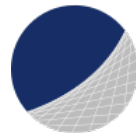


Section speed



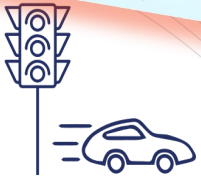
In-vehicle & Fixed Speed



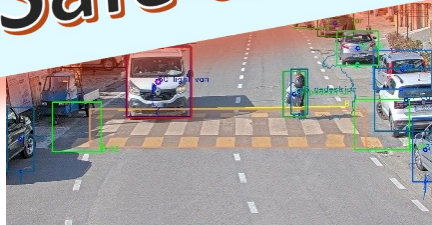
ENiNe

One step ahead

Red Light Violation



Safe crossing



ANPR & ADR



# Never stop innovating

- **EngiNe S.p.A.** is one of the most versatile and advanced company in the field of **enforcement**
- One of **EngiNe's mantras is to innovate and introduce new products** on the market every year or enhance/upgrade existing ones with the latest technologies.
- The ENG **R&D team** covers a wide range of skills.

Legal metrology

Big data management

Signal analysis, and  
image/data processing

Device centralization

Artificial intelligence

Laser & radar devices

Features extraction  
from scenes

# Innovating Milestones



**2007 - EnVESRED:** the world's first red light enforcement device 'Independent' - no physical connection with the traffic light controller is needed.



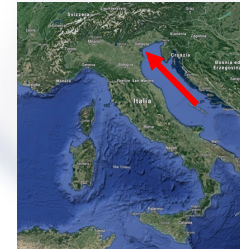
**2009 - CELERITAS:** the world's first second-generation section speed enforcement system.



**2017 - 17025 accreditation:** the first lab in Europe accredited for section speed system calibrations.



**2019 - Average Speed @ Venice:** section speed enforcement for boats.








# **CELERITAS** **MSE 2021**

## **1. Automotive In-Vehicle speed enforcement**





# Key strenghts

 **No calibration** required and easy installation.

 **Enhanced reliability**, bolstered by AI technology.

 Suitable for up to **three lanes** in **both** directions.

 Improved performance with **artificial intelligence**.

 **Plug and play** functionality.



# How system works: easy setup

**CELERITAS**  
MSE 2021




# How system works: operative samples



☰ 🔄 🏠 ☁️ 08/05/2024 15:39 AN0015P - 0x000342E9 Stato: Software Telecamere Radar GNSS Rilevamento attivo Transiti Utility Utente

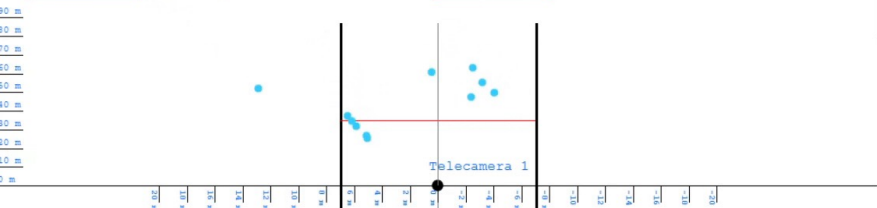
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Tutti
Infrazione
Controllo



VELOCITÀ 98 KM/H
🔒 BLOCCA
08/05/2024 15:39:35.308 Dir. ↑ Targa: FF150DR

CONNESSO
Direzione: ↕
Velocità propria: 142 km/h
Rollio: 5.9°
Elevazione: 2.4°




Rilevamento attivo

Configurazione: Non predefinita

Autorefresh  Totale: 61

Data	Velocità	Dir.	Targa	Classe
08/05/2024 15:39:35	98	↑↑	FF150DR	leggero
08/05/2024 15:39:27	63	↑↑	CA779KX	pesante
08/05/2024 15:38:39	111	↑↑	FZ396AJ	leggero
08/05/2024 15:38:36	106	↑↑	GF453RR	leggero
08/05/2024 15:38:36	62	↑↑	*****	pesante
08/05/2024 15:38:34	89	↑↑	*****	leggero
08/05/2024 15:38:29	105	↑↑	*****	leggero
08/05/2024 15:38:22	98	↑↑	GF412DG	leggero






# How system works: operative samples



08/05/2024 15:43 AN0015P - 0x000342E9 Stato: Software Telecamere Radar GNSS Rilevamento attivo
Transiti Utility Utente

