



Company Presentation

The Company



Industry A.M.S. s.r.l was founded from Mr. Pasquale Impero in 1969 as Automation, Manufacturing and Service Company.

In 2011 it starts a new business in the Road Safety sector. Since this year the Company designs and produces road restraint systems which absorb the vehicle impacts, known as crash cushions and end terminals. Several analyses and many studies from the R&D team have involved the born of the brand **SMA** (Safety Modular Absorber).

**Click on the button
to play the video**



Our Business



R&D

Our R&D Department designs and develops new solutions for every kind of fixed obstacle on the roads.



Manufacturing

From the carpentry to the the assembly line: all the phases are carried out with a particular care.



Sales

The importance of having a team of expert people who can satisfy the customer needs is essential.



Communication

Brochures, social media, and newsletters only play a small but important role in this Company area.

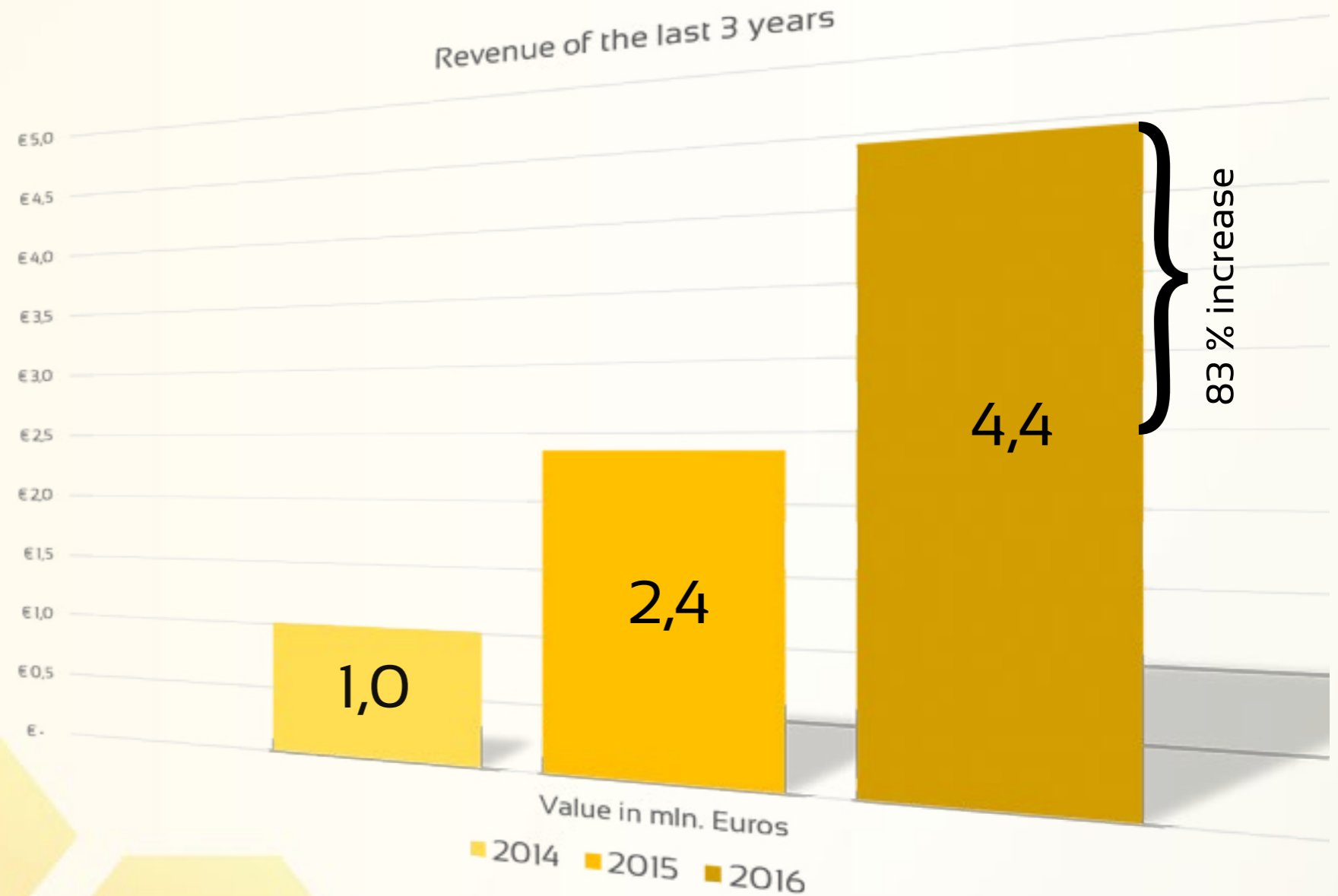
More turnover with less overturnings



Our business improvement is off course due to the ability to create value for money.

Cutting edge products permit to offer great benefits in terms of safety technologies as well as in terms of cost reduction.

