Commercial Presentation 2023 | Defense

beyondcomposite

innovative solutions

About us

S.I. HISOPO is a company founded in the field of engineering dedicated to advanced composite materials.

The company's focus is to develop high performance and lightweight composite materials, namely multiscale composites, gradient composites and sensitive. Our focus is on the defense, aerospace, mobility. As a guarantee of excellent quality, we provide the most developed manufacturing and processing techniques.

Our goal is to guarantee the best quality, placing us as a reference in the area.

Location

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Skills

- Development of composite design
- Prediction of material behavior (Computation Modelling)
- Product development in advance composites
- Monitoring of projects

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Technological Capacities

Hot and Cold Compression Moulding

Autoclave

Vacuum infusion

Hand Lay-up

RTM (Resin Transfer Molding)

CNC machining

Thermoforming

3D printing

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Company Approach

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Markets

Defense

Aerospace

Mobility

Architecture

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Lifesaving Composites

Armoured Vehicles and Aeronautics

Personal Equipment

Constructions

Armoured Vehicles and Aeronautics

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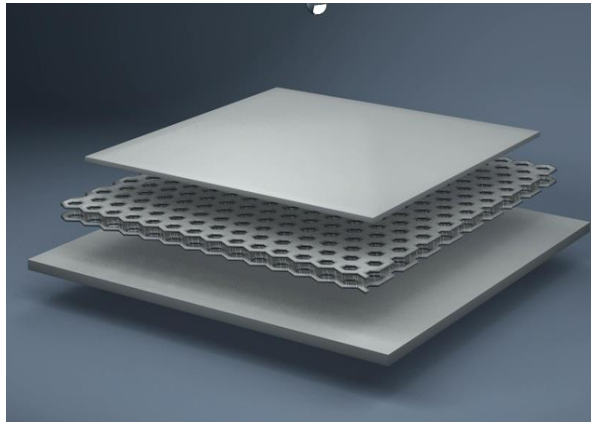
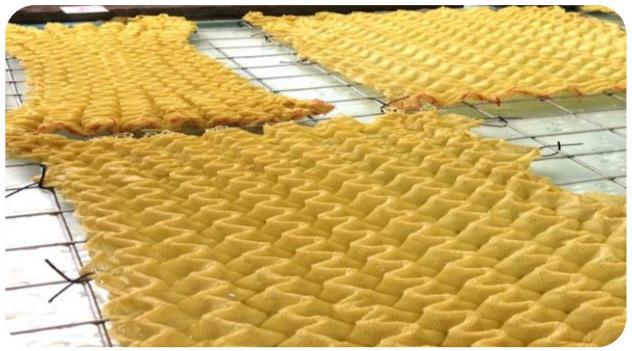
Impact Resistance Skills

