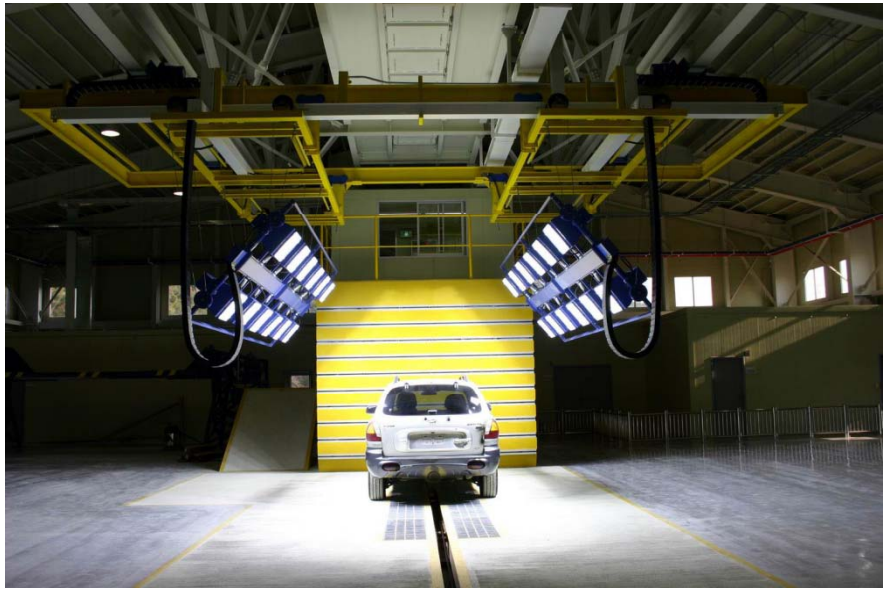


Lighting System for High Speed Photography on Automobile Crash Test Facility



6F Gwangmyeong Techno-Town, 626-3, Cheolsan-dong, Gwangmyeong-si, Kyonggi-do 423-829 KOREA
Tel. 02-2612-2111 Fax. 02-2612-0660 Web. www.visol.co.kr e-mail. hopark@visol.net

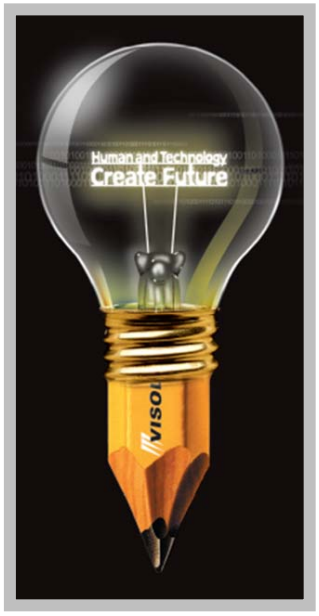
VISOL



Introduction

Human and Technology Create Future

VISOL,Inc was established with the aim to develop the best image and optical solution on Visual solutions basis. Applying the most advanced technology to overcome the limitation of the human eye, we will keep to challenge and endeavor for perfecting Image acquisition, Analysis solution and Optical technology in order to conquer global market.



Company	VISOL Inc.
President	Jae-Young Lee
Establishment	January 2000
Employee	35
Head Quarter	6F Gwangmyeong Techno-Town, 626-3 Gwangmyeong-si, Kyonggi-do 423-829 Korea
Business	Sports Timing and System Maintenance 2D & 3D Motion Capture & Analysis System Test System (High Speed Lighting, Solar Simulation) System Engineering and Integration

TEL.	82-2–2612-2111	FAX.	82-2–2612-0660
URL	www.visol.co.kr www.kwon3d.com	e-mail	hopark@visol.net

VISOL

HSL System



Overview

Over the last 12 years VISOL has installed lighting systems to the automotive industry for crash test applications. With our enhancing high technology, comparable configurations had been installed and are in successful operation at: Delphi Korea, Ssangyong Motors, Hyundai Motors, Korea Automobile Test & Research Institute, Korea Insurance Development Institute, Automotive Parts Innovation Center, etc. in Korea and Geely Automobile, GATC, DongFeng Automobile Group, Luckybaby in China.





HSL(High Speed Lighting)
APPLICATION

VISOL



Light Source : HMI(Metal Halide) 4KW(Available Boost Function)

Color Temperature : 6,000 K° (Daylight color temperature)

Color Rendering Index(Ra) : > 90

Light Modulation : No Flicker effects up to 10,000fps

Average Life Time of Lamp: 500 hours or 1,600 Starts

Control : The control of the lighting system should be manual & Automatic.
An interface to enable external overall test sequence control needs to be established.

Uniformity : (Emax – Emin) / Emax ≤ 10%

VISOL



Illumination Area & Average Luminance

Frontal Crash Test

6M(L) x 3M(W) x 2(H), Over 150,000lux
Pit Lighting : 6M(L) x 3M(W), Over 80,000lux
Positioning System : X – Axis : 0m ~ 3m
Y - Axis : 4m for each direction
Z - Axis : 1.5m from floor
Tilt : 45°

