



Sung Gwang Smog Co.,Ltd.

Sung Gwang Smog Control

<http://www.sunggwangsmog.com>

Sung Gwang Smog Co.,Ltd.

Realizes complete combustion of all existing internal combustion engines .

Improving the combustion efficiency
of internal combustion engines and
Exhaust guiding device for rapid
extraction of exhaust gas

EID

EID Smoke Reduction Device

World's first patent registration



Development background

Development Background

- Reduced smoke and fine dust
- carbon emissions (Net-Zero) Improved
- performance and lifespan of internal combustion
- engines Reduced fuel consumption and improved output



Crisis of fines for 'exceeding greenhouse gas emissions'

(Kia KRW 140 billion, Renault KRW 83 billion, Ssangyong KRW 53 billion)

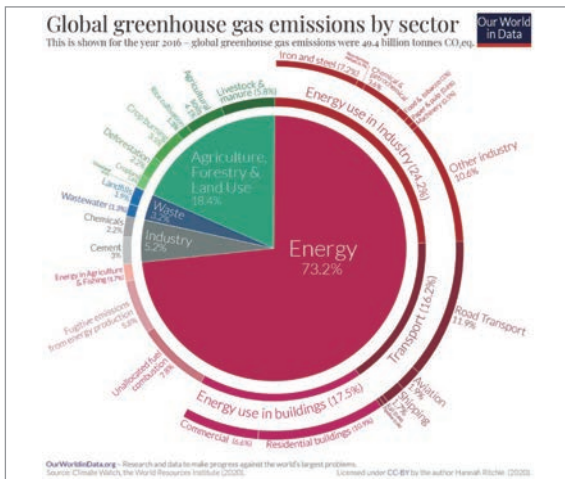
Amount achieved by automobile manufacturer by year and final excess (US)* (~'20)

manufacturer company	classification	Excess (US) achievement by year									Company's CO2e, requirement required
		2012	2013	2014	2015	2016	2017	2018	2019	2020	
Hyundai	pass	3,328,923	6,429,010	6,904,230	5,488,059	1,408,301	1,961,908	4,008,010	3,099,849	-10,403,699	709,204
	Carpo/Carpo					-822,942	-724,191	-1,082,978	-1,998,100	1,396,371	
Kia	pass	2,473,930	3,480,302	3,687,288	1,943,469	927,839	1,584,133	2,414,790	721,759	-8,703,284	-2,842,841
	Carpo/Carpo					-37,984	-190,282	-300,602	-84,990	1,180,780	
Kia GM	pass	808,501	1,018,398	190,844	-385,528	-439,769	-83,781	1,439,828	937,119	-1,160,823	1,281,989
	Carpo/Carpo					16,745	-6,527	47,325	28,787	-80,239	
Renault company	pass	270,860	714,794	1,477,406	1,428,172	-123,504	211,407	197,012	-712,834	-1,820,089	-1,869,040
	Carpo/Carpo							1,849	3,721	4,892	
Ssangyong	pass	171,930	397,865	841,033	358,709	-327,000	-344,009	-198,823	-431,929	-694,044	-1,069,290
	Carpo/Carpo					286,197	60,929	29,877	-78,103	-179,786	
BMW	pass	378,819	808,165	1,249,938	1,409,371	650,739	280,944	450,823	149,083	372,210	972,116
	Carpo/Carpo										
BMC	pass	263,767	634,028	1,100,106	1,000,431	522,481	-13,648	212,867	208,391	-329,639	112,600
	Carpo/Carpo										
Audi Volkswagen	pass	786,427	1,899,844	2,319,619	2,129,676	197,447	-5,496	165,059	-99,893	71,899	239,394
	Carpo/Carpo										
VW	pass	67,348	99,852	197,499	197,408	2,920	8,002	7,587	-24,483	-63,581	-83,129
	Carpo/Carpo										
Kia/renault	pass	76,304	190,790	262,863	584,888	126,011	66,340	59,890	28,809	62,897	147,596
	Carpo/Carpo										
Kia/renault	pass	60,987	168,799	270,448	304,190	59,373	97,008	79,012	61,824	-3,330	154,000
	Carpo/Carpo										
Volvo	pass	32,388	73,991	179,917	298,061	137,911	122,102	82,449	-23,900	68,414	146,279
	Carpo/Carpo										
Kia/renault	pass	20,302	30,857	74,396	110,582	26,341	11,934	28,541	17,077	19,930	82,812
	Carpo/Carpo										
Kia/renault	pass	3,286	9,298	70,832	168,930	114,794	190,739	101,610	25,740	-17,894	127,360
	Carpo/Carpo										
Kia/renault	pass	46,498	110,914	124,287	193,624	93,334	25,909	18,200	-21,113	-23,242	18,230
	Carpo/Carpo										
Kia/renault	pass	1,175	3,899	6,980	6,708	-1,715	-18,139	14,019	-899	-19,104	3,917
	Carpo/Carpo										
Kia/renault	pass	451,838	393,513	304,983	-88,588	81,472	104,383	169,934	171,856	34,971	376,381
	Carpo/Carpo										
Kia/renault	pass	3,486	19,208	101,972	134,323	20,829	-19,231	-47,002	89,110	-28,848	56,254
	Carpo/Carpo										
Kia/renault	pass	18,274	17,016	7,494	-1,017	-102,719	62,708	64,936	93,998	-9,473	118,304
	Carpo/Carpo										
total		10,125,347	16,298,778	19,368,911	15,368,067	3,067,814	5,092,214	6,016,801	5,095,982	-49,260,000	-1,168,000,000