- Lightweight
- Durability
- Sustainability
- Performance
- Custom Developments

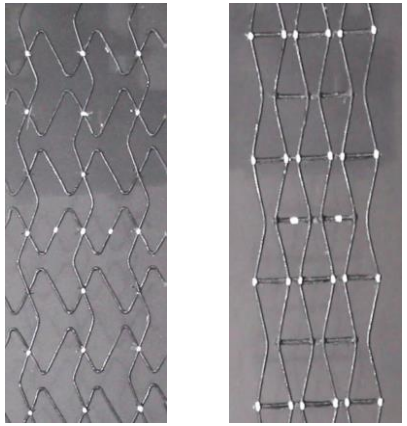


3D structures



Advanced fibrous structures

High energy absorption structures



Auxetic structures

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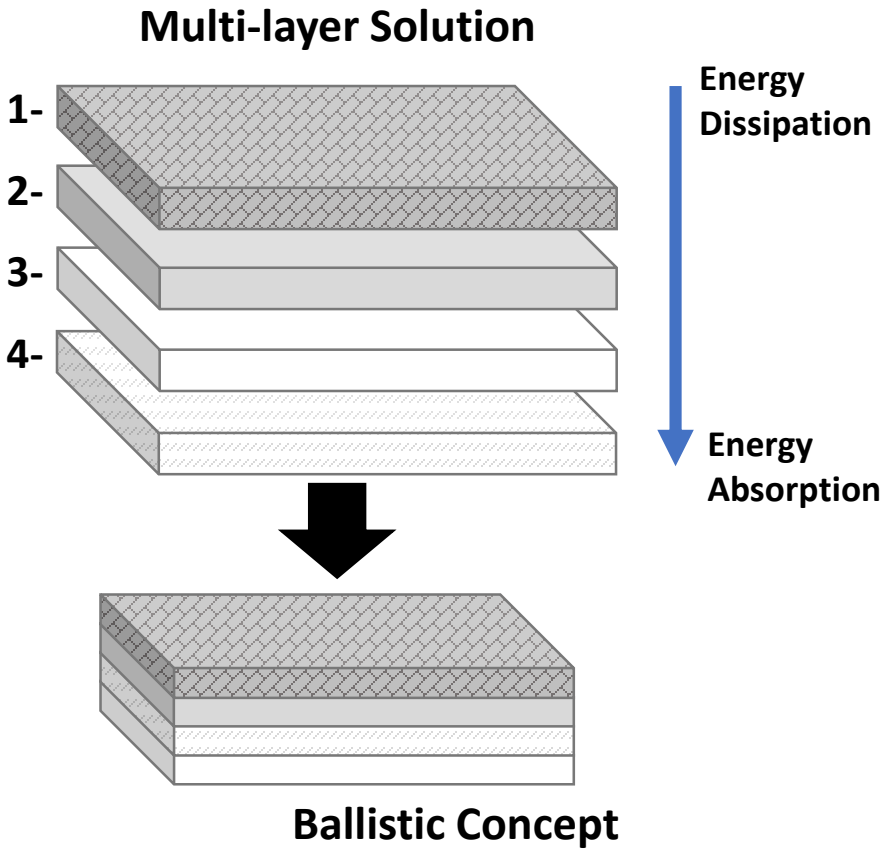
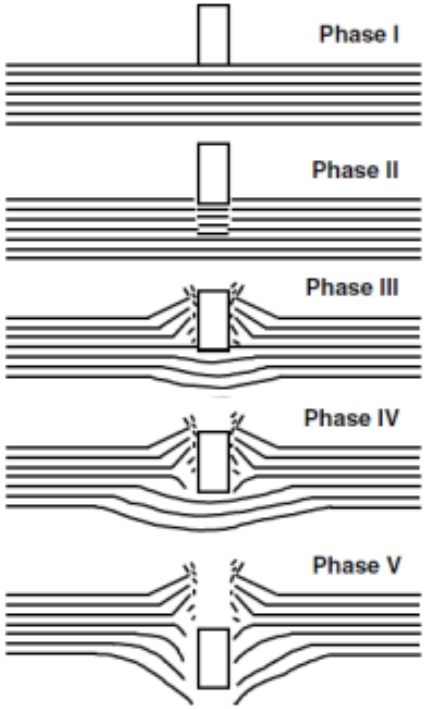
Impact Resistance Skills





