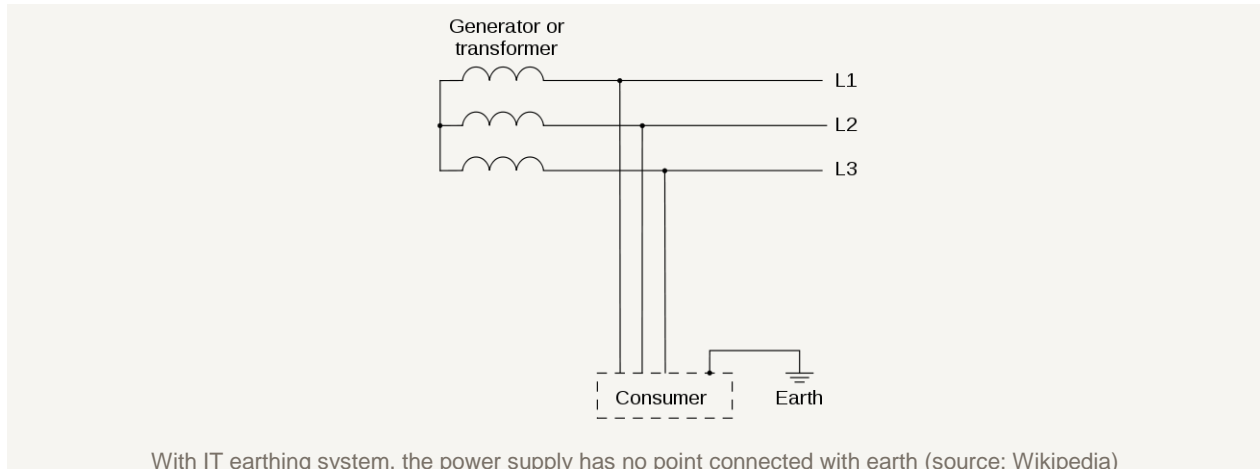


IT EARTHING SYSTEM: FOR OR AGAINST?

The IT earthing system, when used properly and in the relevant electrical installations, provides numerous advantages, despite the misconceptions held against it. The main advantage is that it increases the availability of the installation. It helps reduce the risk of fires and explosions. It increases the lifespan of the electrical equipment. It also facilitates preventive maintenance and at the same time optimizes the overall maintenance costs, which means that the initial extra-costs are paid back.



The IT earthing system allows you to increase the availability of your installation

This is the first and main benefit of the IT earthing system. With the TN system, an insulation fault corresponds to a short circuit, so the protection device will trip (thus part of the installation is stopped), and the fault current is very high. In comparison, with the IT earthing system, in presence of an insulation fault the current cannot loop via the transformer's neutral, so the first fault current value remains very low. But to take full benefit of it, the IT earthing system should be used effectively. Generally, an electrical network completely using the IT earthing system might be difficult to manage, especially while locating the first faults.

The optimum economic arrangement, which also allows easier maintenance, often consists of a TN system with islands of IT systems for circuits that really require this availability:

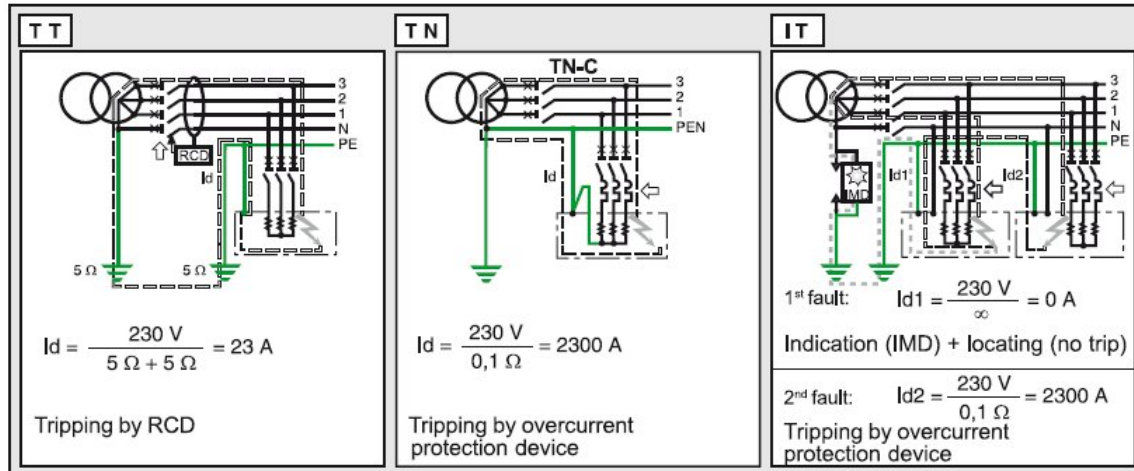
- Continuous process,
- Safety circuits,
- Some lighting circuits

The initial additional cost is quickly recovered, especially when you compare to the operating losses during the shutdown, which may be very significant.

Also, manufacturers now provide offers to implement IT system much more easily, and also devices that enable automatic location of faults.

The IT earthing system allows you to reduce the risk of fire or explosions

Many fires are started by high local over-heating or by an electric arc due to an insulation fault. The higher the fault current, the greater is the risk: a contact between a live conductor and a metal part may, particularly in sensitive areas, start a fire when the fault current exceeds 500 mA. For the risk of explosion it is the same approach. This risk is particularly present in mines, silos, oil rigs and chemical industry.



The IT earthing system allows you to increase the lifespan of your equipment

Due to the very limited fault currents in IT systems, the electrical equipment is subjected to less stress, so its life duration is increased. A high fault current can result in significant damages to the installation, or to the loads, which would therefore require more cost and time for repairs.

The gain is difficult to estimate, but it is certain that the aging of the electrical installation is largely related to these phenomena.

The IT earthing system allows you to optimize the maintenance

Even in a non-continuous process, the tripping of a circuit breaker requires the intervention of the maintenance department.

With the IT earthing system, the first fault does not cause any tripping.

It is therefore possible to optimize the maintenance, as there is no need to have maintenance people on site at all times: at the beginning of each day the maintenance department can check for the presence of a fault.

Protection devices will only trip if a second fault occurs before the first fault is cleared, which means that after a first

fault, an IT system behaves like a TN system. Additional costs of the IT system (transformer, insulation monitoring devices) are quickly paid back by these direct savings in maintenance and productivity.

The IT system facilitates your preventive maintenance

The IT system allows for good visibility on the electrical network. Even when there is no fault, monitoring the insulation resistance enables to detect the degradation of the insulation of a circuit or a device, so it becomes possible to act before an actual fault occurs. Like other measurements, the insulation resistance is a good indicator to follow the electrical installation condition.

Source : <http://engineering.electrical-equipment.org/electrical-distribution/it-earthing-system-for-or-against.html>