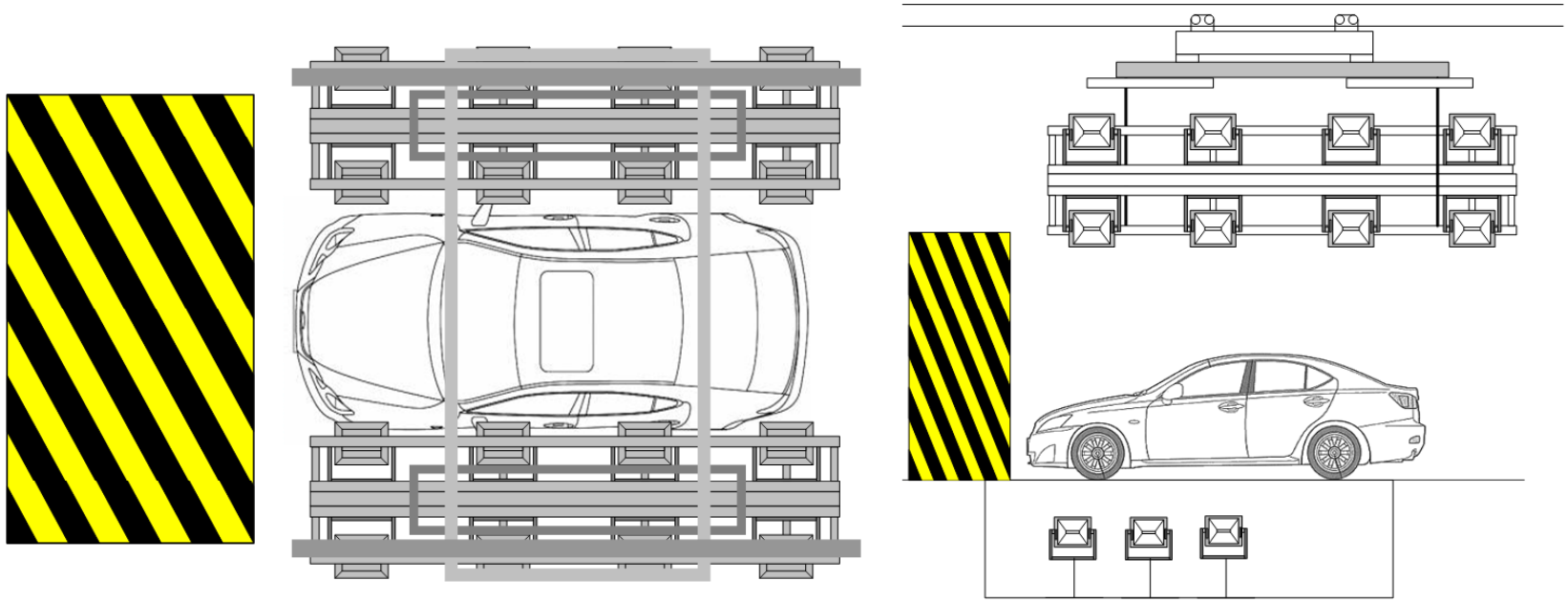


Frontal Crash Test Over View

HSL System



Frontal Crash Test



Luminary quantity can be decided depending on the required intensity and exposed area.



Illumination Area & Average Luminance

Side and Rear Impact Test

6M(L) x 4M(W) x 2(H), Over 150,000lux
Pit Lighting : 4M(L) x 3M(W), Over 80,000lux
Positioning System : X – Axis : 0m ~ 3m
Y - Axis : 4m for each direction
Z – Axis : 1.5m from floor
Tilt : 45°
Rotate : 90 ° 2sub frames

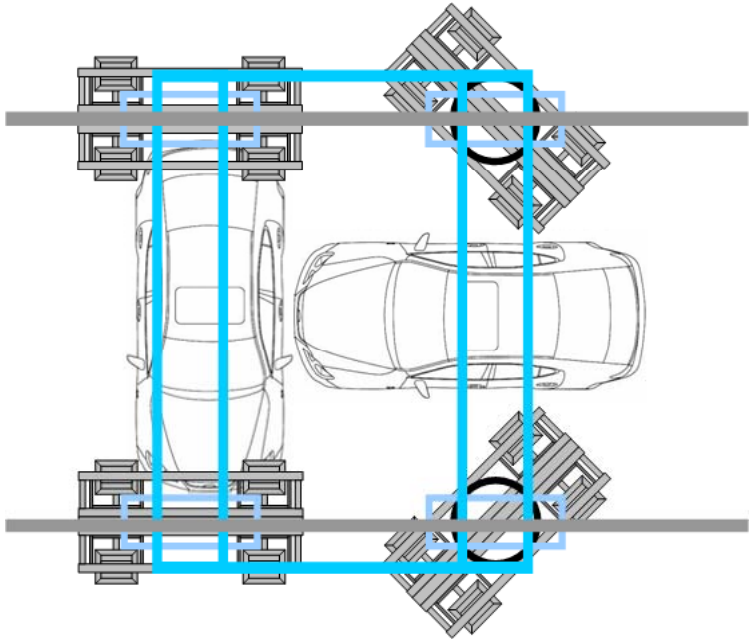


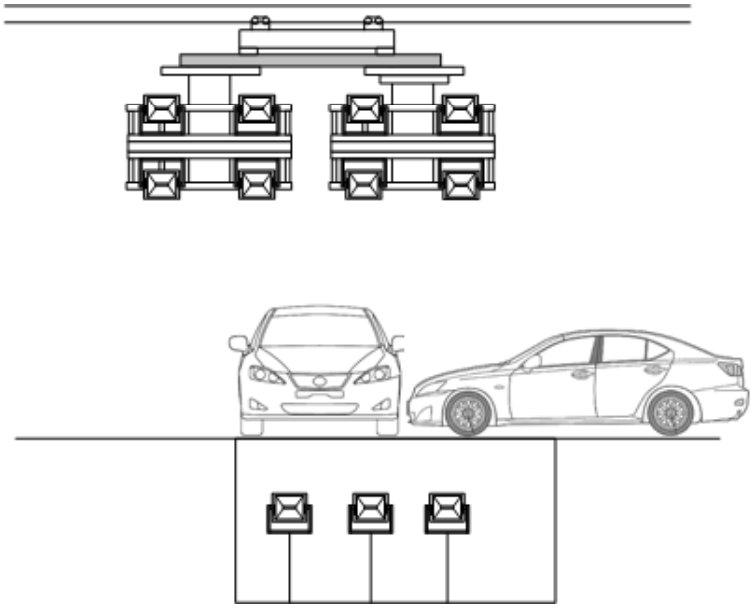
High Speed Lighting System Over View

HSL System



Side and Rear Impact test





For Side & Rear Impact Test, two sub-frames can be rotated for various testing type.
Luminary quantity can be decided depending on the required intensity and exposed area.