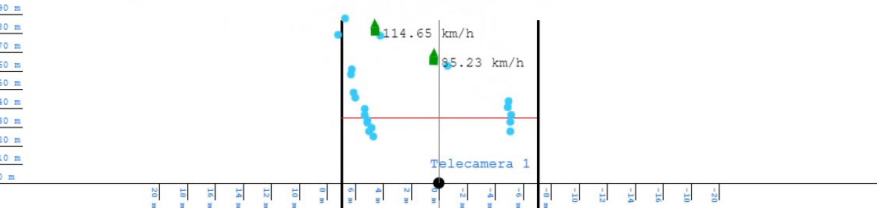
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Tutti Infrazione Controllo



**VELOCITÀ 104 KM/H** **BLOCCA** 08/05/2024 15:42:31.029 Dir. ↑ Targa: FH027RG

**CONNESSO** Direzione: ↓↑ Velocità propria: **132 km/h** Rollio: **-1.5°** Elevazione: **-1.7°**




Rilevamento attivo

Configurazione: Non predefinita

Autorefresh  Totale: 69

Data	Velocità	Dir.	Targa	Classe
08/05/2024 15:42:31	104	↑↑	FH027RG	leggero
08/05/2024 15:42:23	105	↑↑	*****	leggero
08/05/2024 15:42:18	99	↑↑	EN798YM	leggero
08/05/2024 15:41:27	81	↑↑	GF453RR	leggero
08/05/2024 15:40:53	75	↑↑	GF453RR	leggero
08/05/2024 15:40:39	105	↑↑	GF453RR	leggero
08/05/2024 15:40:10	80	↑↑	EX692ZB	leggero
08/05/2024 15:40:00	90	↑↑	GC940FN	pesante



# How system works: operative samples



☰ 🔄 🏠 ☁️ 08/05/2024 15:44 AN0015P - Dx000342E9 Stato: Software Telecamere Radar GNSS Rilevamento attivo Transiti - Utility - Utente

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Tutti Infrazione Controllo

**VELOCITÀ 94 KM/H** BLOCCA 08/05/2024 15:44:01.748 Dir. ↑ Targa: GA154ZK 🔍

DOWNLOAD ETF ELIMINA

CONNESSO Direzione: ↓↑ Velocità propria: 0 km/h Rollio: -0.1° Elevazione: 0.7°

**Rilevamento attivo**

Configurazione: Non predefinita

Autorefresh  Totale: 73

Data	Velocità	Dir.	Targa	Classe
08/05/2024 15:44:01	94	↑↑	GA154ZK	leggero
08/05/2024 15:43:51	96	↑↑	DP998LP	leggero
08/05/2024 15:43:42	114	↑↑	XA117NH	leggero
08/05/2024 15:43:35	84	↑↑	BS705JH	leggero
08/05/2024 15:42:31	104	↑↑	FH027RG	leggero
08/05/2024 15:42:23	105	↑↑	*****	leggero
08/05/2024 15:42:18	99	↑↑	EN798YM	leggero
08/05/2024 15:41:27	81	↑↑	GF453RR	leggero

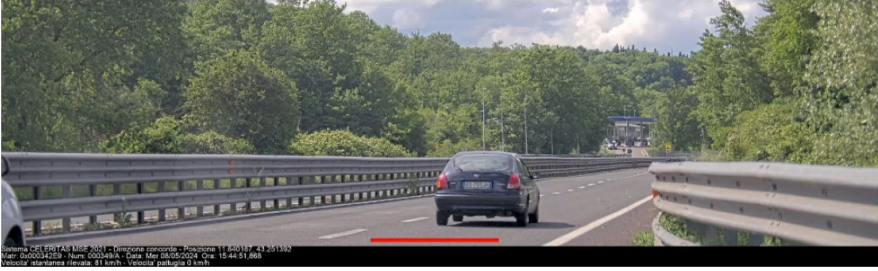
# How system works: operative samples



Transiti - Utility - Utente
08/05/2024 15:48 AN0015P - 0x000342E9 Stato: Software Telecamere Radar GNSS Rilevamento attivo

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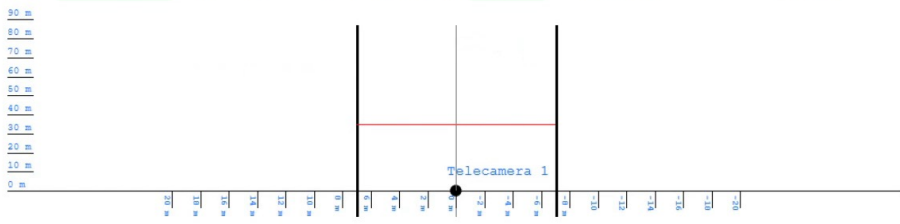
Tutti **Infrazioni** Controllo Video



