



BESHIELDING

BUSBAR | ENGINEERING | SHIELDING

COMPANY PROFILE



www.beshielding.com

BEShielding an engineering company that manufactures and installs its own solutions and products to mitigate low-frequency electromagnetic pollution. With operational and administrative headquarters in Villarbasse (Turin), the organization consists of a technical and design office, a dedicated laboratory testing area, a sales and marketing office, an administrative office, and a construction department for installation activities. Manufacture of all BEShielding brand products is delegated to an affiliated company in the province of Brescia. For market identification, BEShielding uses the acronym BES, summarizing the 3 competencies covering the main objectives of its activity:

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BUSBAR – ENGINEERING – SHIELDING

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CONDOTTI SBARRE – INGEGNERIA – SCHERMATURA

During its strategic, organizational development, BEShielding has gone through a series of profound transformations:

- ▶ the activity founded in **2007** simply as a commercial branch of **Sati Italia spa**, a historical Italian company in the electrical industry sector;
- ▶ it was then transformed, in **2009**, into **No Field s.r.l.**, a technical start-up conceived in the I3P incubator of the Polytechnic University of Turin, which began offering solutions and products derived from its own know-how.
- ▶ it took on the company name **Sati Shielding s.r.l.** with a new brand in **2015**;
- ▶ finally, came its latest configuration, **BEShielding s.r.l.**, in **2019**, changing the company name and brand to what is used today.
- ▶ in late **2020**, the entire controlling share in the company passed to the current ownership structure.

Milestones



2007



2009



2015



2019

Flat shielding solutions

As regards shielding against low-frequency magnetic fields, the products and solutions BEShielding offers differ according to customer needs.

With its pool of engineers, BEShielding tackles the issue of electromagnetic interference starting with an environmental impact study, analysing the various sources of magnetic fields; this is done using its proprietary MAGIC software, current version 1.8.5.90, and proposing its own solution for mitigation.



The image above shows a BEShielding ceiling installation in a Cabin room, while the image to the side shows the floor installation in a Data Center.

The first shielding solution reduces the electromagnetic interference produced by the transformer substation (n.b.: rooms in a student dormitory) while the second solution protects the Data Center from the electromagnetic pollution generated by the electrical infrastructure outside the Data Center itself.

In this specific application, the Data Center is considered as a room containing sensitive electronic equipment (CEI EN 61000-4:8).

The shielding solution can also be installed directly by the customer, however, in the most complex cases, BEShielding prefers to offer installation by its own team, or to supervise the work with its own technicians

Shielded Underground Ducts and Jointing Pits



BEShielding offers very interesting solutions and products in a sector involving the underground installation of high-voltage overhead lines, a sector increasingly gaining importance each year.

The first solution proposed is a shielded underground duct designed to contain the magnetic field generated by power lines that need to be interred.

While, for a more in-depth look at the shielded “Jointing Pits” solution, it is important to note that in connecting the high-voltage (HV) cable — where the maximum cable length is 500 meters — HV cable manufacturers are required to install special joints to join cable sections.

To make the joint, the HV cables need to be spread far apart from one another, thus increasing the magnetic field generated.

BEShielding offers a shielding solution dedicated to mitigating the magnetic field generated by such jointing pits.

Covered by BEShielding patent for several years now, this solution is defined as “shielding through a system of high magnetic coupling passive loops, thus derives the product name, HMCPL: “High Magnetic Coupling Passive Loop”.

The operating principle is based on the opposing electromagnetic field generated by a series of LV cables highly coupled to the main HV cable through a ferromagnetic core.

In passive loops, LV cables, a current is generated that matches that flowing in the HV cable but with opposite phase.

This current, in turn, creates a magnetic field of equal intensity to the source current, but of opposite polarity thus creating a nearly null magnetic field.



Shielded Ducts



Over the years, starting from the principle that flat shielding can always be adopted — even if, in some cases, this solution is more costly — a number of specific products have been created, such as:



- ▶ closed, shielded metal ducts (the SCTS and SCTF lines), suitable for both indoor and outdoor use;
- ▶ underground metal ducts (SCU and SCU Plus lines) suitable for interring ducts.