Our customers trust in us because they recognize the high reliability and care we offer.

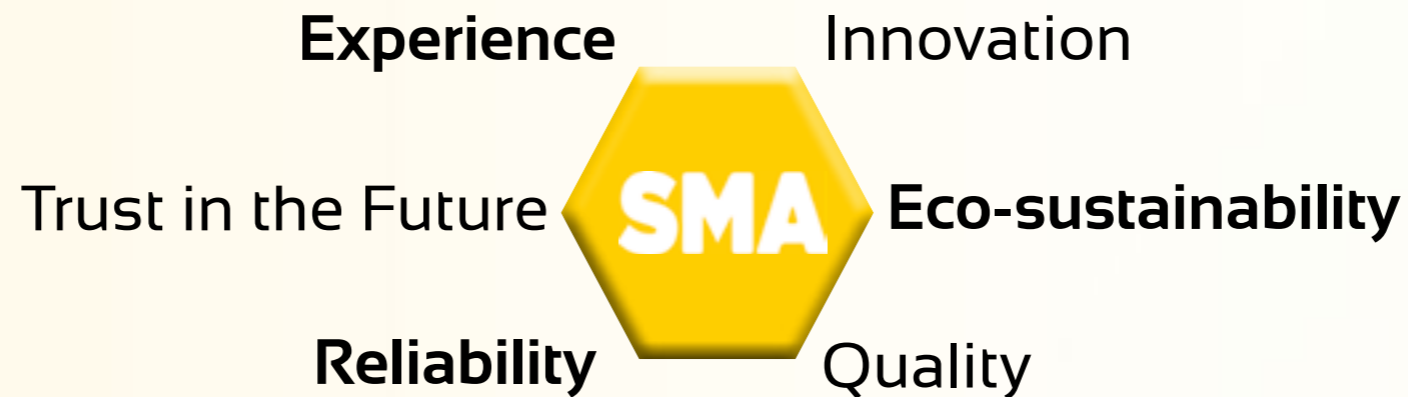


Our Values



The pursuit of your own ideas and purposes requires solid foundations that support them.

For this reason, the brand SMA encloses the following set of values



Brand awareness

SMA brand awareness is everyday stronger.

We have dealers and partners in all the 5 continents.



Workshop at IRF Asia Regional Congress 2016 in Kuala Lumpur

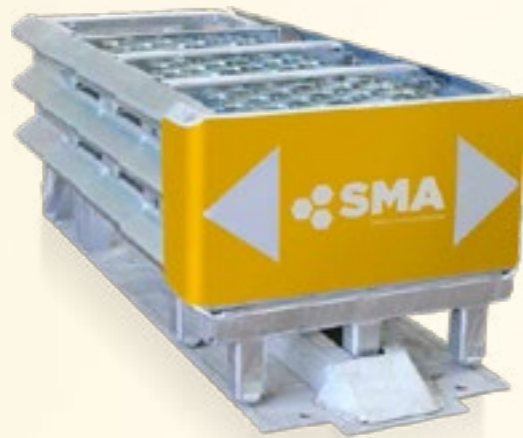
Our stand at the Intertraffic Amsterdam 2016

Reason why

SMA products are designed to satisfy every specific situation for several roads in the World. Every new project is developed in order to **fill the gap in the road safety.**



The Products



Parallel



Semi Wide



Wide

The SMA Family offers the widest set of Crash Cushions in the world. For this reason, they can perfectly protect every kind of fixed obstacle, according as they are wide or narrow, on highways or in towns, in tunnels or in front of the working zones and toll plazas. They can even perfectly protect the right-angled cusps as well as poles and trees.