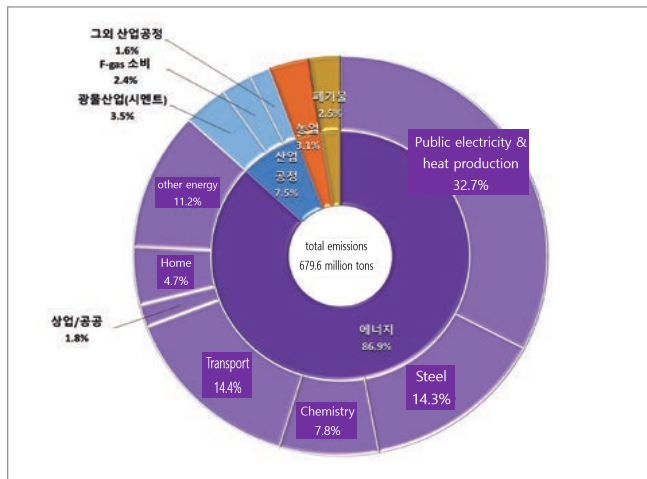
*Excess (non-achievement component) (g/1km) calculation method = ((GHG standard - GHG Emissions) x number of units sold)

Source: Ministry of Environment 22. 11. 16. Press release

Causes of Greenhouse Gases and Carbon Emissions



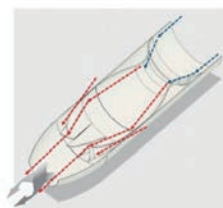
Source : www.visualcapitalist.com



Source: Ministry of Environment website

Technical Performance

- Without electrical or chemical devices
- Improving combustion in internal combustion engines
- Non-powered & non-filtered soot reduction technology
- Preemptively blocking the causes of soot and fine dust
- Exhaust gas emission inducer using aerodynamics
- Simple attachment within 1 minute at the end of the exhaust pipe without changing the structure of the engine



Improved exhaust structure realizes complete combustion.

