



ASOSIASI INDUSTRI SEPEDA MOTOR INDONESIA
(INDONESIAN MOTORCYCLE INDUSTRY ASSOCIATION)

Motorcycle & Exhaust Emission in Indonesia

Industry & Technology Committee
AISI

JARI Indonesia Round Table Meeting
Jakarta, 14 Feb 2008

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1. AISI Members:

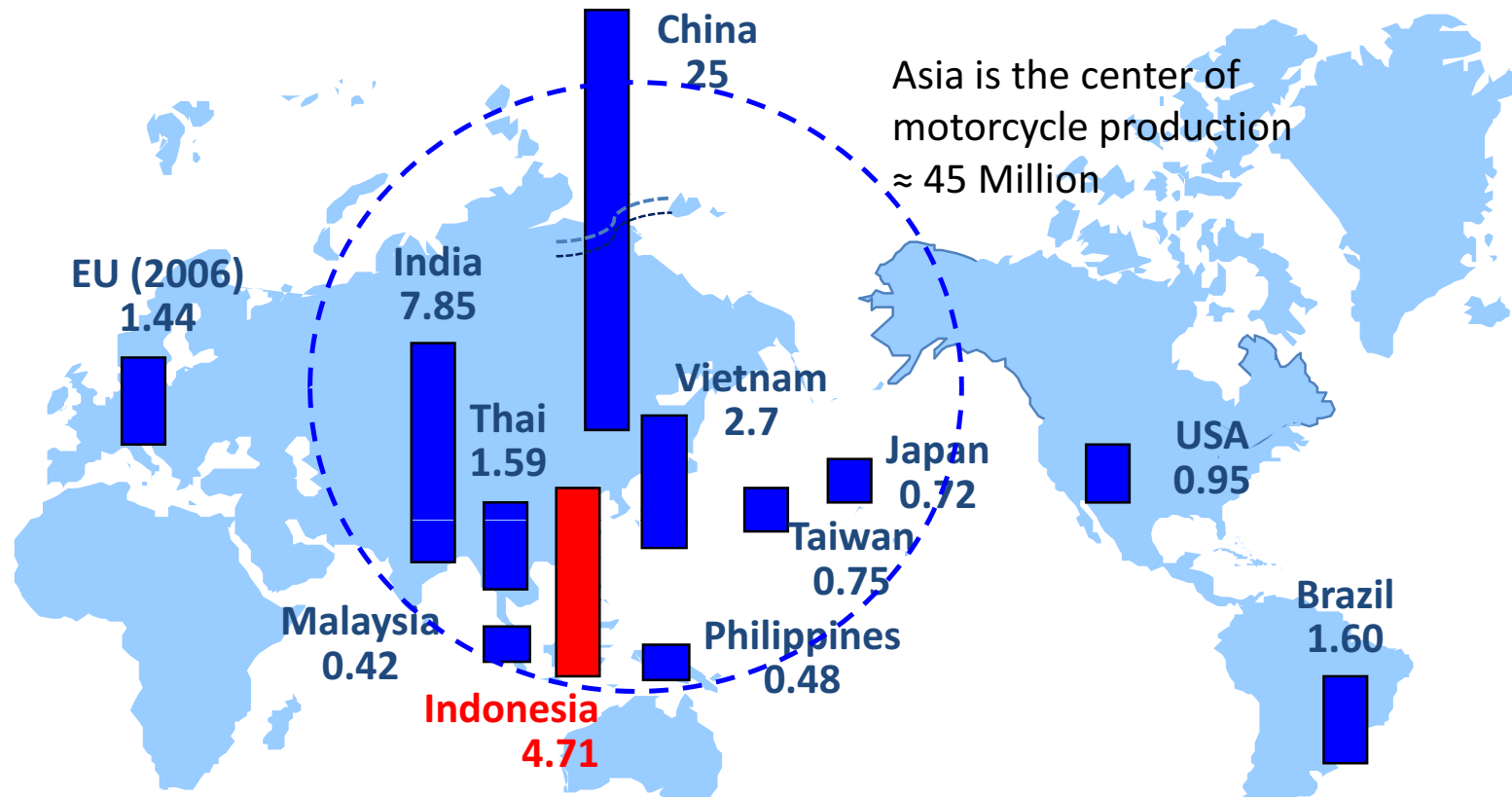


1. PT Astra Honda Motor <http://www.astra-honda.com>
2. PT Inti Kanzen Motor <http://www.intikanzenmotor.com>
3. PT Kawasaki Motor Indonesia <http://www.kawasaki-motor.co.id>
4. PT Kymco Lippo Motor Indonesia <http://www.kymco.co.id>
5. PT Danmotor Indonesia
6. PT Indomobil Suzuki International <http://www.suzuki.co.id>
7. PT Yamaha Indonesia Motor Manufacturing <http://www.yamaha-motor.co.id>



