

# Shielded Transformers Cages

"Smart Shield": Electro-Magnetic Shielding Products

Standard Products (Patent)

## 1. Selection Guide

Distance to Source exposed area \ EMF Source	200 kVA	600 kVA	1000 kVA	2000 kVA	3000 kVA
< 1 meter	HPTC	UHPTC	UHPTC	MUHPTC	MUHPTC
1 - 2 meters	SPTC	HPTC	UHPTC	UHPTC	MUHPTC
> 2 meters	SPTC	SPTC	HPTC	HPTC	UHPTC

SPTC ~ Standard Performance Transformer Cage

HPTC ~ High Performance Transformer Cage

UHPTC ~ Ultra High Performance Transformer Cage

MUHPTC ~ Mu-ultra High Performance Transformer Cage

note: chart according IEC 61000-4-8 (protection for electronic equipment) <3,75 µT

Distance to Source exposed area \ EMF Source	200 kVA	600 kVA	1000 kVA	2000 kVA	3000 kVA
< 1 meter	HPTC	UHPTC	MUHPTC	upon request	upon request
1 - 2 meters	HPTC	UHPTC	UHPTC	MUHPTC	MUHPTC
> 2 meters	SPTC	SPTC	UHPTC	UHPTC	UHPTC

SPTC ~ Standard Performance Transformer Cage

HPTC ~ High Performance Transformer Cage

UHPTC ~ Ultra High Performance Transformer Cage

MUHPTC ~ Mu-ultra High Performance Transformer Cage

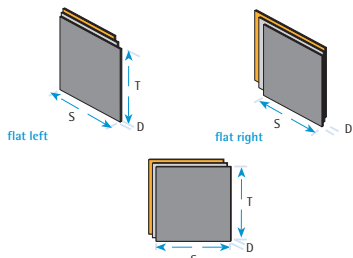
note: chart according NCRP recommendation (protection for people) <1 µT

\* special products and dimensions available upon request

## 2. Models and Dimensions

(all dimensions in mm)

### Flat Planes



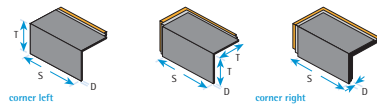
SPTC	S	T	D	KG
	500	500	3	3,4
	500	1000	3	6,7
	1000	500	3	6,7
	1000	1000	3	13,4

HPTC	S	T	D	KG
	500	500	6	6,7
	500	1000	6	13,4
	1000	500	6	13,4
	1000	1000	6	26,8

UHPTC	S	T	D	KG
	500	500	12	13,4
	500	1000	12	26,8
	1000	500	12	26,8
	1000	1000	12	53,6

MUHPTC	S	T	D	KG
	500	500	12	14,5
	500	1000	12	29,0
	1000	500	12	29,0
	1000	1000	12	58,0

### Corner Planes



SPTC	S	T	D	KG
	500	500	3	6,7
	1000	500	3	13,4

HPTC	S	T	D	KG
	500	500	6	13,4
	1000	500	6	26,8

UHPTC	S	T	D	KG
	500	500	12	26,8
	1000	500	12	53,6

MUHPTC	S	T	D	KG
	500	500	12	29,0
	1000	500	12	58,0

## 3. Ref. Number (example) Flat and Corner Planes

**Problem:** transformer 2000 KVA (at 1 meter distance) from office area.

**Question:** which backplanes should be installed to protect people (human beings)?

**Answer**

<b>4 units x</b>	Shielding Performance	Length (T)	Flat / Corner	Width (S)
	MUHPTC	1000	F	1000

# Shielded Transformers Cages

## "Smart Shield": Electro-Magnetic Shielding Products

### 4. Installation Guide

There are 3 different kind of installations for shielding transformers:

- Wall protection (side).
- Ceiling protection.
- Complete protection (walls and ceiling).

#### Wall Protection

Shielding will be applied on the side which radiates into the affected area.

If wall is made of brick or concrete, panels will be fixed directly to wall with screws.