Vehicles

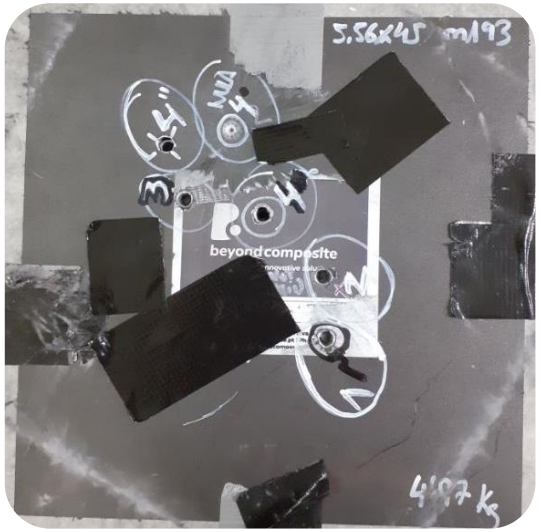
- **STANAG 4569 Developments**

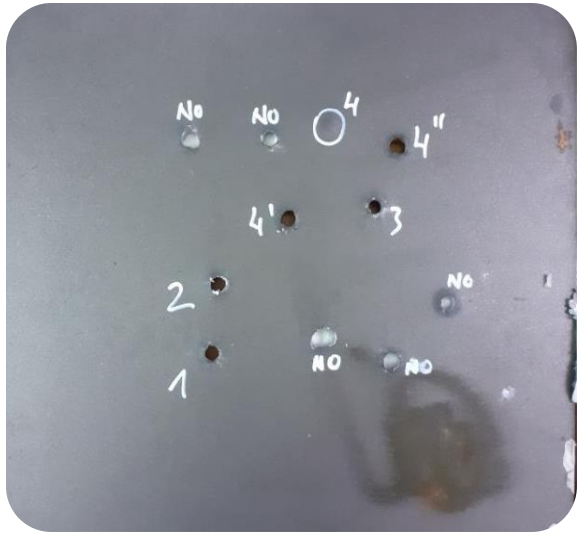
Level 1

Hybrid composite solution: **8 Kg/m²** in combination with steel plate;

Thickness: 9mm (Composite) + 5mm (Steel A500)

7.62 X 51 MM Nato Ball





Steel after shot

Impact Face

Composite after shot

Back Face

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Vehicles

- **STANAG 4569 Developments**

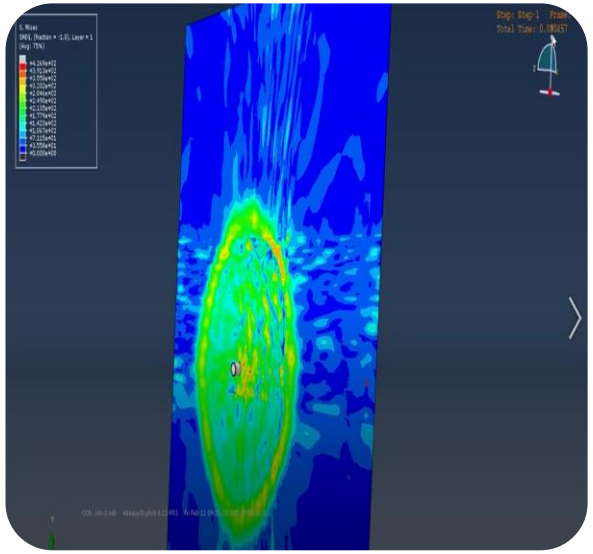
Level 2

Hybrid composite solution: **20 Kg/m²** in combination with steel plate;

Thickness: 19mm (Composite) + 5mm (Steel)

Steel after shot

Impact Face



Composite after shot

Back Face

Vehicles

- **STANAG 4569 Developments**

Vehicles

- **STANAG 4569 Solutions**

Protection Levels for Occupants of Logistic and Light Armoured Vehicles			
STANAG 4569	**Ammunition**	**Mass /m^2 (kg)**	**Thickness (mm)**
1	7.62 mm x 51 NATO ball (833 m/s) 5.56 mm x 45 NATO SS109 (900 m/s) 5.56 mm x 45 M193 (937m/s)	48	9mm (Composite) + 5mm (Steel A500)
		20	19mm (Composite)
2	7.62 mm x 39 API BZ (695 m/s)	58	19mm (Composite) + 5mm (Steel)
3	7.62 mm x 54R B32 API (854 m/s) 7.62 mm x 51 AP (WC core) (930 m/s)	85	22mm (Composite) + 8mm (Steel A500)
4	14.5 mm x 114 API/B32 (911 m/s)	On Going (NATO Project)	

Personal Protection

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Personal Protection

- **Developments**

Ballistic Helmet NIJ Standard 0108.01 Level IIIA

NIJ Standard 0108.01 Level IIIA protection, namely the protection capacity against a 9mm FMJ of 8 gr or of .44 Magnum

SJHP of 15,6 gr with speed of 426 m / s (± 9,1 m / s) projectiles;
.Fragments protection according to STANAG 2920 (2nd edition) namely, 17 grams / 1.1 FSP (v50) at 700m / s (± 15m / s);

Personal Protection

- **Developments**

Knee Pads Standard ISO 20344

Personal Protection Knee Pads

The Protection Knee Pads with 7 mm thickness absorbed 86,92% (56,5kN) of 100% (65kN) of the impact energy which they were subjected to in an impact test performed accordingly to the standard ISO 20344 – Personal protective equipment - Test methods for footwear.