VISOL



Illumination Area & Average Luminance

Sled System

5M(L) x 2M(W) x 2(H), Over 150,000lux
Positioning System : Y – Axis : 3m for each direction
Z – Axis : 1.5m from floor
Tilt : 45°



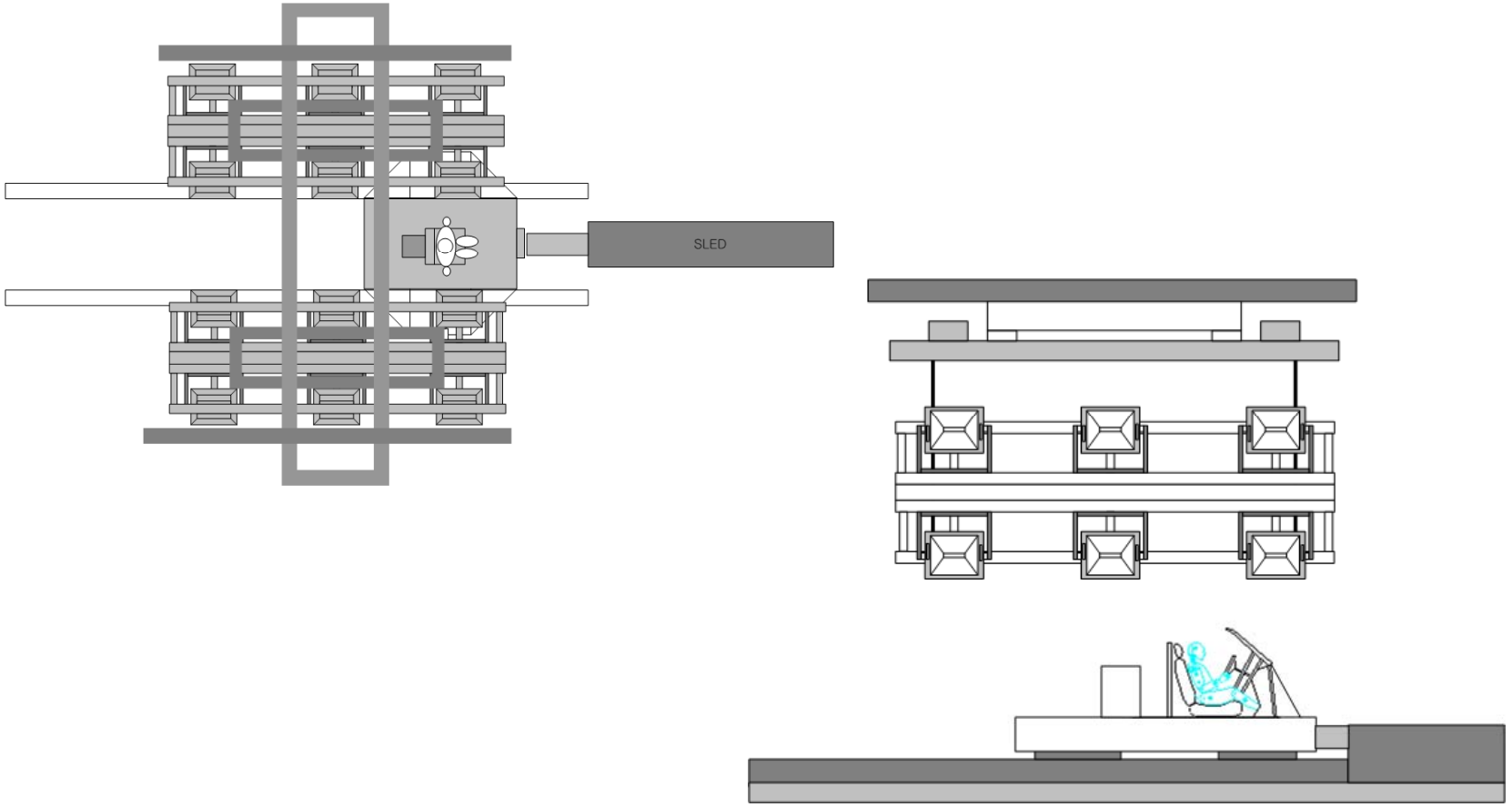
Sled System Over View

VISOL

HSL System



Sled Test

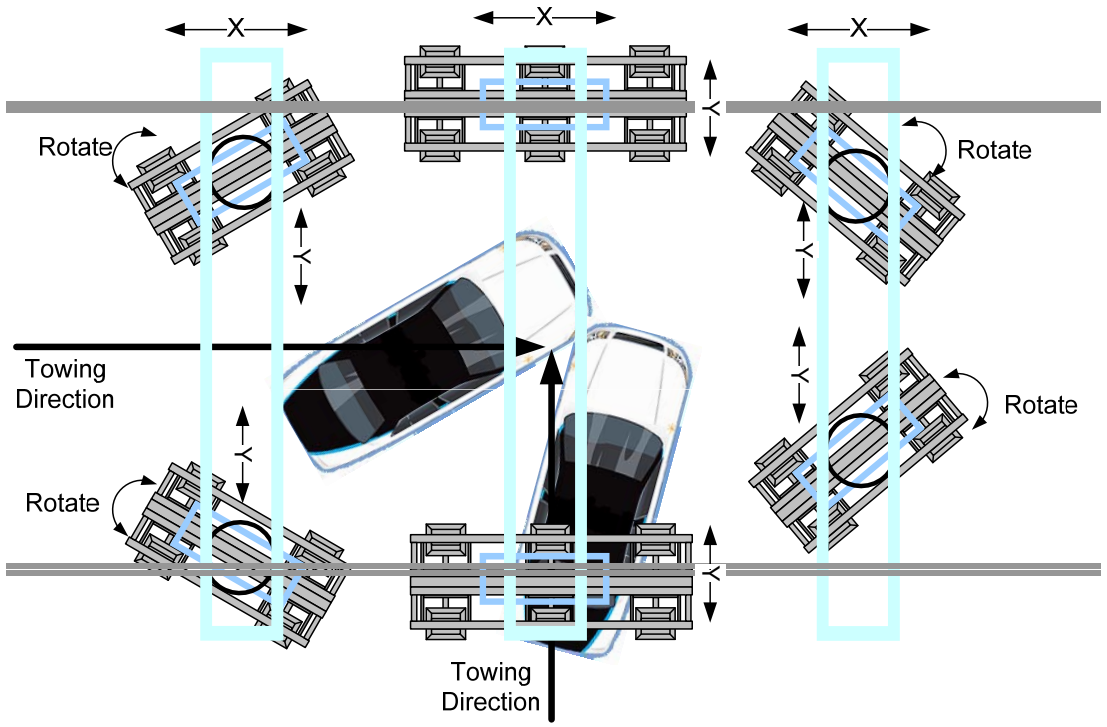


Luminary quantity can be decided depending on the required intensity and exposed area.

HSL System



Multi Angle Car to Car Crash