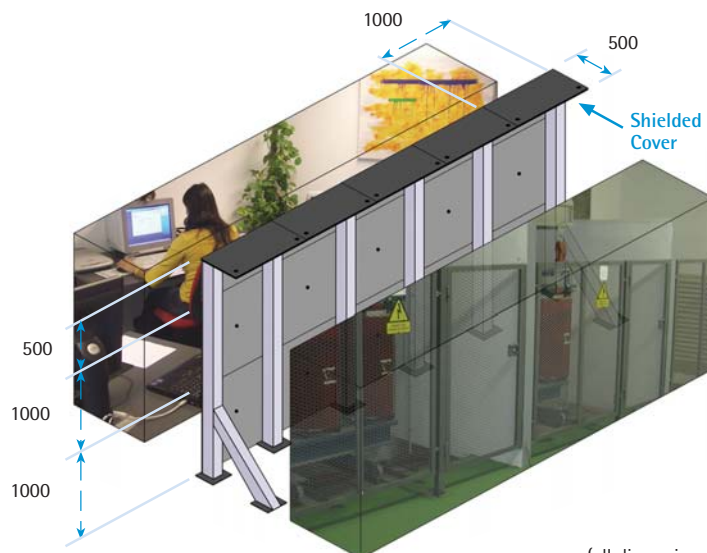
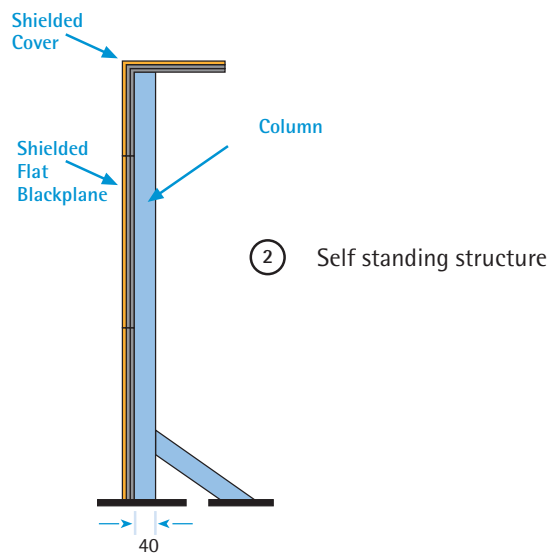
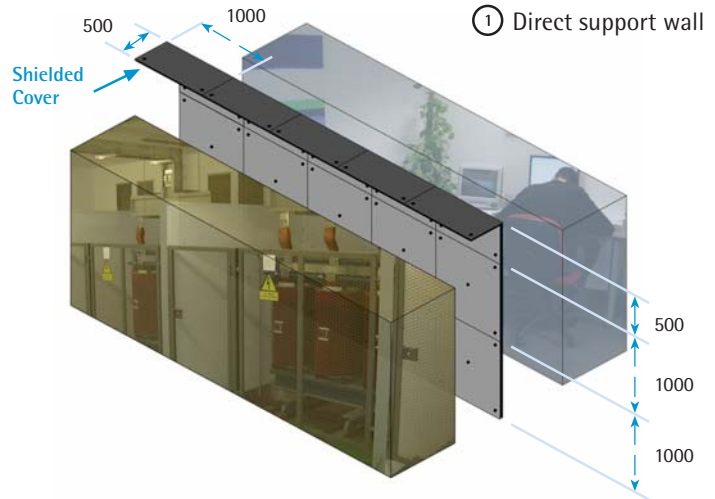
**NOTE:** panels must be connected to ground with 25 mm<sup>2</sup> copper wire.

In other cases, where transformer are fenced and shielded panels cannot be fixed it will be necessary to install some steel structure at the beginning, to attach shielding panels.

Structure consists in tubular galvanized steel with square section (80 x 80).

Separation between beams is 1000 mm, same as width of pieces.