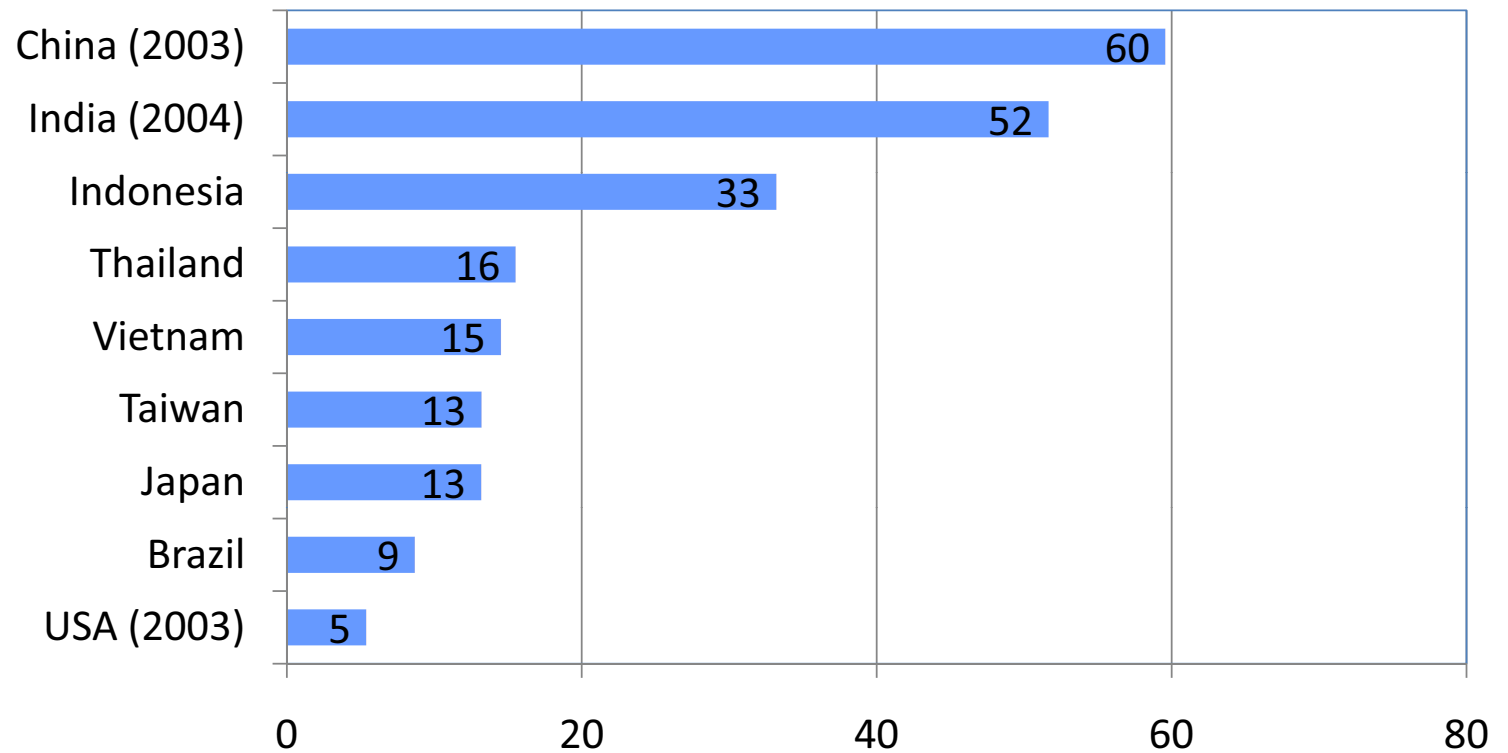
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2. Motorcycle Market 2007



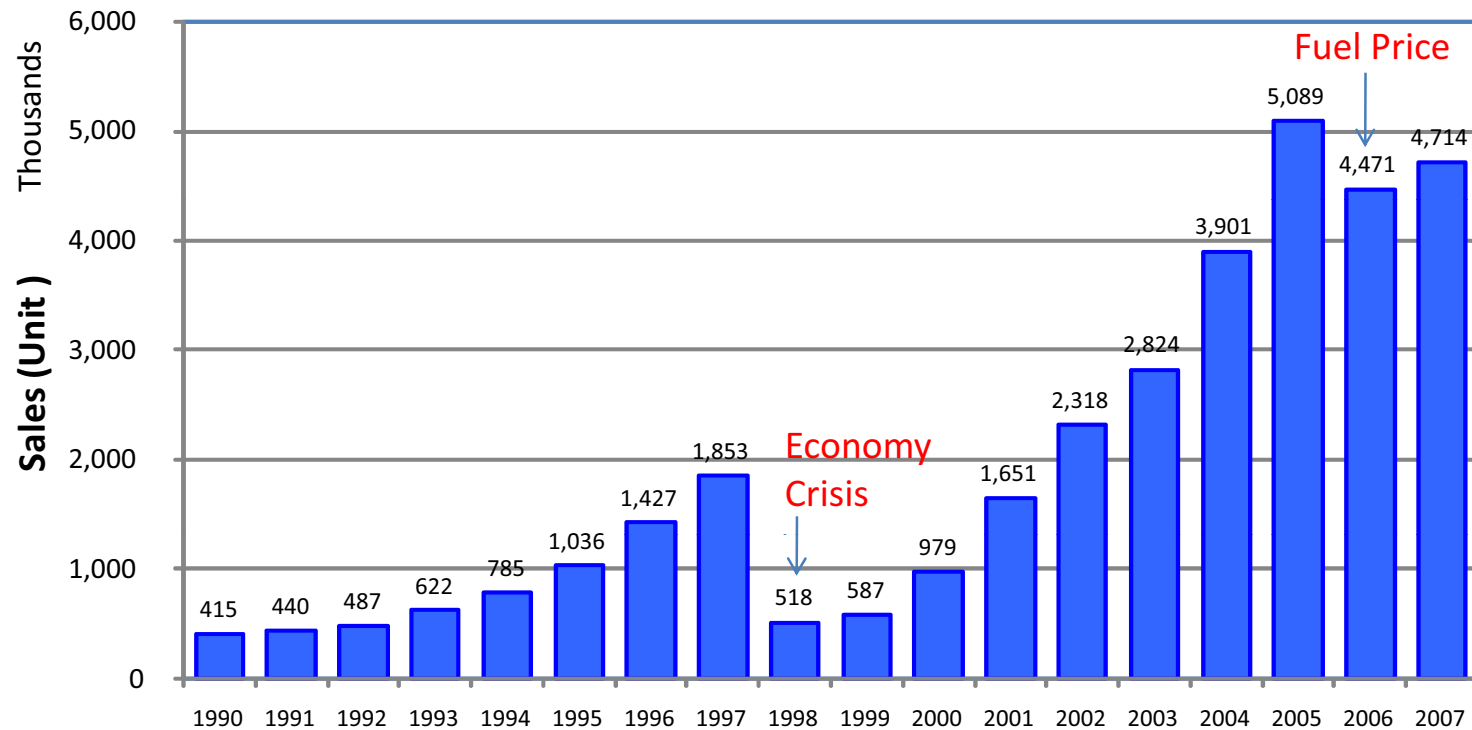
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Motorcycle in-use in selected countries (2005)