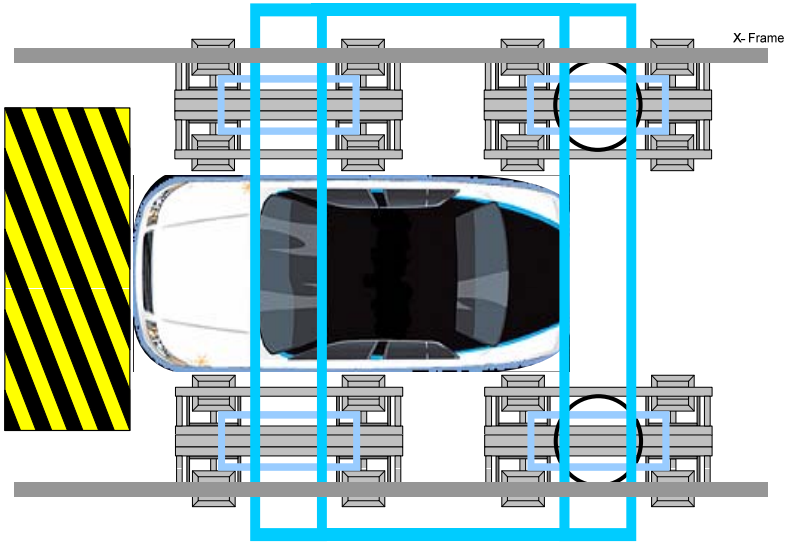
For various Multi Angle Car-To-Car Test, Positioning System consist of 6EA Sub Frames, moveability of sub frames such as X, Y, Z, Tilt, Rotate can make the various test be available. Luminary quantity can be decided depending on the required intensity and exposed area.

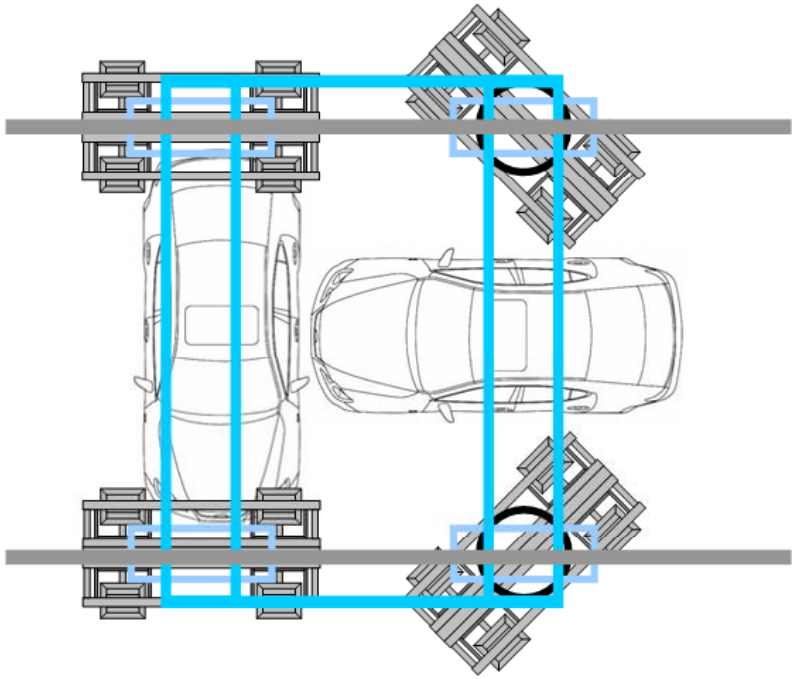
HSL System



Advantage of VISOL LIGHTING SYSTEM

Frontal Test & Side Impact(Rear Impact)