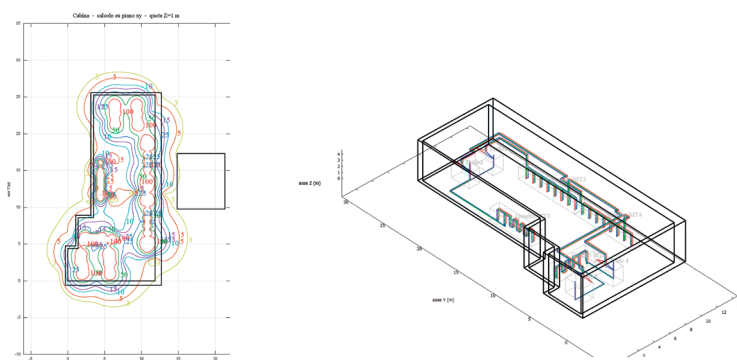
Software Magic ®

BEShielding is the only sector company that uses and markets proprietary software to simulate the magnetic fields induced by low-frequency electrical sources.

The Software is called **MAGIC**, derived from the acronym of the words **MAG**netic **I**nduction **C**alculation.

Over the years, it has been constantly revised and updated so as to both adapt to increasingly complex problems and provide increasingly comprehensive support to the many technical design firms that use it.

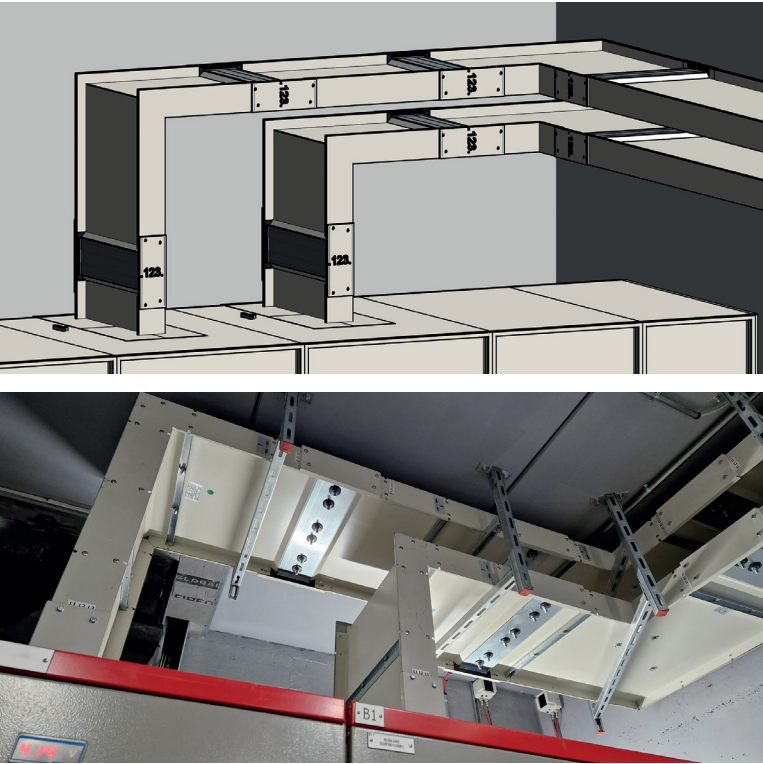
The software, which is constantly being revised, was validated by the Polytechnic University of Turin, through theoretical comparisons with other simulation software and through laboratory testing.



It enables the analysis of the 2D and 3D configurations of power lines, transformer substations and overhead power lines.

The latest update also incorporated BEShielding's medium and high power busbars, in both standard and shielded configurations.

BIM BUSBAR Engineering



BIM is now an instrument widely used in Italy, thanks to the global thrust toward standardization with new working methods that increasingly require a practical, highly evolved design standard. The image underscores the degree of three-dimensional detail that can currently be achieved using BIM design (Revit Software).

BIM or “Building Information Modelling” is performed using MEP (Mechanical - Electrical - Plumbing) components that make it possible to build a digital model for every type of system that can be designed and built.

With its own internal structure, BEShielding has created a “Constructive BIM” library, where the highly detailed information and definition — LOD 400 = Level of Development — makes it possible to simulate a project from the very outset at the bidding stage.

Therefore, as the BEShielding technical department that specifically handles the Busbar line continues to implement the libraries of

products to be included in the technical layouts, it can offer its clients increasingly detailed technical and commercial offers.