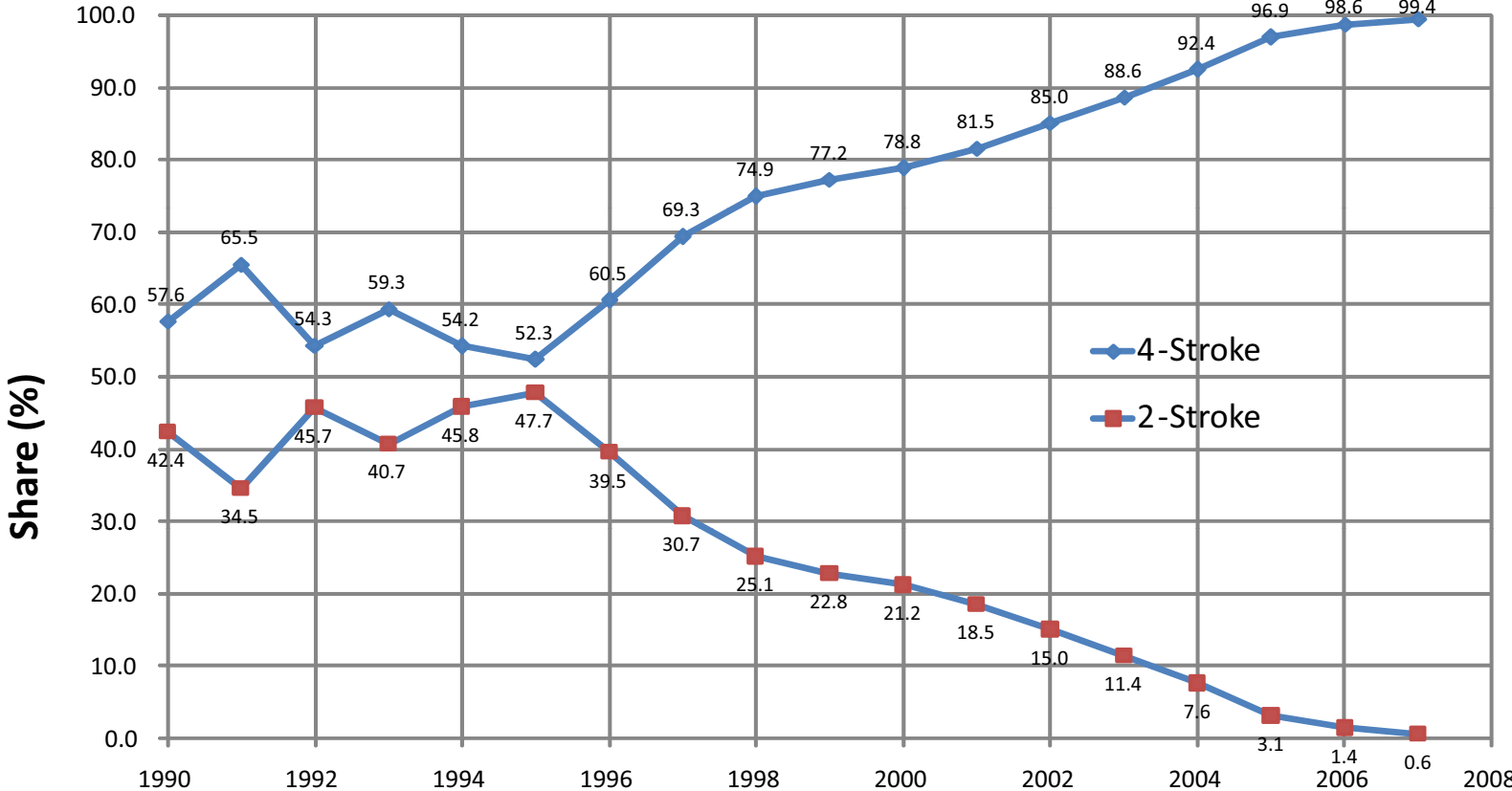
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Motorcycle Sales in Indonesia