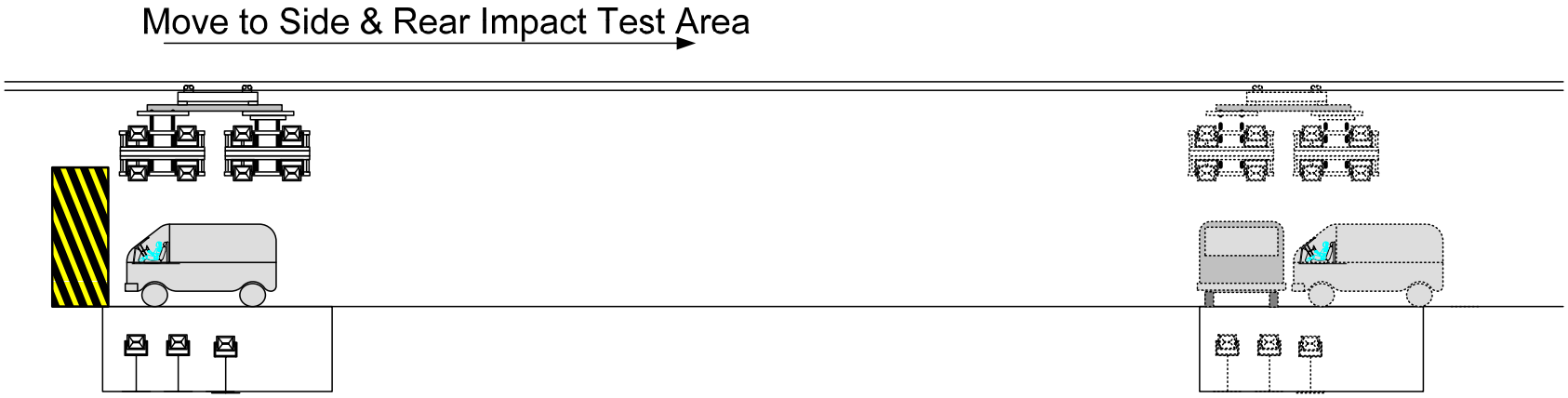


Barrier crash test and Side & Rear Impact Test can be available through moving the Positioning System from Frontal area to Side & Rear area. Two sub frames will rotate with 90 degree.
Luminary quantity can be decided depending on the required intensity and exposed area.

VISOL



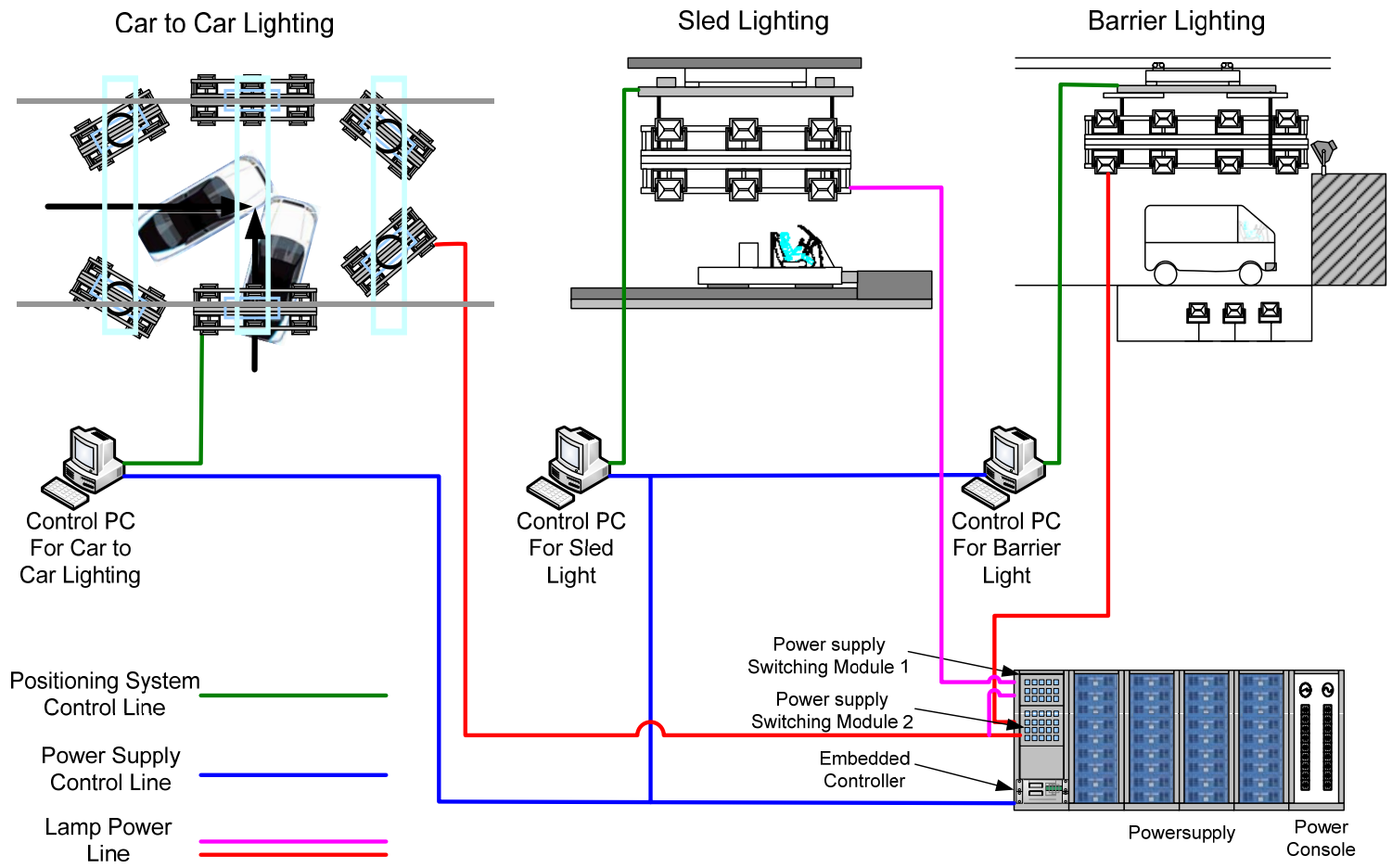
Frontal Test & Side Impact(Rear Impact)



HSL System



Advantage of VISOL LIGHTING SYSTEM



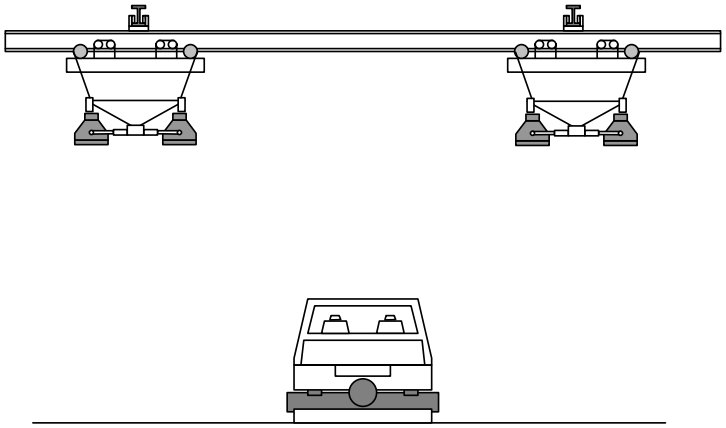
Sharing Power Supply(EPS) can be cost-effective and useful.