The resistance to drilling was evaluated accordingly to the standard EN388, with a performance equal or higher to 125 N.

Immediate protection function against common threats in operational exercises.
It can be adapted and integrated in the equipment.

PROTECTED · PATENT · PROTECTED

Properties	Value	Standard
Young's Modulus (GPa)	17,12 ± 1,14	ASTM D3039/D3039M
Absorbed energy (kN)	A56,5 (86,92%)	ISO 20344
Thermal contuctivity (W/mK)	75,40 x 10^{-3}	----------
Density (kg/m3)	315,8	NP EN 12127
Water absorption (%)	5,94	Internal method
Air permeability (l/m2/s)	0	NP EN ISO 9237
Flame protection	Fireproof	ISO 15025

Personal Protection

- **NIJ Standard-0108.01 Solutions**

Ballistic Resistant Protective Materials			
NIJ 0108.01	**Ammunition**	**Mass /m^2 (kg)**	**Thickness (mm) ***
IIIA	44 Magnum Lead SWC (426 m/s) 9mm FMJ (426 m/s)	7,5	8mm (Composite)
III	7.62 mm (838m/s) 308 Winchester FMJ (838m/s)	19	20mm (Composite)
IV	30-06 AP (838 m/s)	45	9mm (alumina) + 20mm (Composite)

*Dimensions : (1,5m x 3m)

Constructions

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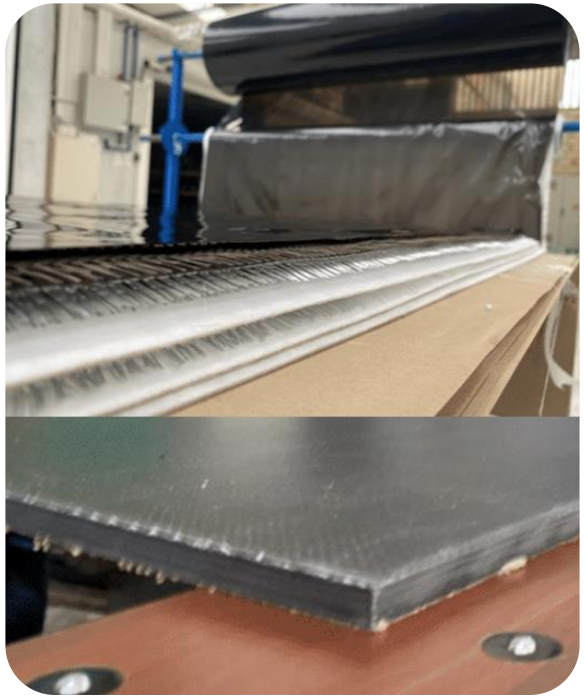
Constructions

- **NIJ Standard-0108.01 Developments**

Level Ill, IIIA and IV

With level Ill, IIIA and IV , the CompactShield, a ballistic plate for use in urban environments with civil risks, aimed at more demanding markets for the protection of people.



Constructions

- **NIJ Standard-0108.01 Solutions**

Ballistic Resistant Protective Materials			
NIJ 0108.01	**Ammunition**	**Mass /m^2 (kg)**	**Thickness (mm) ***
II	357 Magnum JSP (425 m/s) 9mm FMJ (358 m/s)	18	9mm (Composite)
IIIA	44 Magnum Lead SWC (426 m/s) 9mm FMJ (426 m/s)	22	11mm (Composite)
III	7.62 mm (838m/s) 308 Winchester FMJ (838m/s)	60	29mm (Composite)

*Dimensions : (1,2m x 3m)

Constructions

- **Polyurethane/Polyurea-based products**

High-performance, explosion-resistant coating suitable for a wide variety of applications.