Sistema C-TE-FOTAS-MIP-NM1 - Impianto coordinato - Altopiano 18 663103 - 43.251392  
 Viter: 0x000342E9 - Num: 0003461A - Data: 08/05/2024 Ora: 15:44:51,868  
 Velocità: 81 km/h - Velocità massima: 81 km/h - Velocità pubblica: 0 km/h

**VELOCITÀ 81 KM/H**    08/05/2024 15:44:51.868    Dir. ↑    Targa: BS705JH           

**CONNESSO**    Direzione: ↓↑    Velocità propria: **0 km/h**    Rollio: **-0.9°**    Elevazione: **-0.2°**



**Rilevamento attivo**

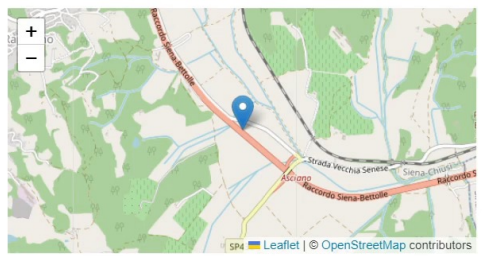
Configurazione: Non predefinita

Autorefresh     Data inizio     Data fine     Tipo Velocità

Targa     Sessione        

Targa: < 1 2 3 >    Totale: 256

Data	Velocità	Dir.	Targa	Classe
08/05/2024 15:45:48	113	↑↑	CP553SG	leggero
08/05/2024 15:45:40	94	↑↑	DW577TV	leggero
08/05/2024 15:44:59	104	↑↑	EN798YM	leggero
08/05/2024 15:44:55	114	↑↑	GR586KC	leggero
08/05/2024 15:44:52	103	↑↑	FH027RG	leggero
08/05/2024 15:44:51	81	↑↑	BS705JH	leggero
08/05/2024 15:44:01	94	↑↑	GA154ZK	leggero
08/05/2024 15:43:51	96	↑↑	DP998LP	leggero



192.168.2.9/GUI/#





## **2. Advanced LTZ enforcement**

# EnVES EVO 1812 in action



# EnVES EVO 1812 in a nutshell



- ▶ The EnVES EVO 1812 is a system designed to detect **unauthorized access to limited traffic zones**.
- ▶ The EnVES EVO 1812 system has been specifically designed with a flexible installation geometry, making it **adaptable to various types of installations**.
- ▶ The EnVES EVO 1812 is equipped with a **customized AI engine** that enables the distinction of various vehicle categories.
- ▶ The EnVES EVO 1812 is **unique** in its ability to discriminate not only between light and heavy vehicles but also among motorcycles, cars, small trucks, heavy trucks, and buses.
- ▶ As a result, it is possible to **limit the control to specific vehicle categories**.





# Classification Samples





# Classification Samples



SS715 km 27+900 direzione Bettolle corsia di marcia  
Matr: AM0003Q - Data: Gio 03/11/2022 Ora: 19:04:31,621



SS715 km 27+900 direzione Bettolle corsia di marcia  
Matr: AM0003Q - Data: Ven 04/11/2022 Ora: 02:57:58,066



SS715 km 27+900 direzione Bettolle corsia di marcia  
Matr: AM0003Q - Data: Gio 03/11/2022 Ora: 22:38:16,542



SS715 km 27+900 direzione Bettolle corsia di marcia  
Matr: AM0003Q - Data: Ven 04/11/2022 Ora: 04:32:58,655





# Classification Samples



SS715 km 27+900 direzione Bettolle corsia di marcia  
Matr: AM0003Q - Data: Mar 08/11/2022 - Ora: 09:28:06.425



SS715 km 27+900 direzione Bettolle corsia di marcia  
Matr: AM0003Q - Data: Mar 08/11/2022 - Ora: 06:33:01.921

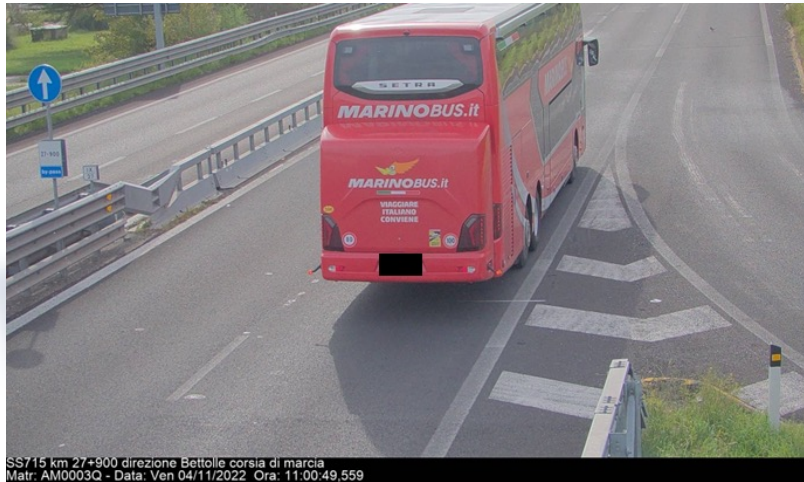


SS715 km 27+900 direzione Bettolle corsia di marcia  
Matr: AM0003Q - Data: Lun 07/11/2022 - Ora: 20:38:48.329