HSL System

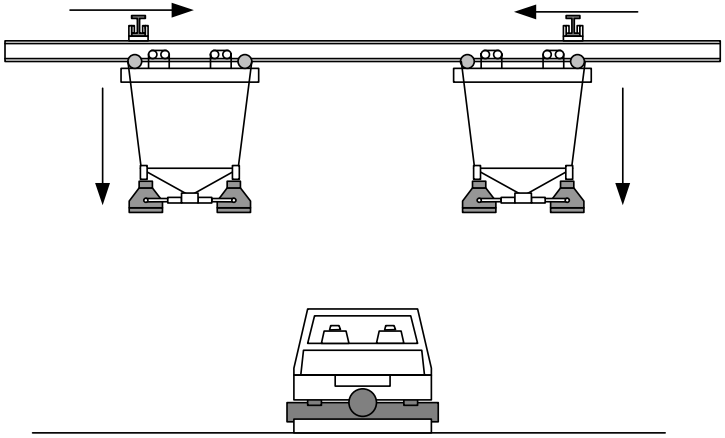


Basic Operation For Barrier & Sled Test

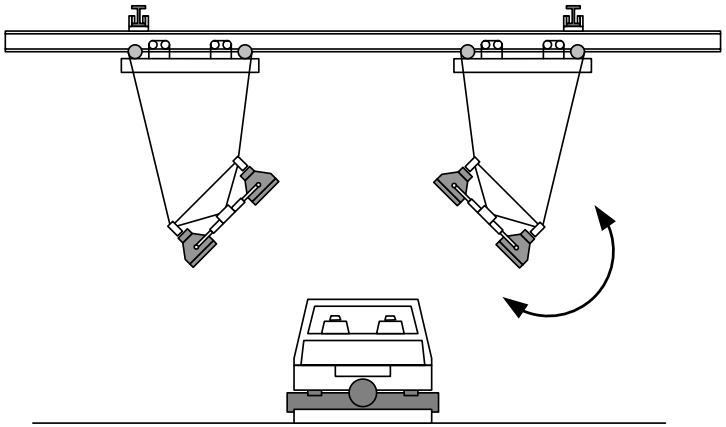
State 1(Not Use)



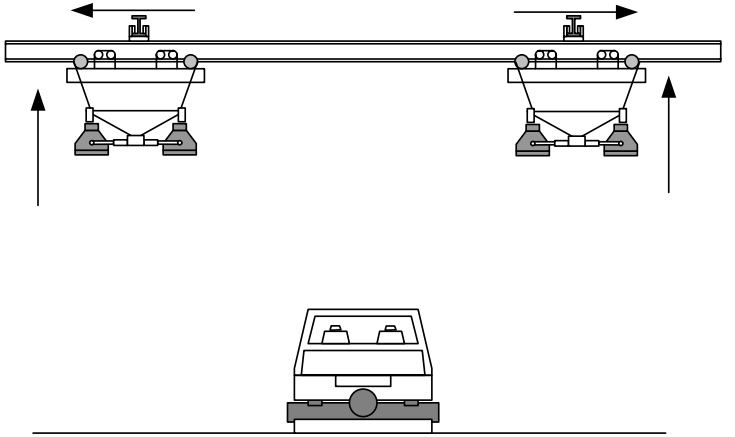
State 2(Power On)



State 3(Boost Up)



State 4(Power Off)



VISOL

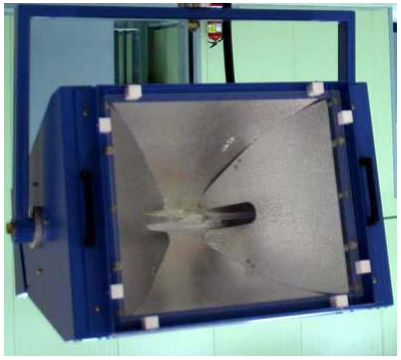


PRODUCT

HSL System



Products



Luminary

Working Temp (℃) : -10℃ ~ +60℃
Humidity(%) : No dew
Lamp Type : Metal Halide 4,000W
Lamp Average Life time : 500h or 1,600 starts
Color Temperature(K˚) : Approx. 6000K˚
Luminary type : Flood Type
UV Cutoff : 280nm or Shorter
Dimension : 540(W) * 400(D) * 470(H)



Power Supply 4000W

Input : 220V 3PH or 380V 3PH/N
Output & Operation Time :
2,000W – No Limits
4,000W – No Limits
8,000W – 10s or More
Ambient Temp(℃) : 0 ℃ ~ +30 ℃ (No Dew)
Output Stability : ±1%
Dimension : 435(W) * 540(D) * 177(H)

VISOL

HSL System



LED Lights



VSL12060

Luminary (Built-In Power)

Working Temp (℃) : -10℃ ~ +40℃
Humidity(%) : No dew
Lamp Type : LED 1,200W
Mode : Dimming Control or On/Off
Lamp Average Life time : 30,000 Hour
Color Temperature(K°) : Approx. 6000K°
Preheating time : None
Wavelength: Visible Wavelength(No IR, No UV)
Input Voltage : AC 80 ~ 220V
Dimension : 250(W) * 170(D) * 460(H)
Weight : 12kg