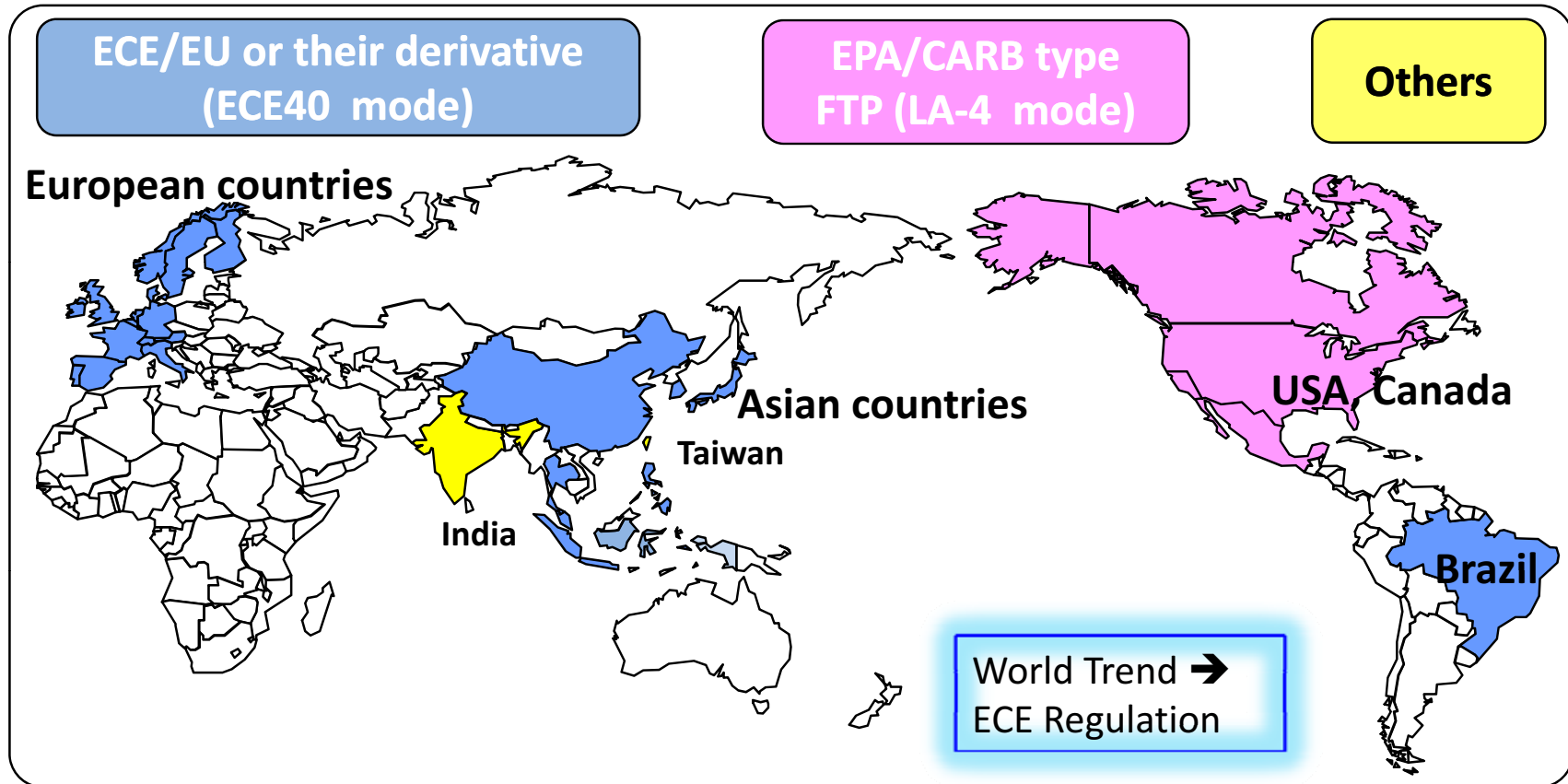


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Share of 4 Stroke vs 2 Stroke Motorcycle in Indonesia