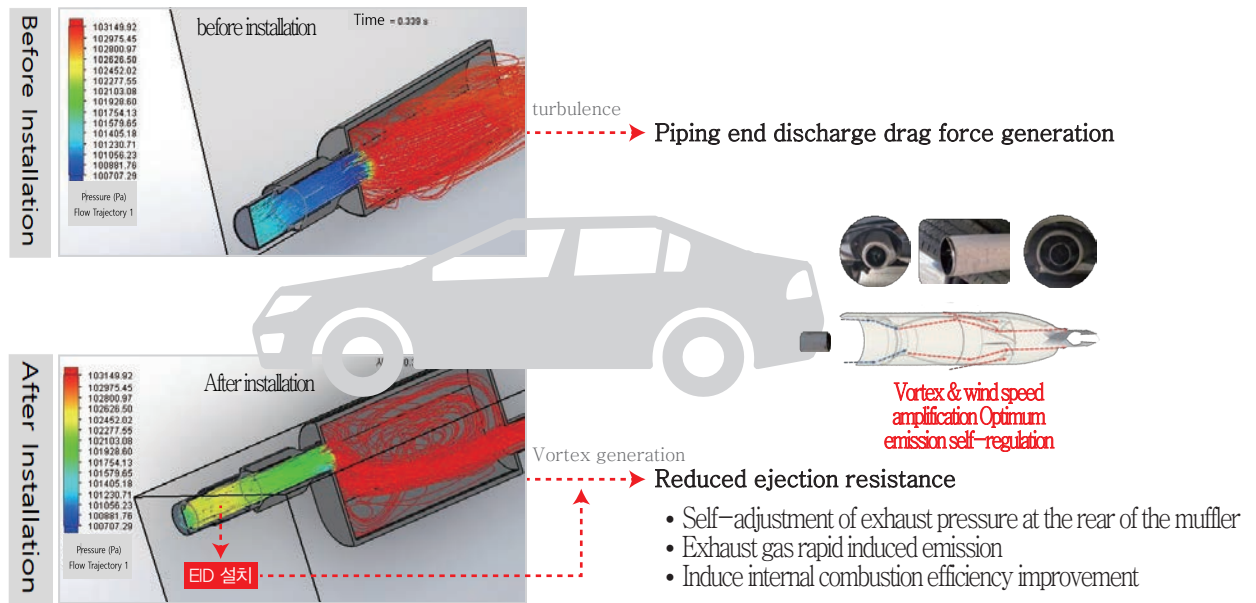


lack of oxygen low burn / sufficient oxygen supply high temperature

Product description

Product technology structure (1)

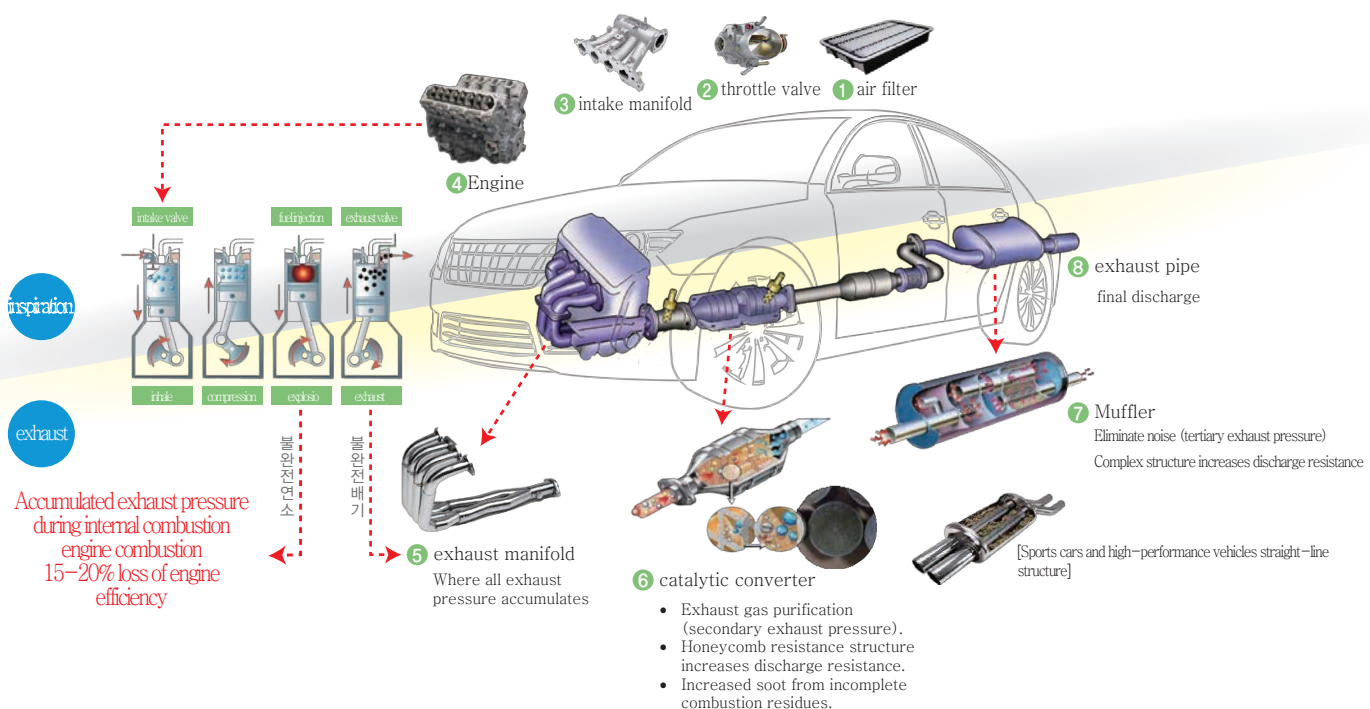
► Amplification of emission function by introducing aerodynamic vortex generation technology_EID system