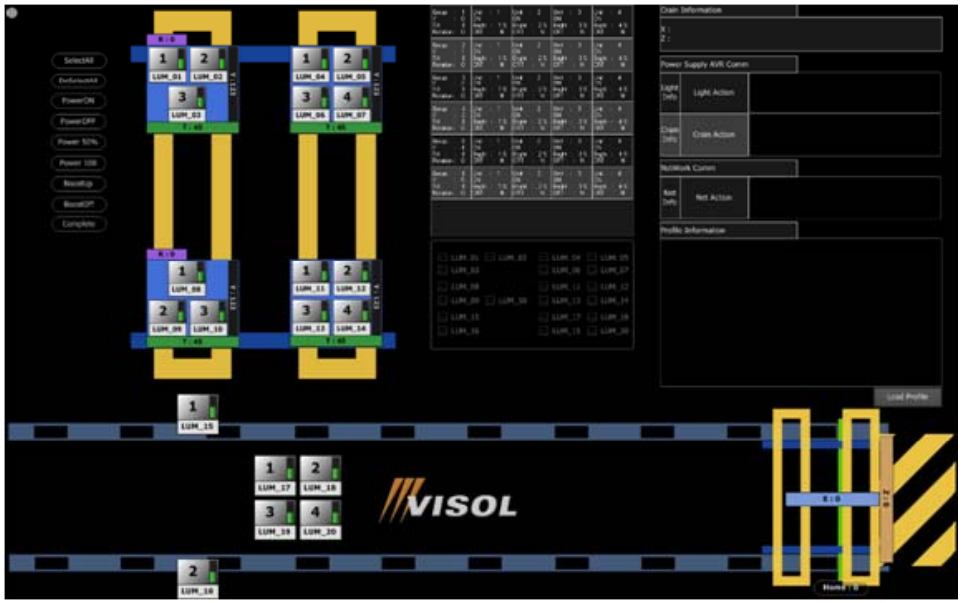
VISOL

HSL System



Software

Control Program



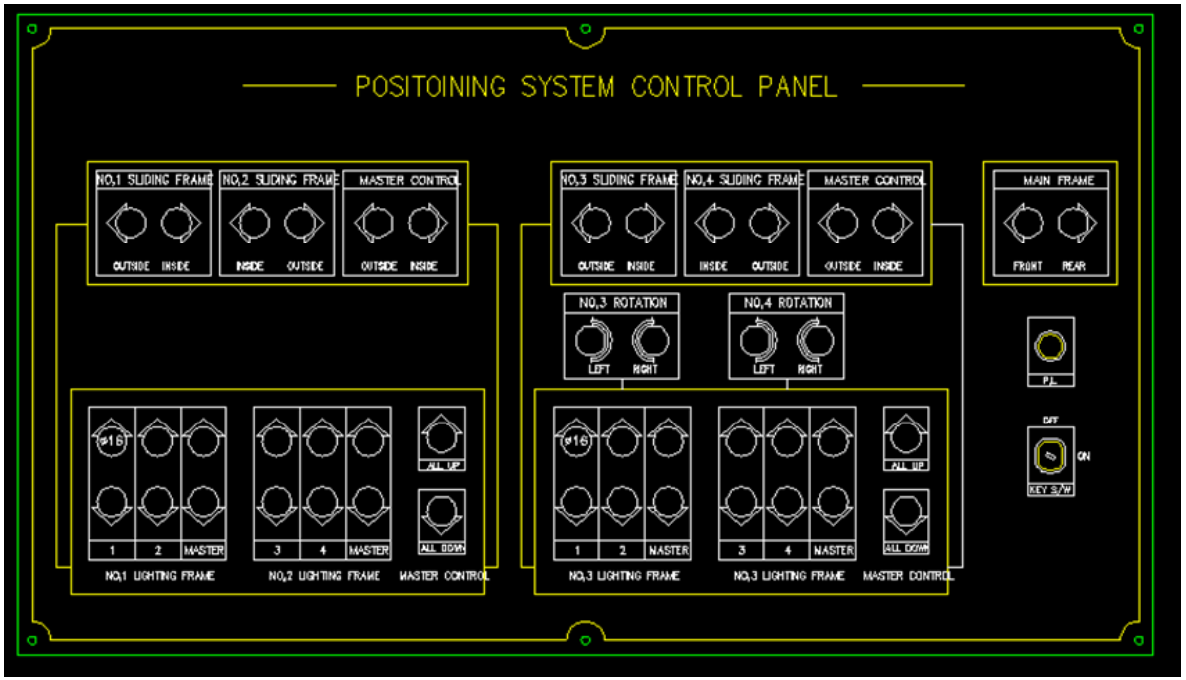
- The similar GUI as the real product installation
- Profile Save and Load
- Real-time Display of Status
- Positioning System Control (X/Y/Z/Tilt/Rotate)
- Individual Luminary On/Off and Boost
- Etc.

VISOL

HSL System



Positioning System Control Panel





Positioning System Manual Controller

Overall Control (X/Y/Z/Tilt/Rotate),

Individual Control (X/Y/Z/Tilt/Rotate)

VISOL

HSL System



Aux Light





Application

Air-bag Test (Deployment, Dynamic), Seat-Belt, Drop, Seat Anchorage

HSL System



CE Certificate

TÜV AUSTRIA CERT GMBH
Certification Body

TÜV AUSTRIA

CERTIFICATE OF CONFORMITY

Reg.- Nr.: TA 380 09 0374

Product:	High Speed Light EPS (Electronic Power Supply)	Applicant:	Visol, Inc. #601 Gwangmyeong Techno-Town 626-3, Cheolsan-dong Gwangmyeong-si, Kyonggi-do 423-829 Korea
Type:	VSEPS-4000		
Description:			
Certification reference:	EN ISO 12100-1:2003 EN ISO 12100-2:2003 EN 60204-1:2006 EN 60204-11:2000 Machinery Directive 98/37/EC, Annex I (Essential health and safety requirements)		
Comments:			
Test report:	BWS-09-SC-138		

The above mentioned product complies with the requirements of the above standards. It fulfills the requirements of Directive 98/37/EC.