# Classification Samples



SS715 km 27+900 direzione Bettolle corsia di marcia  
Matr: AM0003Q - Data: Ven 04/11/2022 Ora: 11:00:49,559



SS715 km 27+900 direzione Bettolle corsia di marcia  
Matr: AM0003Q - Data: Ven 04/11/2022 Ora: 22:43:31,582



SS715 km 27+900 direzione Bettolle corsia di marcia  
Matr: AM0003Q - Data: Ven 04/11/2022 Ora: 01:52:36,570



# Classification Samples



SS715 km 27+900 direzione Bettolle corsia di marcia  
Matr: AM0003Q - Data: Mar 08/11/2022 Ora: 07:34:31.030



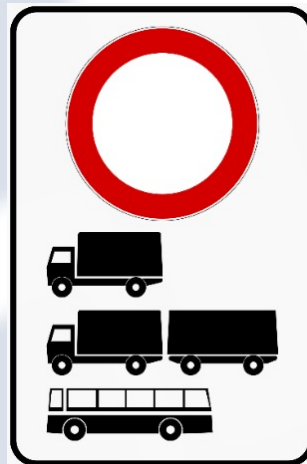
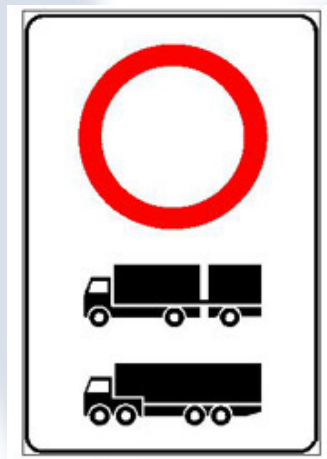
SS715 km 27+900 direzione Bettolle corsia di marcia  
Matr: AM0003Q - Data: Lun 07/11/2022 Ora: 21:07:26.225



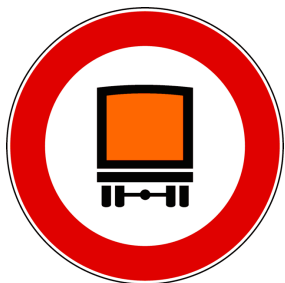
SS715 km 27+900 direzione Bettolle corsia di marcia  
Matr: AM0003Q - Data: Lun 07/11/2022 Ora: 23:58:46.378



# Prohibitions or exclusions for multiple categories of vehicles.







# Classification Samples



SS715 km 27+900 direzione Bettolle corsia di marcia  
Matr. AM0003Q - Data: Mar 08/11/2022 Ora: 08:38:49.739



SS715 km 27+900 direzione Bettolle corsia di marcia  
Matr. AM0003Q - Data: Ven 04/11/2022 Ora: 17:22:02.773



SS715 km 27+900 direzione Bettolle corsia di marcia  
Matr. AM0003Q - Data: Mar 08/11/2022 Ora: 01:28:46.790



SS715 km 27+900 direzione Bettolle corsia di marcia  
Matr. AM0003Q - Data: Ven 04/11/2022 Ora: 18:42:46.396

# EnVES EVO 1812 vs traditional systems



## EnVES EVO 1812



- ▶ **Flexible geometry allows for the largest covered area** in the market, providing **more installation flexibility and the ability** to detect multiple vehicles simultaneously.
- ▶ **Vehicle classification can be achieved using external sensors or an advanced AI classification module** (pending approval of the AI classification module).
- ▶ The camera's 8.9-megapixel (4K) resolution ensures **high-quality**, detailed images even when covering two lanes.

## Traditional systems



- ▶ **Smaller area:** while some other systems may have a longer distance but limited depth, and others may have a larger coverage area but shorter distance, no other product offers the same coverage area as EnVES EVO 1812.
- ▶ **Only a few other systems have been approved for classification and require an external sensor.**
- ▶ **Many systems utilize cameras with 2 megapixel or 5 megapixel resolution**, resulting in lower image quality.