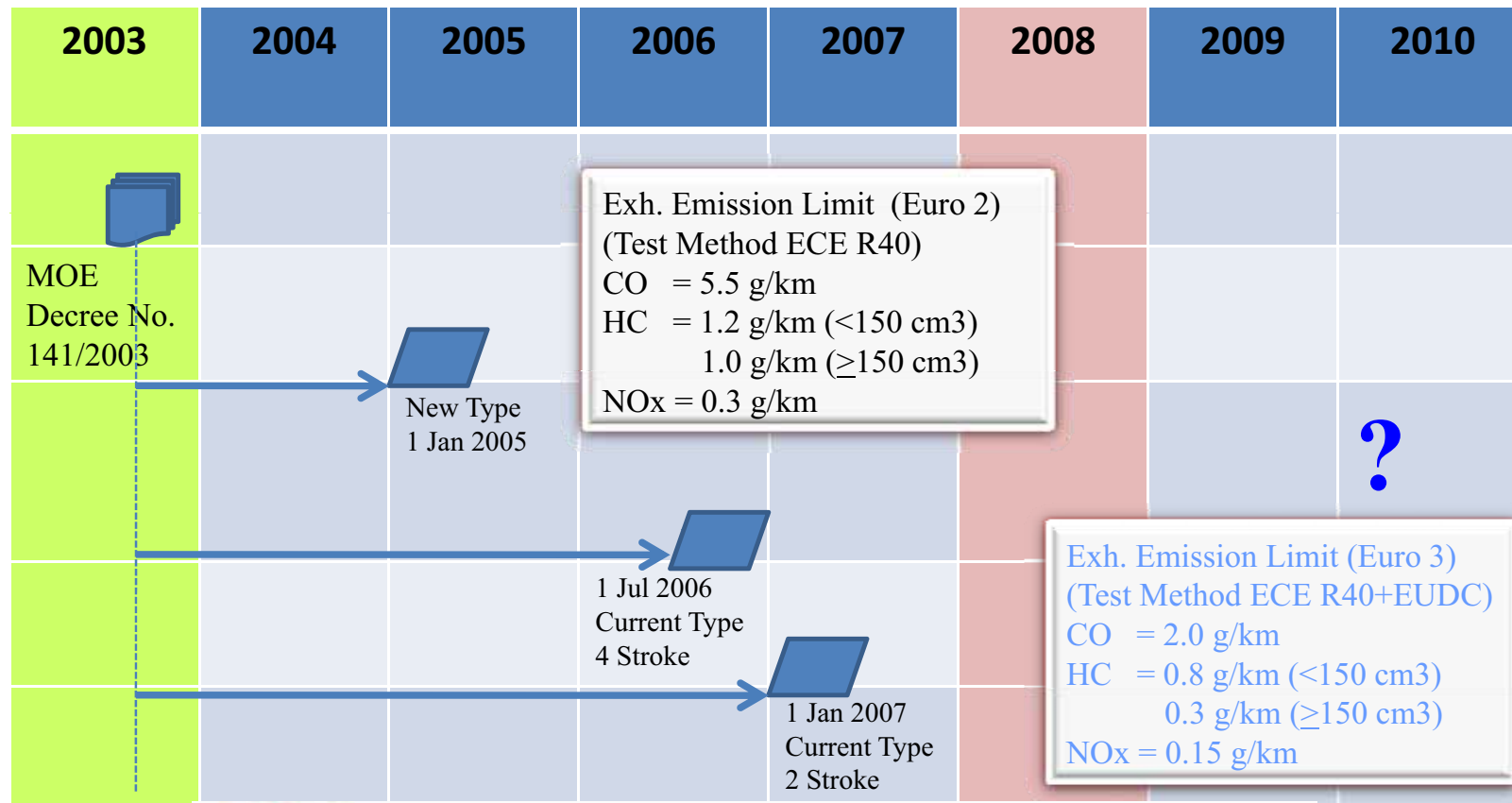


3. Exhaust Emission Regulation



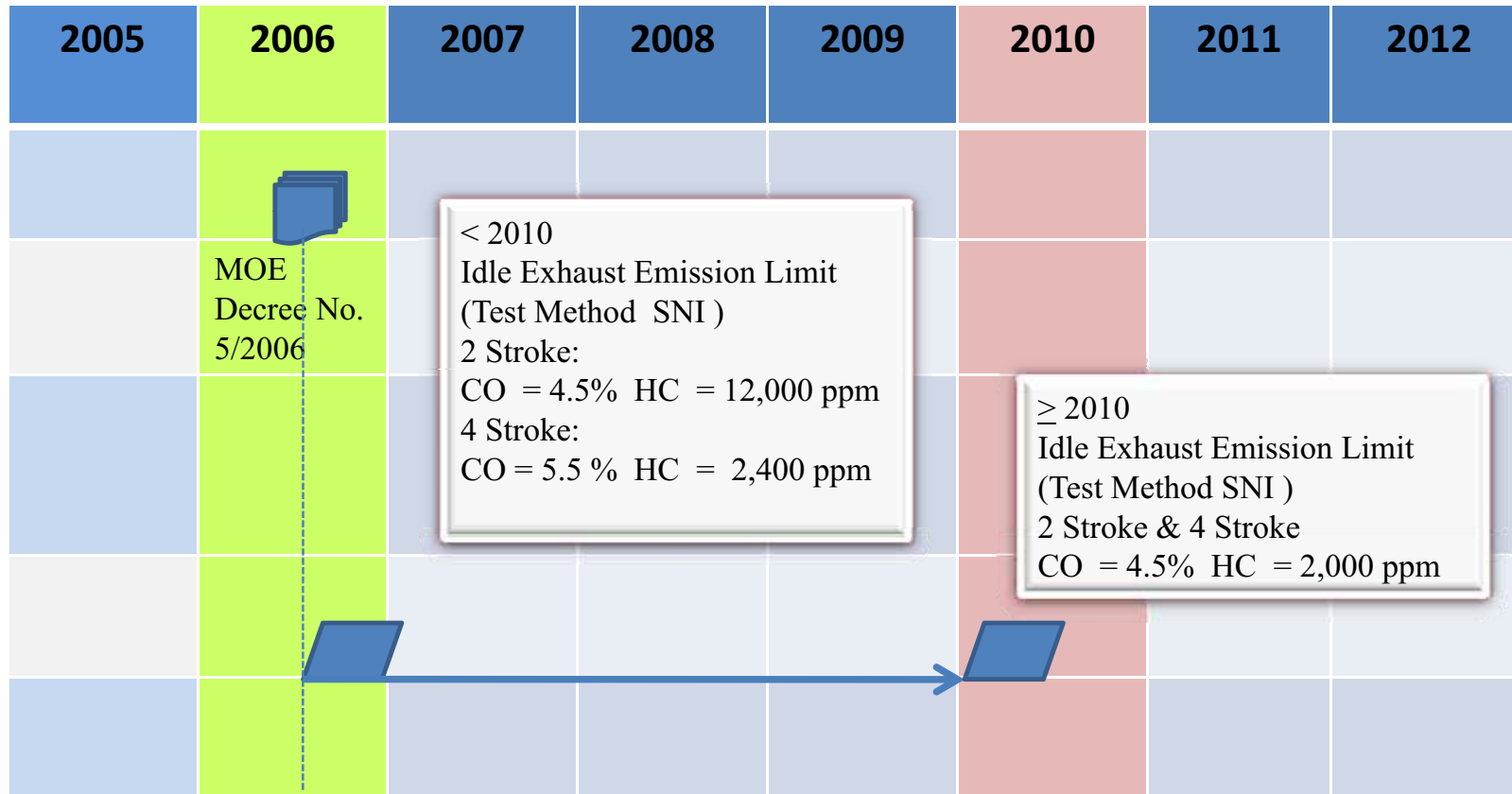
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Exhaust Emission Regulation for **New & Current Type** Motorcycle in Indonesia