2009-10-08
Date of issue

Certification representative

CE

After preparation of the necessary technical documentation as well as the conformity declaration the required CE marking can be affixed on the product. Other relevant directives have to be observed.

„The duplication of this document in parts is subject to the approval by TÜV AUSTRIA CERT GMBH"

TÜV AUSTRIA CERT GMBH
A-1015 Wien, Krugerstraße 16
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Fax: +43 (0)1 514 07- 6065
e-mail: prodzert@tuv.at

QFM-TAC-ModA-006, Rev.01

ZERTIFIKAT | CERTIFICATE | CERTIFICAT | CERTIFICADO | СЕРТИФИКАТ | شهادة | 证书 | 인증서

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TÜV AUSTRIA CERT GMBH
Certification Body

TÜV AUSTRIA

CERTIFICATE OF CONFORMITY

Reg.- Nr.: TA 380 09 0375

Product:	High Speed Light EPS (Electronic Power Supply)	Applicant:	Visol, Inc. #601 Gwangmyeong Techno-Town 626-3, Cheolsan-dong Gwangmyeong-si, Kyonggi-do 423-829 Korea
Type:	VSEPS-4000		
Description:			
Certification reference:	EN 61000-6-4:2007 EN 61000-6-2:2005		
Comments:			
Test report:	BWS-09-EC-0109		

The above mentioned product complies with the requirements of the above standards. It fulfills the requirements of Directive 2004/108/EC.

2009-10-09
Date of issue

Certification representative

CE

After preparation of the necessary technical documentation as well as the conformity declaration the required CE marking can be affixed on the product. Other relevant directives have to be observed.

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e-mail: prodzert@tuv.at

QFM-TAC-ModA-006, Rev.01

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VISOL

HSL System



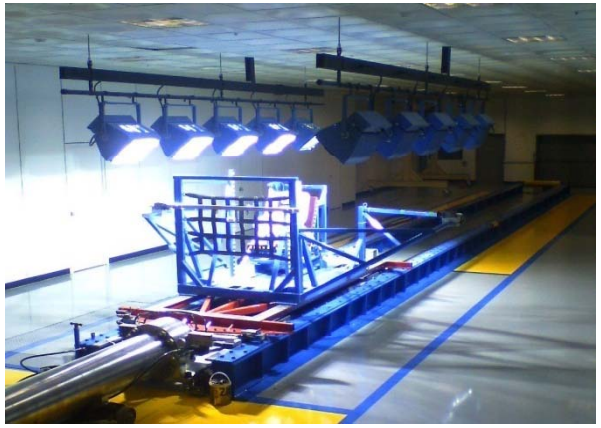
Photos



쌍용자동차 (Z/Tilt)



삼송 (X/YZ/Tilt)



한국건설생활환경연구원 KEMT (Fixed)



Autoliv (Y/Z/Tilt)



Autoliv (Y/Z/Tilt)



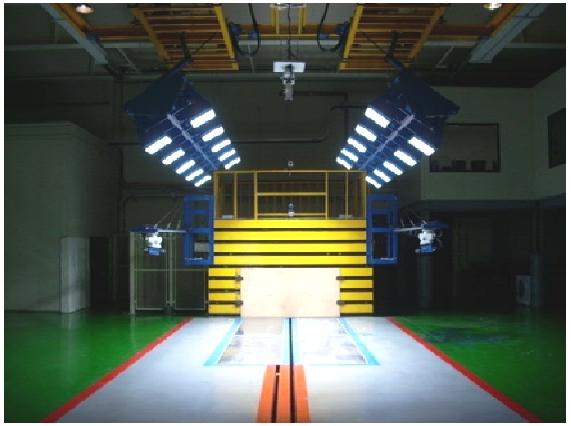
Autoliv (Y/Z/Tilt)

VISOL

HSL System



Photos



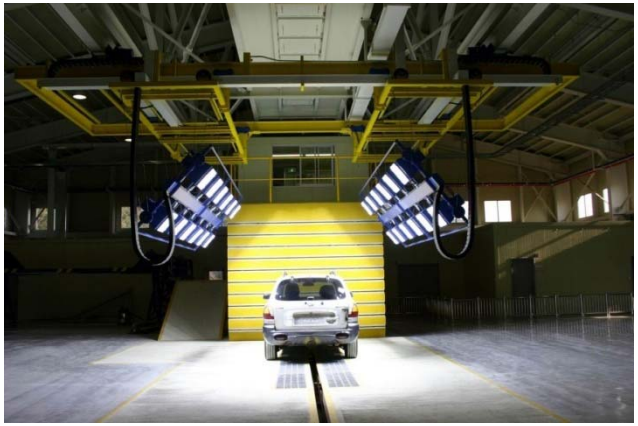
쌍용자동차 (Y/Y/Z/Tilt & PIT)



쌍용자동차 (Y/Y/Z/Tilt & PIT)



울산테크노파크 (Y/Y/Z/Tilt)



울산테크노파크 (Y/Y/Z/Tilt)



보험개발원 (Z/Tilt)



보험개발원 (Z/Tilt)

VISOL

HSL System



User List

- **Hyundai Motor Company (HMC)**
- **Renault Samsung Motors**
- **Autoliv Korea**
- **Korea Delphi Automotive Systems Corporation**
- **Daewoo Precision Industries**
- **Ssangyong Motor Company**
- **Korea Automobile Testing & Research Institute**
- **Korea Insurance Development Institute**
- **Automotive Parts Innovation Center (Ulsan Industry Promotion Techno Park)**
- **Korea Environment & Merchandise Testing Institute (KEMTI)**
- **LG Chem, Ltd.**
- **Samsong Industries Ltd.**
- **High Speed Camera Suppliers**
- **GATC (China)**
- **Geely Automobile (China)**
- **Dongfeng Automobile (NAST, China)**
- **Lucky Baby**
- **Max-Inf**
- **etc.**

VISOL