Urban Areas



Working zones
and toll plazas

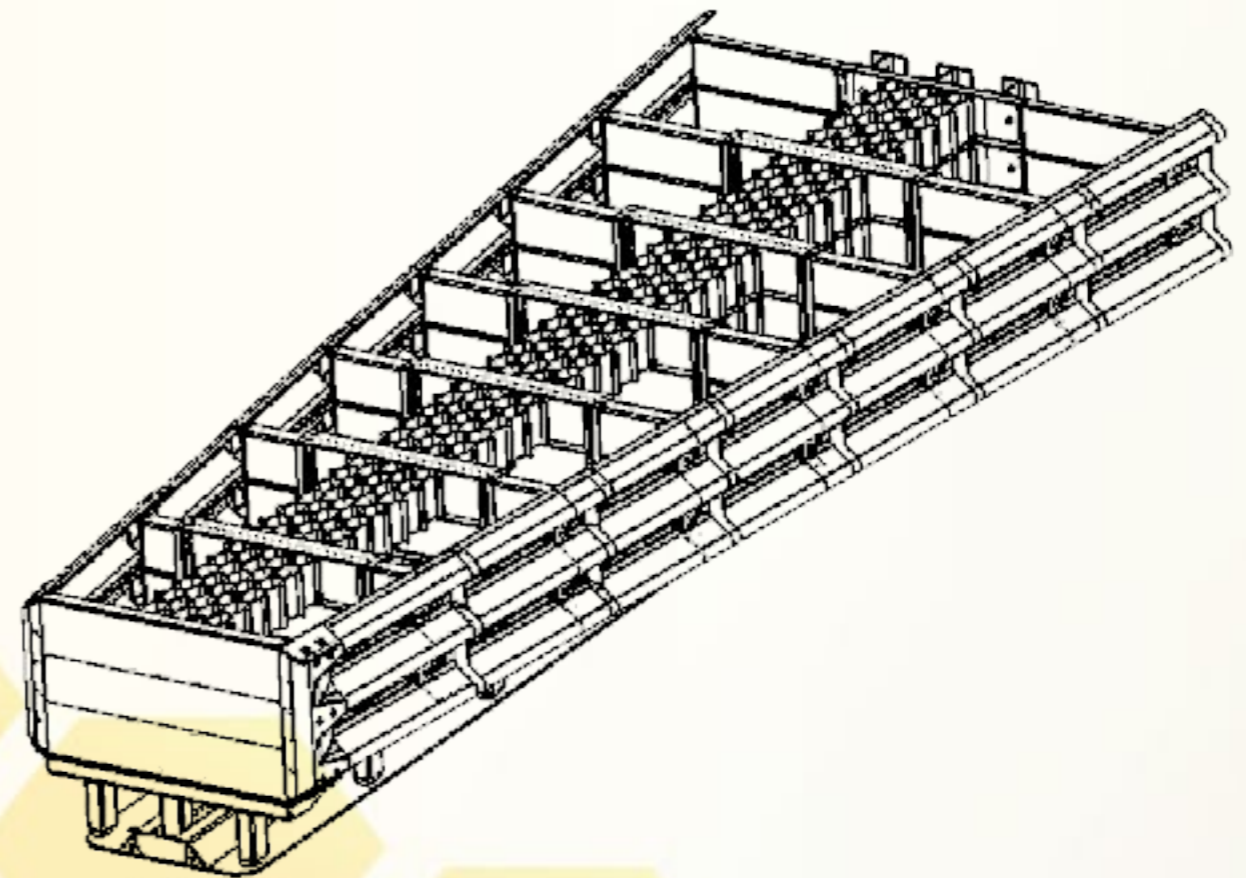


End Terminal

The 6 main Advantages of the SMA products



1. They are the **shortest** crash cushions in the world.
2. They are totally made of **steel**.
3. They are **certified** according to the EN 1317.
4. They can be installed both on the concrete basement and on the **asphalt**.
5. They are available in **different widths**.
6. They can be restored in a **few time**.



SMA Parallel

SMA Parallel are the shortest redirective Crash Cushions in the world.

The model 50P is only 1,57 m long.

SMA 110P has even been tested with success at a speed of **130 Km/h**.

The models 80, 100, and 110 are available in 2 different widths: **Normal** and **Large**.

SMA Parallel is the perfect device to protect the narrow cusps, but also to protect the fixed obstacles in **tunnels**.



Product	50P	80P	100P	110P
Speed class	50 Km/h	80 Km/h	100 Km/h	> 110 Km/h
Length	1570 mm	2800 mm	4700 mm	5900 mm
Width	860 mm	860 mm	860 mm	860 mm
Height	760 mm	760 mm	760 mm	760 mm