Product technology structure (2)

► Carbon Emissions from Incomplete Combustion of Internal Combustion Engines_Intake and Exhaust Flow

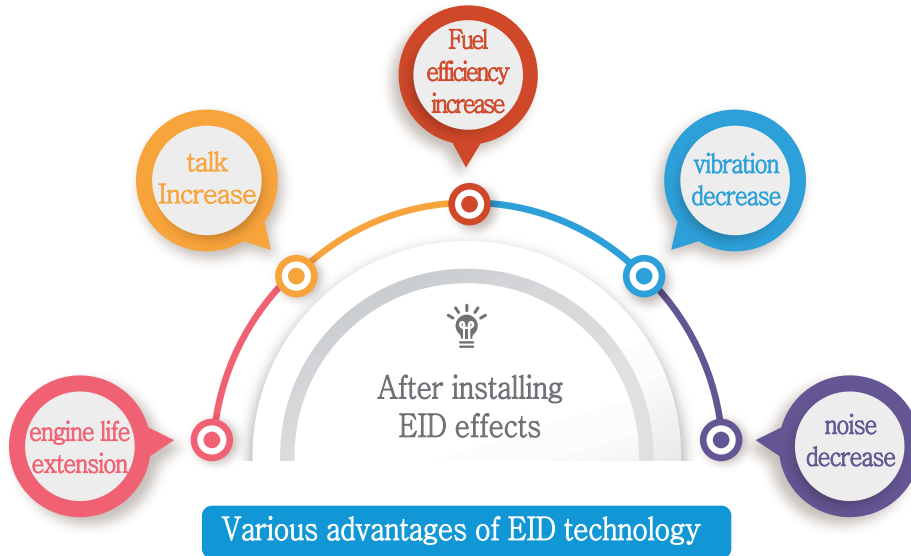
Exhaust loss due to incomplete combustion, which occurs due to accumulated exhaust pressure during combustion of an internal combustion engine, improves the problems of internal combustion engines such as soot (including carbon dioxide), fine dust, reduced fuel consumption, reduced output, and vibration.





Product characteristics

Competitiveness (Effect)



- Filtering and reprocessing of soot materials, commercialized reduction technology
- To improve incomplete combustion of internal combustion engines
- Accompanying various side effects when improving incomplete combustion

EEID differentiation (compared to 49 certified emission reduction devices)

Ultra low cost

- 10% cost of DPF unit
- No filters or chemicals
- No electricity & power device
- No parts except for this product

Ease of Installation

- Installation time less than 5 minutes
- No additional device added
- No installation space secured
- No disassembly & disassembly of existing equipment
- No structural change approval/permission

Vigilance

- No regular cleaning
- No frequent breakdowns
- Semi-permanent use
- No periodic regeneration operation

Wide Applicability

- No oil type classification
- Used regardless of output & displacement & vehicle model & maker
- No functional abnormalities
- Equipped with all new and used cars
- Increased output when applying DPF-equipped vehicles

Applying field

Smoke test result after EID installation

▶Automotive Inspection Station Measurements

vehicle name	Registration Number	Fuel	Year	Smoke inspection category (permissible standard %)	Before attachment %	After attaching %	Distance Driven KM	Inspection Date
Porter extra long shaft double cap	80다6952	Diesel	2002	20	21	8	259,406	20.11.02
Grand Starex	70다9460	Diesel	2008	15	43	14	67,489	20.09.22
Grand Starex	78노7166	Diesel	2017	15	7	0	23,787	20.09.22
Serato	10소7912	Diesel	2007	15	14	3	245,981	19.06.08
Porter 2	95나0549	Diesel	2010	15	15	2	173,093	19.06.03
Grand Starex	73수2421	Diesel	2010	15	32	9	237,852	19.06.20
Sorrento	31조3729	Diesel	2004	20	6	1	161,194	19.06.04
Porter 2	82더4929	Diesel	2015	15	75	6	193,339	18.10.29
Santa Fe	49오8866	Diesel	2002	25	99	9	240,380	19.10.18
Porter 2	85도7616	Diesel	2012	15	10	4	300,808	18.10.06
Bongo Frontier	인천83다2203	Diesel	2001	20	15	7	251,781	17.08.24

