually create problems on electromechanical equipment, but often cause damage on electronic equipment.

D – Blackout



This is the most obvious event (though less frequent) because everybody notes it. It may happen accidentally on production plants or on distribution lines, or may be programmed to reduce energy consumption. There are also microinterruptions, which may last between microseconds and a few tenths of milliseconds, caused by short circuits or line switching. These faults are not noticed by electromechanical equipment, but they can cause damage to electronic equipment. Usually switching power supplies, installed in almost all electronic equipment, compensate interruptions lasting only a few milliseconds. Longer blackouts can cause loss of data,

program cancellations and system failures.

E – Harmonic distortions



These are a new type of failure on electric lines that are becoming more and more common. They are caused by the ever increasing use of electrical equipment with non linear absorption such as: rectifiers, converters, drives, switching power supplies. This fault can cause heavy overloads on lines and transformers, explosion of power factor correction capacitors, incorrect indications on measuring equipment and, generally speaking, bad operation of any type of electrical equipment.

Choosing the right protection

The letters **A – B – C – D – E** that indicate each series of products are a useful guide to help you find the most suitable equipment to ensure the required protection. Each letter represents an electrical fault that the product is able to remove, correct or diminish, whereas the colour indicates the efficiency level.

Green letters indicate that the function is performed with the **maximum degree of efficiency**.

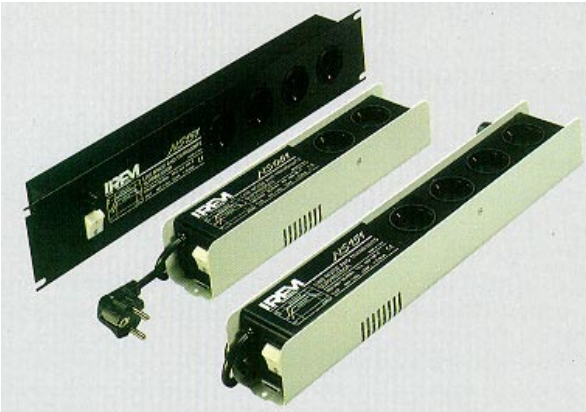
Yellow letters indicate that the function is performed with a **good degree of efficiency**.

Orange letters indicate that small spikes damping is performed with the help of **optional devices**.

Line noise suppressors

B C

NS



A first level protection against voltage interferences. Fitted with line filter and transient suppressor they can suppress high frequency interferences and voltage spikes. In compliance with safety regulations, they are equipped with 15 Ampere high quality sockets, switch, fuse and cable to ensure a reliable connection for equipment. They are available in three models, ranging from 6 to 15 Ampere in an epoxy powder painted sturdy metal housing.

Electronic stabilizers

A C

ES

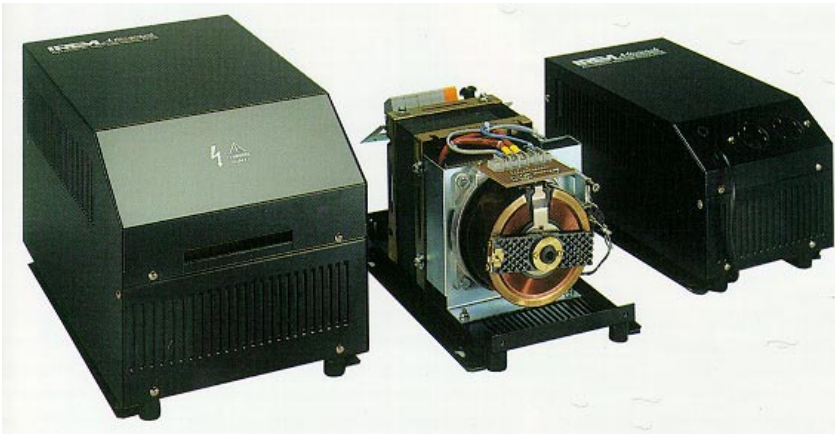


A full static regulation circuit that guarantees a very high stabilisation speed, together with a built-in line filter, permit these stabilizers to be recommended for powering electronic equipment. Available in 4 single phase models with power ranging from 500 VA to 4 KVA.

IREM

Electrodynamic voltage stabilizers

A



Ministab M...E, T...E

Suitable for any type of load, they deliver a "true RMS" stabilised output voltage, even when there are strong harmonic distortions on the line. They are of a very simple, but sturdy, construction and are most suitable for applications that require:

- * high reliability due to installation in areas with access difficulties and/or subject to critical environment conditions;
- * capability to compensate wide voltage variations, even up to $\pm 25\%$;
- * high accuracy of the stabilised voltage;
- * feeding of equipment with high initial currents;
- * simplified and limited servicing.