**NOTE:** structure must be connected to ground with 25 mm<sup>2</sup> copper wire.

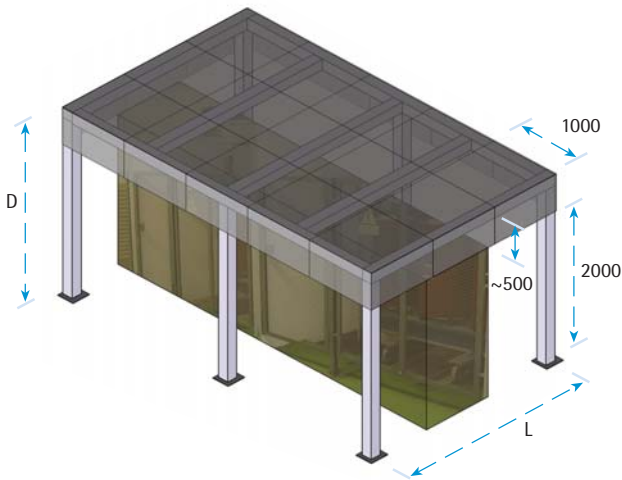


\* Self standing structure quoted under request

(all dimensions in mm.)

# Shielded Transformers Cages

## "Smart Shield": Electro-Magnetic Shielding Products



(all dimensions in mm.)

### Ceiling Protection

For ceiling installation, it will be necessary to mount some structure in order to support all pieces.

The distance between ceiling and structure must be at least 300 mm. and between transformer and structure at least 500 mm. in order to ensure good ventilation.

Structure consists in tubular galvanized steel with square section (80 x 80). Separation between beams is aprox. 1000 mm, same as width of pieces (see the picture beside).

**NOTE:** structure must be connected to ground with 25 mm<sup>2</sup> copper wire.

### Complete Protection

The complete protection against magnetic fields in transformers consists on shielding walls and ceiling.

In order to support all shield panels is necessary to mount the appropriate steel structure.

The distance between ceiling and structure must be at least 300 mm. and between transformer and structure at least 500 mm. in order to ensure good ventilation.

Distance between wall and structure must be at least 500 mm and between structure and transformer must be at least 500 mm in order to let free space for maintenance facilities.

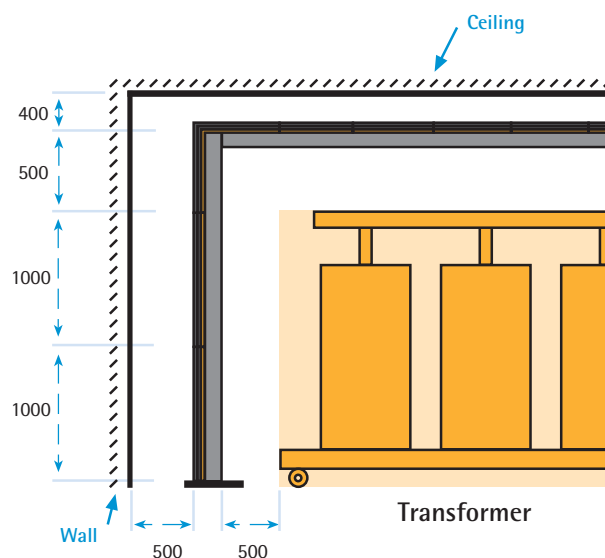
The steel beams are separated 1000 mm. aprox.

Wall panels must be fixed to structure with 6 screws and 6 nuts at least.

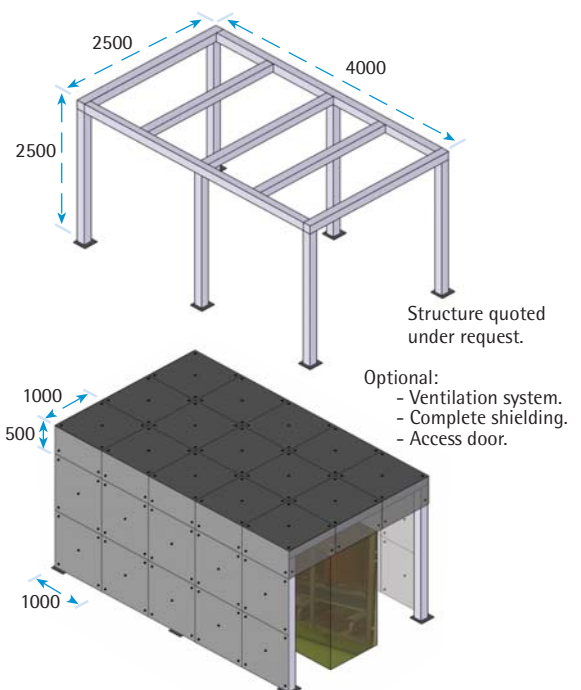
Ceiling panels must be fixed to structure with 4 screws and 4 nuts at least.