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Exhaust Emission Regulation for **In-use** Motorcycle in Indonesia



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4. Exhaust Emission Reduction Technology

For Euro-2:

1. [Carburetor improvement](#)
Machining tolerance for A/F accuracy improvement
2. [Engine modification](#)
Valve timing, combustion chamber shape, compression ratio, ignition timing.
3. [Secondary Air Injection](#)
4. [Metal catalyst and heat guard](#)

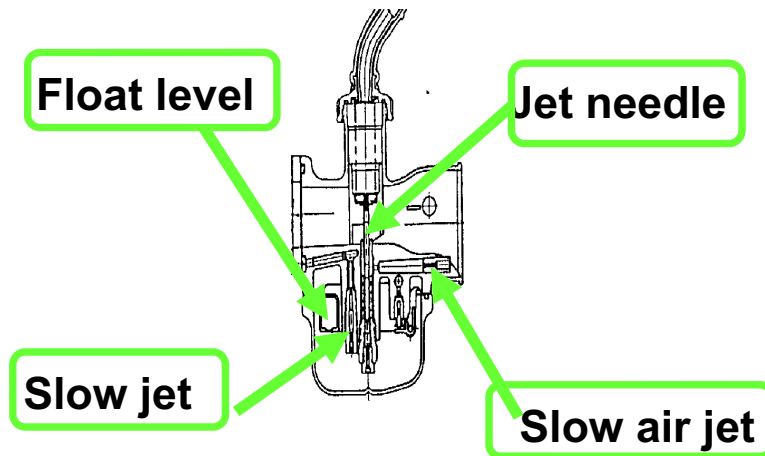


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Technology for Euro-2

Carburetor improvement

Need to reduce machining tolerance for A/F accuracy improvement



Engine Modification

- Valve Timing
- Shape of combustion chamber
- Compression ratio
- Ignition timing

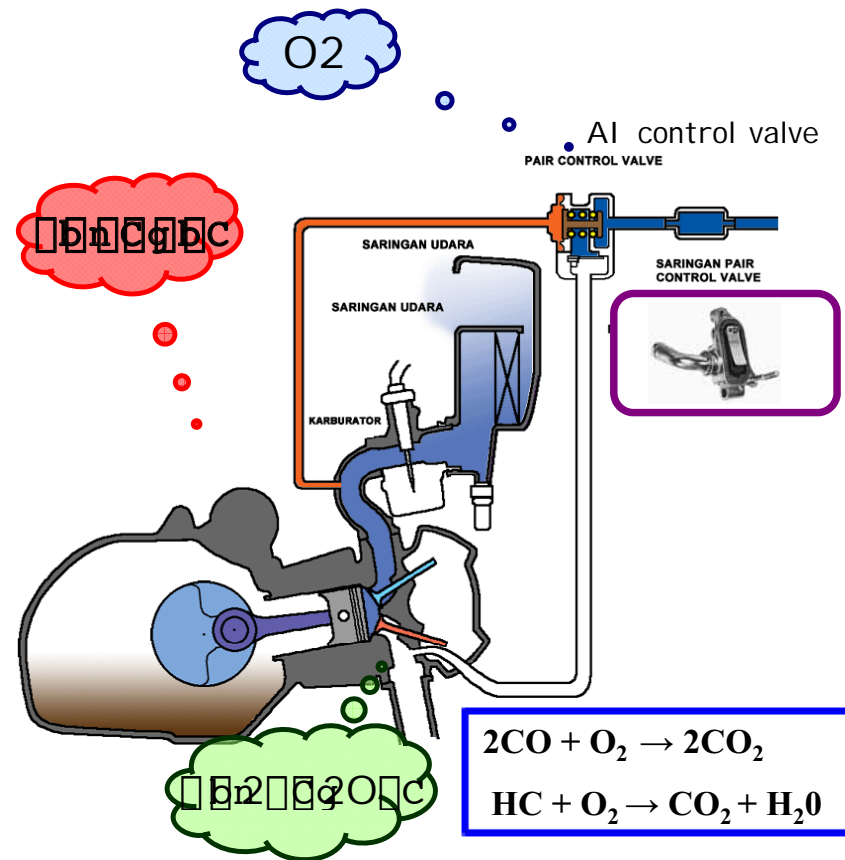


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Technology for Euro-2

Secondary Air Injection

- During engine ON, fresh air injected to muffler through AI control valve.
- Inside muffler, fresh air (O_2) will react with CO & HC (Poisonous gas) by chemical reaction & produce CO_2 & H_2O (Non poisonous gas)



Technology for Euro-2

CAT & Heat Guard



CAT/Heat guard

Metal Catalyst



Metal CAT



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4. Exhaust Emission Reduction Technology

For Euro-3:

1. Technology for Euro-2

+

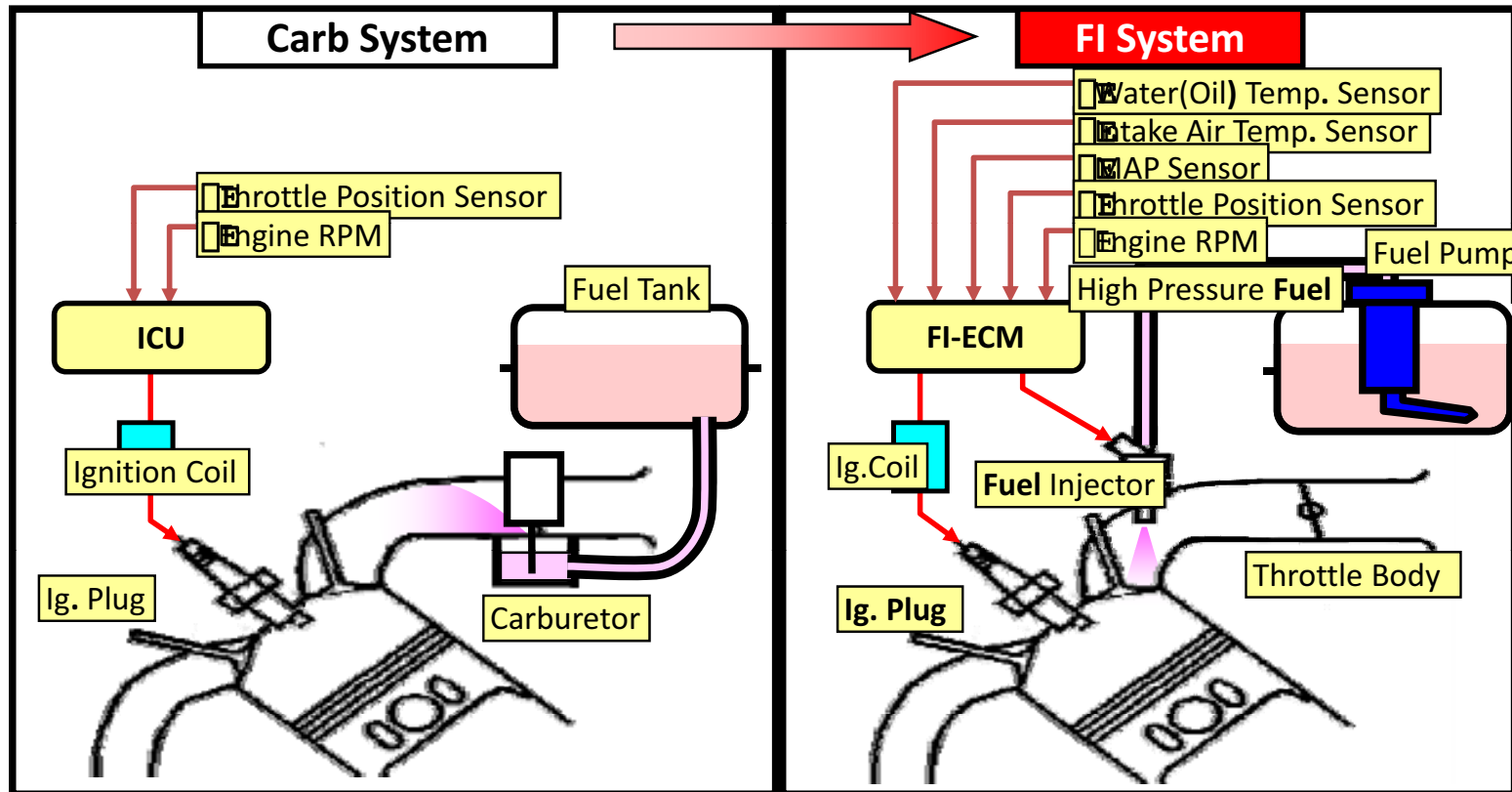
2. Fuel Injection

3. Oxygen Sensor



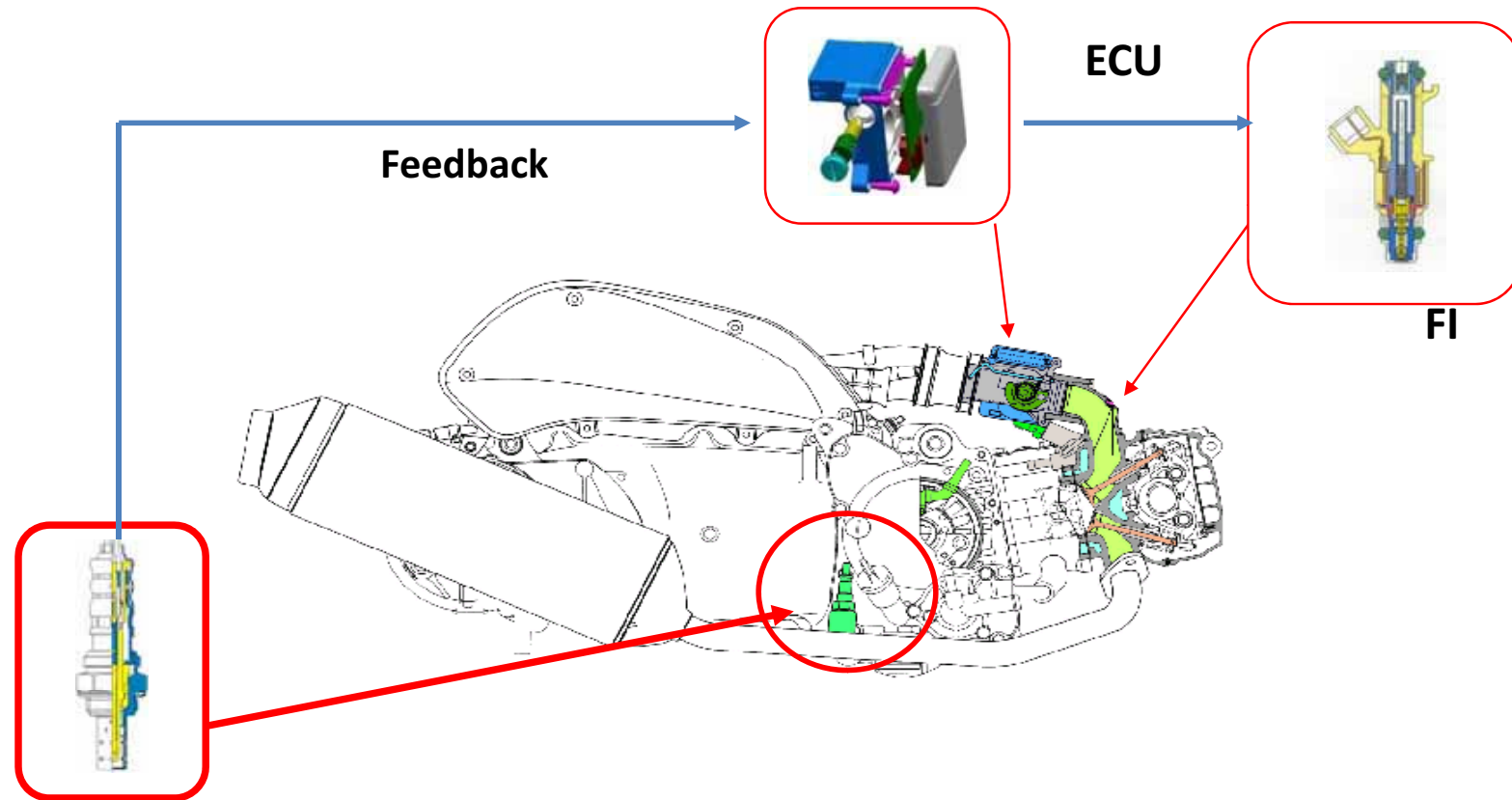
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Technology for Euro-3



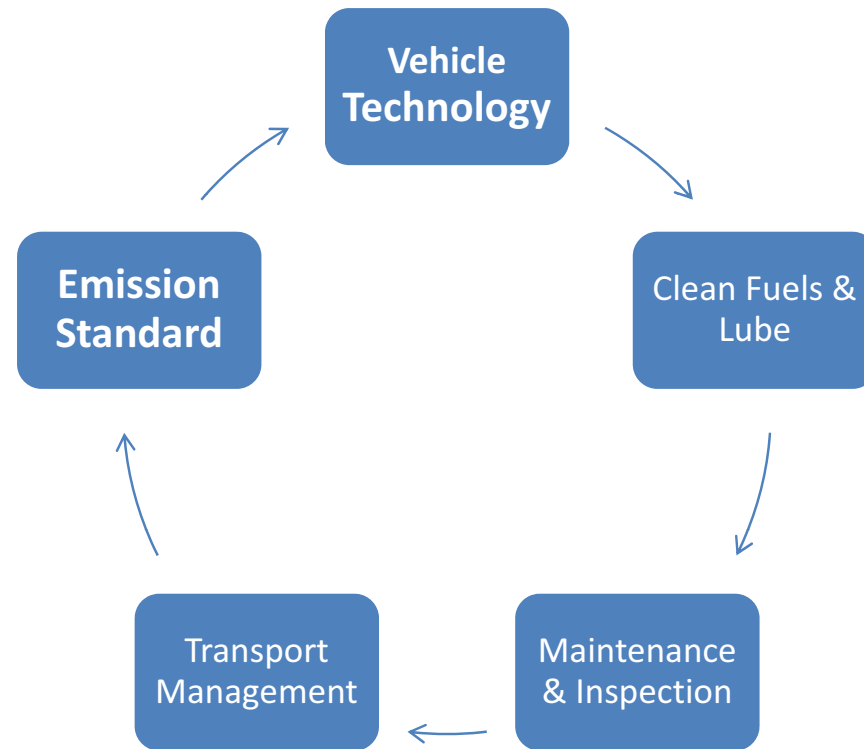
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Technology for Euro-3



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5. Elements of a Comprehensive Vehicle Pollution Control Strategy



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6. What AISI has achieved

- AISI has always actively participated in the regulation making process.
- Products of AISI members have complied with Exhaust Emission Regulation i.e. MOE Decree No. 141/2003
- Some of AISI members have invested Mode Exhaust Emission Laboratory



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6. What AISI has achieved

Mode Exhaust Emission Laboratory



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7. Problems:

1. Modifying or tampering motorcycle with non standard parts which are not comply with regulation (e.g. muffler, lamps etc.) is in increasing.
2. The exhaust emission limit for in-use motorcycle has been regulated, however the system of periodical check has not been established.



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8. Conclusion:

1. The problems mentioned on previous page make the exhaust emission reduction technology applied not effective.
2. Asia is the biggest market and producer for motorcycle.
Asian governments should be encouraged to take more leading initiatives in the regulating and controlling of emission reduction.



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Thank You
Terima Kasih

Notes