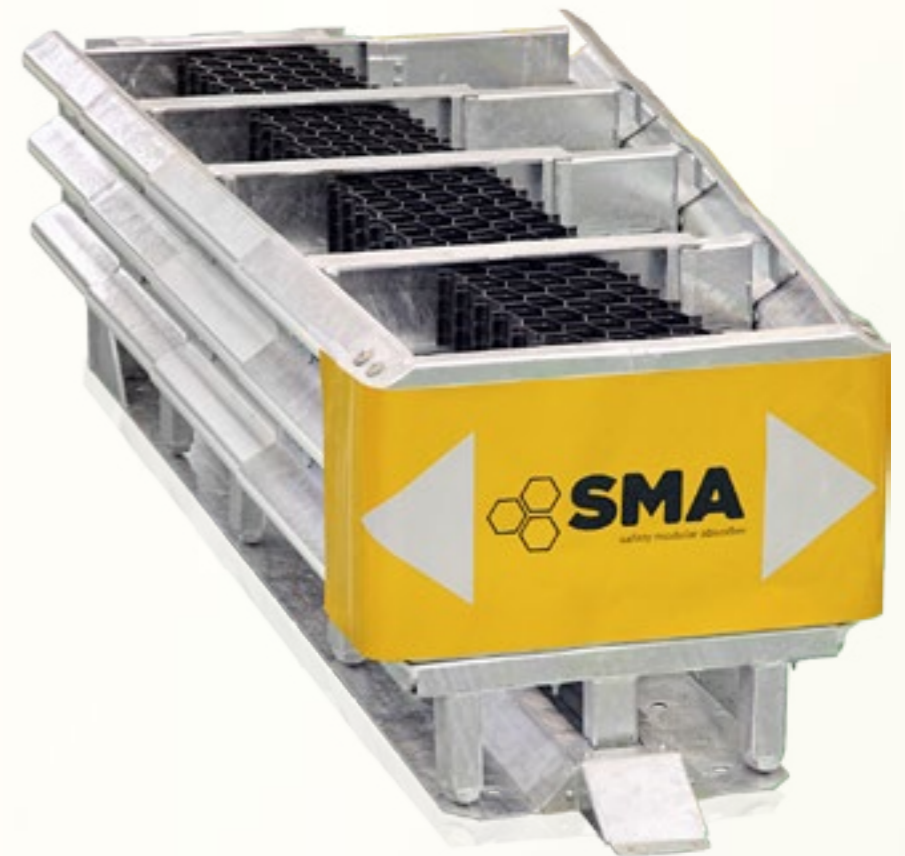
SMA Semi Wide



The particular shape of this device represents its strong point.

SMA Semi Wide is characterized by a right-angled trapezoidal form, with two different sides that make it perfect to protect particular cusps near the entrance/exit of the roads.

Each model is available in different widths: **Slim**, **Normal**, and **Large**.



Product	80SemiW	100SemiW	110SemiW
Speed class	80 Km/h	100 Km/h	110 Km/h
Length	2800 mm	4700 mm	5900 mm
Frontal width	1200 mm	1200 mm	1200 mm
Rear width	1465 mm	1640 mm	1760 mm
Height	770 mm	770 mm	770 mm

SMA Wide



SMA Wide is the perfect device for the protection of wide cusps and large fixed obstacles.

This road restraint system has extraordinary performances thanks to its structure, which absorbs the frontal and lateral impacts in a way that it dissipate the impact energy.

SMA Wide is available in different widths: **Slim**, **Normal**, and **Large**.



Product	80W	100W	110W
Speed class	80 Km/h	100 Km/h	110 Km/h
Length	2800 mm	4700 mm	5900 mm
Frontal width	1290 mm	1290 mm	1290 mm
Rear width	1840 mm	2200 mm	2415 mm
Height	770 mm	770 mm	770 mm

SMA for Urban Areas

SMA devices for the Urban Areas are perfect to protect fixed obstacles like poles, trees, pillars, narrow cusps, roundabouts and gate entrances.

SMA **City** is the shortest device suitable to protect this kind of obstacles with its length of only 900 mm.

SMA **Tree** is made to protect the trees with two crash cushions linked with a lateral panel so that the tree is protected on three sides.



Product	City	Tree
Speed class	50 Km/h	50 Km/h
Length	900 mm	3300 mm
Width	740 mm	740 mm
Height	760 mm	760 mm

SMA for Work Zones and Toll Plazas



SMA Crash Cushions **80/1** are the perfect solution to protect work zones and toll plazas.

They are designed in order to protect the obstacle avoiding all the risks to impact against.

Unlike the other SMA devices, they present a different system of absorption which is called "Crashbox".

SMA **A/T 80/1** is the **narrowest device** of the SMA Family (only 590 mm).

SMA **80/1 Wide** has been designed to protect the cusps in front of the toll plazas.



Product	A/T 80/1	80/1 Wide
Speed class	80 Km/h	80 Km/h
Length	3600 mm	3600 mm
Frontal width	590 mm	780 mm
Rear width	590 mm	1690 mm
Height	680 mm	680 mm

SMA End Terminals

End Terminals SMA T 2 and SMA T 4 are the best systems for the protection of side and median barriers.

They present a **collapsible beam** which absorbs the impact by means of a controlled deformation.

These End Terminals have been tested according to the **part 7** of the **EN 1317** and are **double sided, bi-directional, and repairable**



Product	T 2	T 4
Speed class	80 Km/h	110 Km/h
Length	3600 mm	6000 mm
Width	290 mm	290 mm
Height	620 mm	620 mm

Temporary Solution for Work Zones 80/1 WZ



The R&D Dept. has designed the first **solution for work zones**, which, thanks to its features, can even absorb side impacts without invading the carriageway.

The system can be installed in a simply way by placing the crash cushion already screwed on the steel plate in front of the obstacle and by fastening the connection to the barrier.