"L" shielded panels sections must be placed on structure corners.

**NOTE:** structure must be connected to ground with 25 mm<sup>2</sup> copper wire.



(all dimensions in mm.)



# Shielded Transformers Cages

## "Smart Shield": Electro-Magnetic Shielding Products

### 5. Applications and Installation Examples Magnetic and Electric Field Low Frequency

#### 1. Residential solution.

Electronic equipments (computers, servers, etc.) and people protection (e.g. High-voltage lines, subway lines, etc.).

In attention to the special circumstances and requirements of the real-estate market, we have developed an oriented screening solution to satisfy these needs.

Based on standard products, it fulfills the corresponding regulation, offering a real protection in environments of medium/low load voltage.

In short, it is a solution that provides the best relation quality/price for those special requirements.



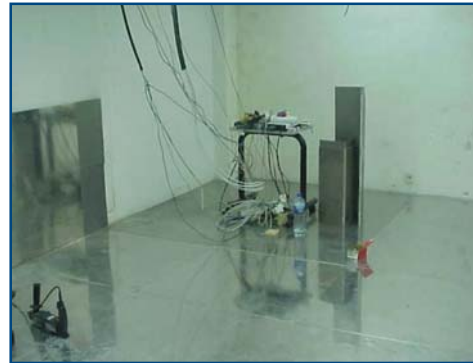
#### 2. Hospitals, Pharmaceutical and Bio-tech Labs:

Protection of the sensible equipment (MRI Rooms) and surroundings, X-ray room, etc.) and people.



#### 3. Factories:

Electronic equipment (computers, servers...) and people protection (transformer, etc.).



#### 4. Telecom rooms / Network centers / Data Centers / Back-up Rooms (transformer aside).



#### 5. Airports and Banks:

Communication rooms, racks rooms, transformer room, etc.




## "Smart Shield": Electro-Magnetic Shielding Products



Certificates

Certificates

### Certificate CE (Safety)

 <b>DECLARATION OF CONFORMITY</b>	
<i>The company:</i>	
<b>ADVANCED SHIELDING TECHNOLOGIES EUROPE S.L</b>	
<i>declare, that the product:</i>	
<b>SHIELD TRAY &amp; BACKPLANES</b>	
<i>complies with the following standards or normative documents:</i>	
IEC 61000-4-8	Electronic equipment immunity from electromagnetic fields
IEC 61537	Cable Tray Systems and Cable Ladder Systems for Cable Management
NFPA 70	National Electrical Code, Article 392: Cable Trays; provide UL classification and labels.
NEMA VE 1/CSA C22.2 No. 126.1	Metal Cable Tray Systems, for materials, sizes, and configurations; provide cCSAus Certificate and labels.
AST s.l. ; c/A.Einstein, 43 ; E-08940 Cornellà LL. (Barcelona) Spain, T: +34 93 475 14 83 F: +34 93 377 28 80 E: info@ast-global.com W: <a href="http://www.ast-global.com">www.ast-global.com</a>	

### Certificate TÜV (Performance)

 TÜV International Grupo TÜV Rheinland	
Subject:	Shielded Trays and Backplanes Electro-Magnetic Fields Attenuation Test according to the levels required by the standard IEC/EN 61000-4-8 and NCRP.
<i>This is to certify that the undersigned inspector of TÜV Internacional Catalunya, TÜV International Group Rheinland, S.L., has witnessed and inspected the test done by AST, S.L. according to the test protocol "S-2004/05-STD" about the Shielding effectiveness of the products :</i>	
<i>Shield Trays and Backplanes)</i>	
<i>The results of the test has been favourable in the accomplishment of the attenuation levels demanded by both the standard IEC/EN 61000-4-8 and recommendations by NCRP.</i>	
<i>The present statement letter is signed in Barcelona, 05<sup>th</sup> May, 2005</i>	
	
<i>* For more details see the Complete Result Test Report 35709529/05,</i>	