Available in 9 models with power ranging

from 1 KVA single-phase to 20 KVA three-phase.

A B



Ministab M...L

The basic characteristics are the same as for the M...E models, the difference being in their even higher precision: $\pm 0.5\%$ instead of $\pm 1.5\%$. Thanks to their special casing they can be easily installed in 19" rack cabinets. The standard fittings include: circuit breaker, pilot lamp, voltmeter, "out of range" indicator and trimmer for the adjustment of the stabilised voltage. Overload protection, electronic voltage relay and release coil can be supplied on customer's request.

Available in 9 single phase models with power ranging from 3kVA to 15 kVA.

A B

Sterostab and Ministab M...A, T...A, Y...A



These models have the same basic characteristics as the M...E models, but can deliver much higher power. They are housed in metal cabinets and are fitted with a voltmeter and pilot lamps. Overload protection and electronic voltage relay, to activate signals, alarms and by pass, can be supplied on customer's request.

These models are a reliable, affordable and tested solution for problems that voltage variations cause on medium-high industrial installations.

Available in 69 single phase and three-phase models with power ranging from 9 to 1000 kVA. They are also available in "open frame" versions for installation into electric panels.

Electronic line conditioners

A B C

Ministatic TS, TR, TST

These models offer a high protection level for sensitive electronic equipment connected to lines disturbed by voltage variations, high frequency interferences and voltage spikes.

They combine in one unit:

- * spike suppressor;
- * two RF filters; * isolating transformer
- * electronic voltage regulator.

They are also available in special versions for telecommunications, robotics and automation, suitable to supply 230 or 110 volts single phase loads which are connected to three-phase lines without neutral.

Available in 27 single phase and three-phase models with power ranging from 150 VA to 24 kVA.



Uninterruptible power supplies

PowerLog Nova

A B D



Thanks to their sophisticated technical solutions these units are the best for computers, modem, networks and all types of equipment using fast electronic devices. Completely managed by a 16 bit INTEL microprocessor, the Nova units can be connected to computers through a built-in RS 232 interface, thus forming an integrated part of the informatics system they supply. Software is available for the more widely used operating systems making it possible to:

- provide the user with information concerning the "operating state" of the unit, as well as the characteristics of the line;
- automatically save data and shut-down the computer before batteries get exhausted. Available in 4 models with a power range of 700, 1000, 1500 and 2000 VA.

A B C D E



Minipower UP

Double conversion uninterruptible power supplies for professional applications. Fully reliable and sturdy, designed to protect:

- * sophisticated expensive equipment or equipment managing processes in which an interruption would cause irrevocable damage;
- * sensitive electronic equipment operating in environments where, besides blackouts, transients and harmonic distortions may occur.

These units are equipped with isolating transformer, line filters and transient suppressors. They use serial and/or parallel communication interfaces to manage data saving. Software is available for the more widely used operating systems. Available in 5 models with a power ranging from 1 kVA to 15 kVA.

IREM. Experience and Quality

IREM is a leading company in the manufacture of electronic and electromechanical equipment for the control of the mains power in the following sectors:

- powering of discharge lamps for professional applications;
- protection of electric users against line disturbances,
- luminous flux regulation in lighting plants;
- power generation by micro hydroelectric plants.

Since its foundation in 1947, *IREM* has gained wide recognition due to the reliability and innovative content of its high-tech products. A reliable company deserving the Oscar-Award. In 1992, in Los Angeles, **Mario Celso** - founder of *IREM* - was granted the "**Scientific-Technical Award**" by the Academy of Motion Picture Arts and Sciences. The development from craft to industrial structure, expanding sales and research programmes have consolidated the know-how gained over the years. Two production plants, a philosophy based on "quality upgrading" as the company's primary concern and direct export exceeding 50% of the global turnover are a warranty of continuity and development.

Experience, quality and professional skill: these are the factors that permitted *IREM* to achieve in 1993 the certification **UNI EN ISO 9001**, a further confirmation of *IREM* commitment to constant improvement to ensure the maximum satisfaction of the customer and its capacity to guarantee:

- a constant quality standard
- a highly reliable product through the years
- precision and repeatability of all working processes
- dropping of acceptance control at the customer's plant
- identification and traceability of a product through the years.

The latest target pursued by *IREM* in the year 2000, ISO EN 14001 certification, is a firm demonstration of the company's will to protect the environment not just through its products but also via precise patterns of behaviour.



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