Crash Test on 80/1 WZ

Speed Class	Test	ASI	Class	THIV
80 km/h	TC 4.2.80	0,55	A	17,36

Product	80/1 WZ
Speed class	80 Km/h
Length	3600 mm
Width	600 mm
Height	680 mm



Crash test SMA T2 [click on the picture to play the video of crash test.](#)

SMA 80/1 WZ
The 1st temporary redirective solution for work zones

Monitoring system GERONIMO

SMA Family widen its range with a new product.

GERONIMO is a monitoring system which alerts real time the highway patrol in case of impact against the obstacle and records a video of the accident.

The video will be used for analysing the impact dynamics and to determine the responsibility of the occurred accident.



The system can be supplied with a photovoltaic panel.



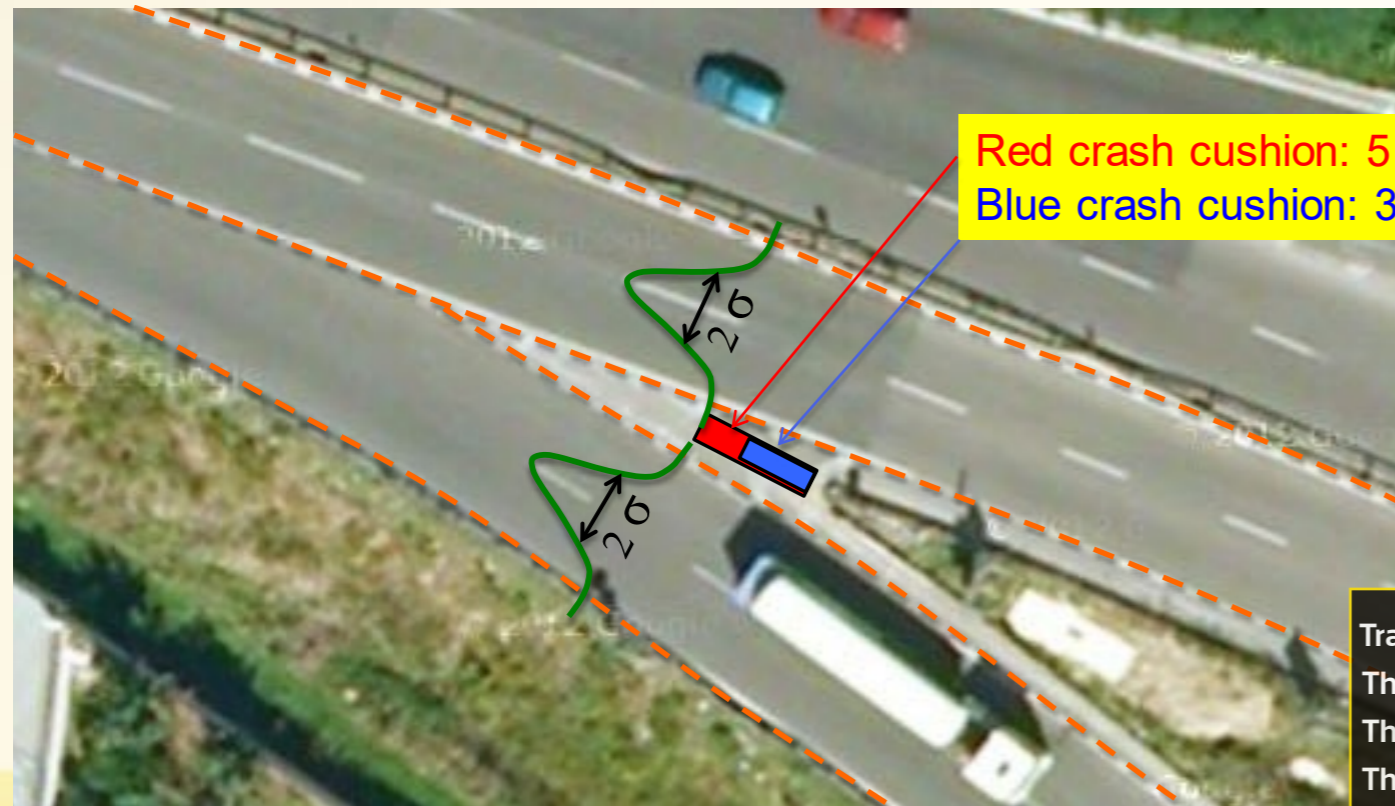
Example of a monitoring system GERONIMO installed on an Italian road. [Click on the left picture to play the video.](#)



A camera records a video of the impact and permits to understand the dynamics of the accident.



Shorter means Safer



An important study carried out by the R&D Department explains the advantages of installing a shorter crash cushion in order to reduce the impact probabilities.

Further information are available on the magazine "CIRCULAR" at page 123. [Click here to open the PDF file.](#)

Traffic flux: 3000 vehicles per day, speed limit 80 Km/h.
The vehicle position is described by a Gaussian distribution.
The standard deviation is estimated to be 0.3 m.
The probability to get an impact passes from 14 imp/year (5m) to 8 imp/year (3m).