The peculiarity of this truly unique, highly versatile technical service is that it is not only useful in system study and design but also during system installation.

The customization of each “individual family” makes it possible to enter into the most minute detail, indicating the route, dimensions and anything else that can help keep tabs on the state of progress in a project or installation.

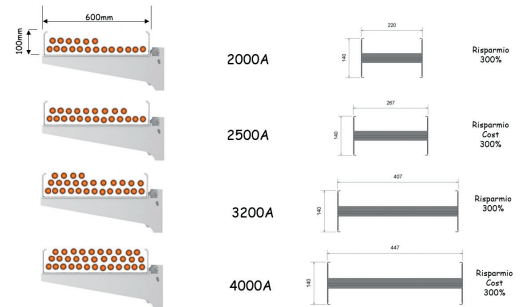
BEShielding, now a partner of qualified design firms, has become a benchmark company, an expert for the BIM presentation of busbars.

Thanks to the skills of its in-house technical staff, BEShielding can manage all phases of the product through the BIM method: from bidding to product shipment, customizing specific solutions to meet each need.

The advantages of busbars

But when and why use busbar trunking in lieu of more conventional cable trays? There are three main technical reasons for this.

- **Installation process:** such busbars are simpler and faster to install, while the installation process for cable trays is more time-consuming, especially as buildings become taller.
- **Flexibility:** busways offer greater flexibility and their system management is more modular; instead, cable trays are more complex when making system changes.
- **Material costs:** the production and installation costs are lower for busbars, while cable trays are more costly not only for installation but also in terms of product, because the cost of the cable must be added to that of the base product — the cable tray.



Busbar Trunking

BEShielding offers a complete line of busbars (from 25 to 6300 A). The 25A and 40A CLM line has recently been completed. The single-piece, extruded aluminium casing ensures greater mechanical rigidity and improves continuity of the electrical protection (PE).

The product is available in versions with 2, 4, and 6 conductors per single element. The system is completely MODULAR.

Based on the consideration that any power busbar can be a major source of electromagnetic interference for the areas surrounding the installation — which may hold people or sensitive, sophisticated machinery (n.b.: data centres, laboratories, electronic microscopes, electromedical devices, precision electronic equipment in general, just to name a few) — BEShielding has created a range of **Shielded Busbar Trunking**.

BEShielding's patented Shielded Busbar Trunking system makes it possible to integrate both the engineering solution for electrical distribution and protection against electromagnetic interference — even that generated by the busway itself — into a single installation. It should be noted that, no matter what the type and brand, within certain distances (n.b.: safety zone) any standard version generates electromagnetic pollution.

Given that, in most cases, technical specifications require the use of busbars that take into account the question of electromagnetic pollution, BEShielding proposes a single solution that combines the two technical requirements: a product that is identical to its standard version, both in size and performance, but that is already shielded internally (internationally patented). Basically, it is a solution that, as the system develops, can be transformed, even at a later date, into modular shielding that can be modified in time.



Technical and commercial documentation

BEShielding has extensive technical and commercial documentation that presents all solutions and products.

Electromagnetic shielding has a dedicated catalogue while separate documentation covers the 3 ranges of busbar lines.

This shows the wide range of configurations available for the special version of shielded busbar trunking in the CHS line (range 800 A to 6300 A).

All solutions and products can be consulted on the website, both in Italian and in English.



Patents

Italy: a Utility Model (No. IT201900001551U) was initially filed for the shielded busbar trunking.

International application (PCT): the Utility Model has been extended internationally through application PCT/IB2020/053651.

United States: the international application resulted in the granting of US patent US11451037B2, which is currently in force.

Russian Federation: the international application resulted in the granting of Russian patent RU2781268C1, which is currently in force.

Europe: European patent EP3973604B1 has been granted, validated as a EU-wide Patent, directly effective in the following countries: **Austria, Belgium, Bulgaria, Denmark, Estonia, Finland, France, Germany, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Portugal, Slovenia, Sweden.**

In addition, the European patent has been validated individually in the following European countries not participating in the EU-wide Patent: **Turkey, Croatia, Spain, United Kingdom, Swiss.**

“ Don't worry, BEShielding!

Info & contacts

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