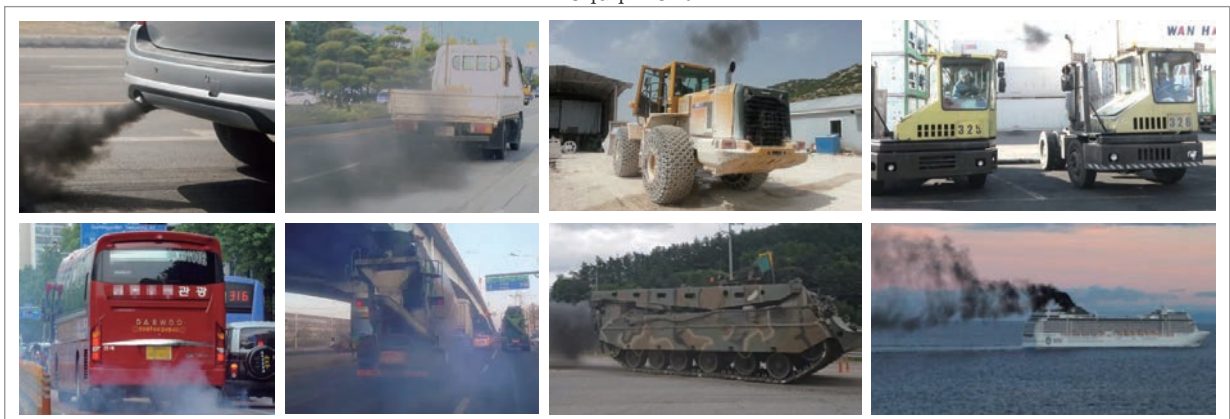
▶IM240 Mode Test Results

ITEM	Before Attachment	After Attaching	Increase and Decrease
HC(unburnt hydrocarbons)	0.009 g/km	0.004 g/km	55% Decrease
CO(carbon monoxide)	0.619 g/km	0.015 g/km	97% Decrease
NOX(nitrogen oxide)	0.003g/km	0 g/km	대폭 Decrease
CO2(carbon dioxide)	155.55 g/km	117.71 g/km	24% Decrease
Mileage per liter	17.20km/ℓ	22.90 km/L	33% Increase

EID Application Industry

▶Attached to all road vehicles equipped with internal combustion engines

- Motorcycles, minivans
- trucks, buses
- military vehicles
- Ship
- generator
- Sedan, RV, SUV
- construction vehicles
- Harbor unloading equipment
- locomotive
- military equipment





Installation case

EID Installation Case

Domestic



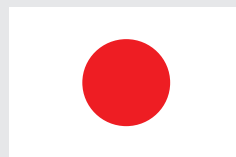
Overseas



Indonesia



Bangladesh



Japan



Turkiye



China



Peru



Brazil



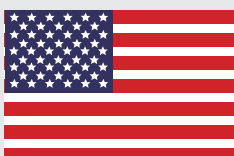
Thailand



Kyrgyzstan



Tazakistan



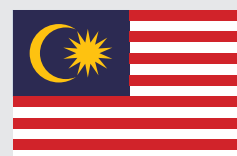
USA



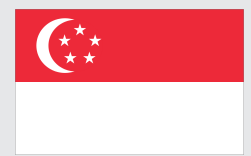
Myanmar



Taiwan



malaysia



Singapore

Certification status

Application Status by Country



미국 특허 출원



중국 특허 출원



유럽 특허 출원

Patent certificate (USA)



Patent Certificate for Vehicle/Vessel



차량 내연기관용
매연저감장치



선박 내연기관용
매연저감장치



내연기관용
매연저감장치

Fine Dust Reduction Certificate (EEEA)



Design Registration Certificate



<관련디자인등록증>
내연기관의 와류발생기



<디자인등록증>
내연기관의 와류발생기



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Other Certificates



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