Shorter means Cheaper

Thanks to their reduces sizes, SMA products offer a very convenient solution in terms of quantity of units wich can be loaded into one container or truck.

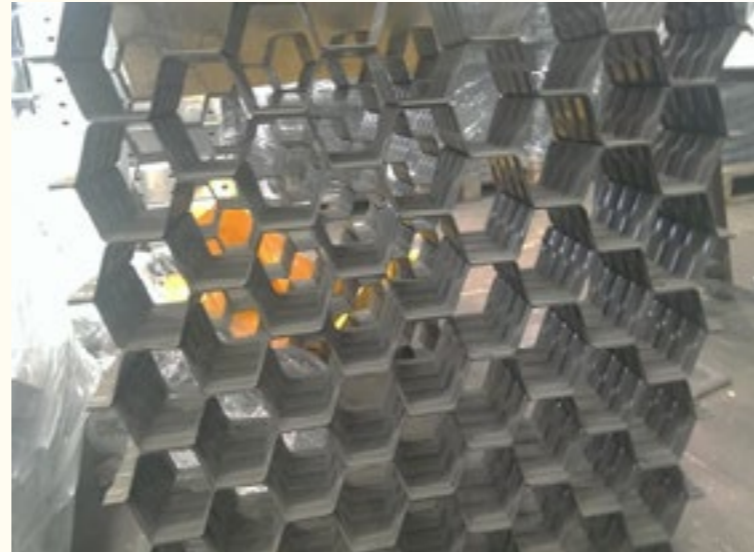
It permits a significant money saving by reducing the number of shipments.



Absorbing panels

The **honeycomb** cells are really functional to absorb frontal, angled, and lateral impacts.

Each panel is very simple to replace after the impact, because the cells have been pressed and therefore they are easy to be removed.



Example of absorbing panel.

Collapsible beam

The absorbing system of the SMA End terminals is formed by some elements named *Crashboxes* which are welded and screwed one another and permit the energy absorption of vehicle impacts from different directions. After the impact it is possible to remove and replace the damaged sections and reuse the rest of the device.



Installation in tunnels

SMA Crash Cushions can be installed without problems in tunnels because they are totally made of steel (Fire Safety Class 0) and very simple to install even in short spots.

SMA Crash Cushions can be removed in a few time in case of emergency.

A short video explains the procedure for the removal.

[Click here to play](#)



SMA 80P installed in Croatia



SMA 80P installed in the Frejus Road tunnel, Italy

The advantage of steel

The steel structure offers 3 unique benefits:

- As a result of the impact the profile doesn't release hazardous debris on the roadway for other motorists;
- The damaged steel profiles haven't any negative environmental impact and can be recycled to create new profiles;
- The material offers excellent resistance to heat sources and open flames.



The pictures show the situation in a tunnel after a fire. The steel structure of the crash cushion has avoided the flame propagation.

Crash test according to EN 1317



Our Crash cushions and End terminals have been successfully tested according to the EN 1317. SMA Crash Cushions have been certified as family.

The End Terminals even have been tested according to the part 7 of the EN 1317 where heavier Crash Tests are foreseen.

End terminals tests according to the prEN 1317-7

SMA	TEST	ASI	CLASS	THIV	Z Class	Lateral Disp.
T110	TT 4.3.110	1,1	B	32	Z1	D1
	TT 2.1.100	1,4	B	44	Z1	D1
	TT 1.3.110	1,4	B	42	Z1	D1
	TT 5.1.100	1,2	B	32	Z1	D1
	TT 6.3.110	1,3	B	30	Z1	D1
T80	TT 3.3.110	1,1	B	40	Z1	D1
	TT 1.2.80	1,1	B	40	Z1	D1
	TT 2.1.80	1,2	B	40	Z1	D1
	TT 4.2.80	1,1	B	24	Z1	D1

Crash cushions tests according to the EN 1317-3

SMA	TEST	ASI	CLASS	THIV	Z Class	Lateral Disp.
50	TC 1.1.50	0,9	A	33	Z1	D1
80	TC 1.2.80	1,25	B	39	Z1	D1
80 WL	TC 1.2.100	1,25	B	36	Z1	D1
100	TC 4.2.100	1,2	B	27	Z1	D1
100 WL	TC 1.1.100	1	A	20	Z1	D1
110	TC 2.1.100	1,1	B	44	Z1	D1
	TC 1.3.110	0,9	A	36	Z1	D1
	TC 3.3.110	1,2	B	41	Z1	D1
	TC 4.3.110	1	A	28	Z1	D1
	TC 5.3.110	1	A	28	Z1	D1
110 WL	TC 1.1.100	0,9	A	39	Z1	D1
	TC 4.3.110	1,2	B	28	Z1	D1
	TC 1.3.110	1	A	40	Z1	D1
80/1 A-T	TC 1.2.80	1	A	41	Z1	D1
	TC 2.1.80	1,1	B	39	Z1	D1
	TC 4.2.80	0,9	A	27	Z1	D1
CITY	TC 1.1.50	1,4	B	44	Z1	D1
50 TREE	TC 4.2.50	0,6	A	12	Z1	D1
110 SLIM	TC 1.3.110	1	A	40	Z1	D1
	TC 4.3.110	1,2	B	25	Z1	D1
130	TC 2.2.130	1,2	B	43	Z1	D1

All the crash test videos are available on the Company Youtube channel [youtube:user/attenuatoriurtoSMA](https://www.youtube.com/user/attenuatoriurtoSMA)

CE Certification



SMA Family products own the CE Certification released by the **CSI S.p.a.**

CSI is a Certification and Behavioural Analysis Center accredited by ACCREDIA, with its site in Milan (Italy).

CSI S.p.a.
Sede Legale:
20030 Senago - MI - I
Cascina Traversagna 21
Direzione, Uffici e Laboratori
20021 Bollate - MI - I
Viale Lombardia 20
Tel. +39 02 383301
Fax +39 02 3503940
www.csi-spa.com

Med. N07-3

CSI CERT **CE**

Certificato numero / Certificate number	0497/CPR/4821
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CERTIFICATO DI COSTANZA DELLE PRESTAZIONI
CERTIFICATE OF CONSTANCY OF PERFORMANCE

In conformità al Regolamento 305/2011/EU del Parlamento Europeo e del Consiglio del 9 marzo 2011 (Regolamento Prodotti per le Costruzioni o CPR), questo certificato si applica al prodotto da costruzione
In compliance with Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), this certificate applies to the construction product

Attenuatore d'urto denominato / Crash cushion named
"Redirective S.M.A. Safety Modular Absorber"

fabbricato da / produced by
INDUSTRY A.M.S. SRL
Via Eduardo De Filippo, 11 - 80013 Casalnuovo (NA) - ITALY
e fabbricato nello stabilimento di produzione / and produced in the manufacturing plant
Zona Asi Sud - 81025 Marcianise (CE) - ITALY

The full document is available in PDF format on our website:
www.smaroadsafety.com/en/certificazioni

Crash test according to NCHRP 350



SMA 110P is the first Crash Cushion to have performed the crash test according to both the European and the American Standard NCHRP 350.

Crash cushion SMA 110P tested according to the NCHRP 350

Thanks to the compliance with both the Norms SMA 110P /TL3 is also named **The Hero of Two Worlds**

TEST	OIVx	OIVy	ORAx	ORAy	Class
TL 3.30	11,4 m/s	4,8 m/s	13,6 g	2,5 g	Preferred
TL 3.31	9,2 m/s	0,7 m/s	13,7 g	- 9 g	Preferred
TL 3.32					Preferred
TL 3.36	3,5 m/s	6 m/s	-3,8 g	-10,5 g	Preferred
TL 3.37	4 m/s	5,3 m/s	-5,8 g	-7,7 g	Preferred
TL 3.38	5,5 m/s	5,1 m/s	19,4 g	-13,4 g	Preferred
TL 3.39					Preferred



Crash test SMA 110P: [click on the picture to play the video.](#)


Crash test with dummy onboard



The crash test TL 3.31 according to NCHRP on SMA 110P has been performed with an instrumented dummy onboard.

Crash test results according to EuroNCAP Test TL 3.31 with instrumented dummy

Criterion	Passenger SP 3 (H3)	Higher performance limit	Difference from the limit
Head & Neck	4.000 *		
Head			
HIC 15	37.94	700	662,06
Acceleration Resultant 3ms cumulative	28.42 g 4.000 *	80.0 g	51.58 g
	26.80 g	80.0 g	53.2 g
Neck			
Shear Force Fx+	0.00 kN 4.000 *	1.9 kN	1.9 kN
Shear Force Fx-	-0.42 kN 4.000 *	1.9 kN	1.9 kN
Tensile Force Fz+	0.48 kN 4.000 *	2.7 kN	2.22 kN
Extension My-	-12.41 Nm 4.000 *	42 Nm	54,4 Nm
Chest	4.000 *		
Deflection	-16.29 mm 4.000 ¹⁾ *	22 mm	38,29 mm
VC max	0.09 m/s 4.000 ¹⁾ *	0.5 m/s	0.41 m/s
Diagonal belt upper force			
Sum	(8.000)		
1) based on 2-point cal. chest deflection			
Rating without modifiers			
Points			
* 4.000			
* 2.670 - 3.999			
* 1.330 - 2.669			
* 0.001 - 1.329			
* 0.000			



Head impact

Neck impact

Chest impact

Crash test SMA 110P: [click on the picture to play the video.](#)

Some pictures of our products



SMA 100P: installation on asphalt



SMA 100W: installation on concrete basement



SMA City: installation on asphalt



SMA A/T 80/1: installation on concrete basement

Further pictures are available on our website

www.smaroadsafety.com

Some pictures of our products



SMA 110P: installation on asphalt



SMA T4: installation on asphalt



SMA 80P: installation on asphalt



SMA 80/1 Wide: installation on asphalt

Further pictures are available on our website
www.smaroadsafety.com

Restoring

SMA Family products **don't request maintenance**. After the impact they can be restored in a few time, by replacing the damaged components. **All the component** of the crash cushion can be easily removed and replaced. The estimated time for a complete restoring is **1 hour**.



Example of a phase of restoring: the damaged bays must be opened in order that the absorbing cells can be replaced.
[Click on the left picture to play the video.](#)

Transport costs

Thanks to their reduced sizes SMA products offer a very convenient solution in terms of space required into the container or truck. Such features permit the transportation of more units in a single trip and to make the costs of logistics smaller.



App SMART

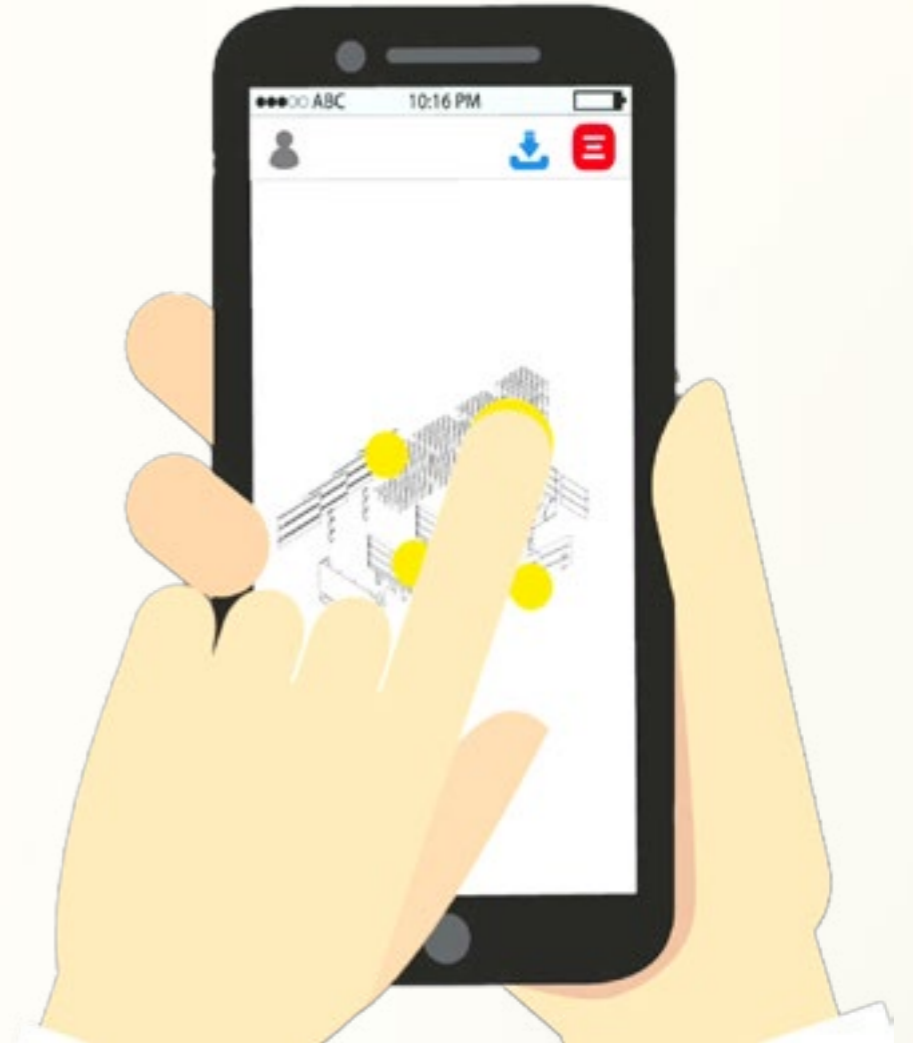
SMA has created the App **SMART** which connects the smartphone to the SMA device by the NFC Technology in order to offer the best service for the customer's requests.

Thanks to SMART it is possible to get important data regarding the purchased device:

- Model, width, date of shipment;
- Installation procedure;
- Spare parts list;
- Repair procedure.



The Smartphone must touch the tag (in the red circle) installed on the back face of the SMA device in order to start the App. [Click on the picture to play the video.](#)



With the App SMART you can see the spare parts list for the specific model and request the components you need.

Contacts



Further information are available on our Website:

www.smaroadsafety.com

You can also find information on our products on the Social Media channels:

Facebook

LinkedIn

Twitter

Youtube

Our office contacts are:



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