

Cities of the Future

Steve Goodier







BP is...



Exploration & Production

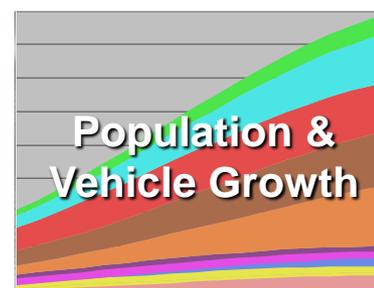
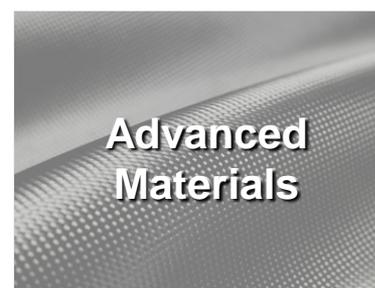
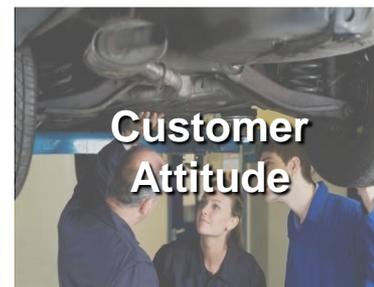


Alternative Energy



Refining & Marketing

We are aware that things are changing





As urban migration increases, efficient, densely populated cities, not distributed options, are the blueprints for more sustainable places to live



Increasing competition between cities over-rides national priorities as mayors lead bold initiatives to place their cities at the forefront of the global stage



Largest Cities in 2020

Rank	City/Urban area	Country	Population in 2020 (m)
1	Tokyo	Japan	37.28
2	Mumbai	India	25.97
3	Delhi	India	25.83
4	Dhaka	Bangladesh	22.04
5	Mexico City	Mexico	21.81
6	São Paulo	Brazil	21.57
7	Lagos	Nigeria	21.51
8	Jakarta	Indonesia	20.77
9	New York	USA	20.43
10	Karachi	Pakistan	18.94
11	Calcutta	India	18.54
12	Buenos Aires	Argentina	15.48
13	Cairo	Egypt	14.02
14	Metro Manila	Philippines	13.4
15	Los Angeles	USA	13.25
16	Rio de Janeiro	Brazil	13.23
17	Istanbul	Turkey	12.76
18	Shanghai	China	12.63
19	Moscow	Russia	11.73
20	Osaka, Kobe	Japan	11.53

Source: www.citymayors.com



The acceptance of being tracked by your mobile is accelerated by ticket-less transport systems, increased surveillance and successful location-based services



Pervasive smart meters and ubiquitous tracking services create platforms for the dynamic pricing of resources, access and travel to manage demand



*Informed choices, growth, congestion and regulation
impact the world's cities to drive a shift to
more sustainable efficient transport options*



Rising sustainability imperatives and increasing cost of ownership shift the balance from ownership to access and we prefer to rent than buy



China, the pacesetter for change in inter-urban transport, is investing over \$1 trillion expanding its rail network to 120,000km by 2020



Mesh networks and ubiquitous mobile connections deliver automated highways to improve safety, increase capacity and reduce congestion



Local initiatives, commuting distances, and emissions standards will inform the customer to choose what power source they use for their personal transport.

What BP is doing...



Efficient products



We will work in partnership with vehicle and equipment manufacturers to improve the overall efficiency of use of our fuel and lubricant products.



Castrol Oil Change Solution Center

Helps make the oil change process easy and fast! Consumers can be certain that only the best motor oil is being put into their vehicles!

- Castrol racking system that holds up to six Castrol e-packs
- Plastic dispensing pitchers

3.2

PRODUCT DESIGN



Enabling lower emissions



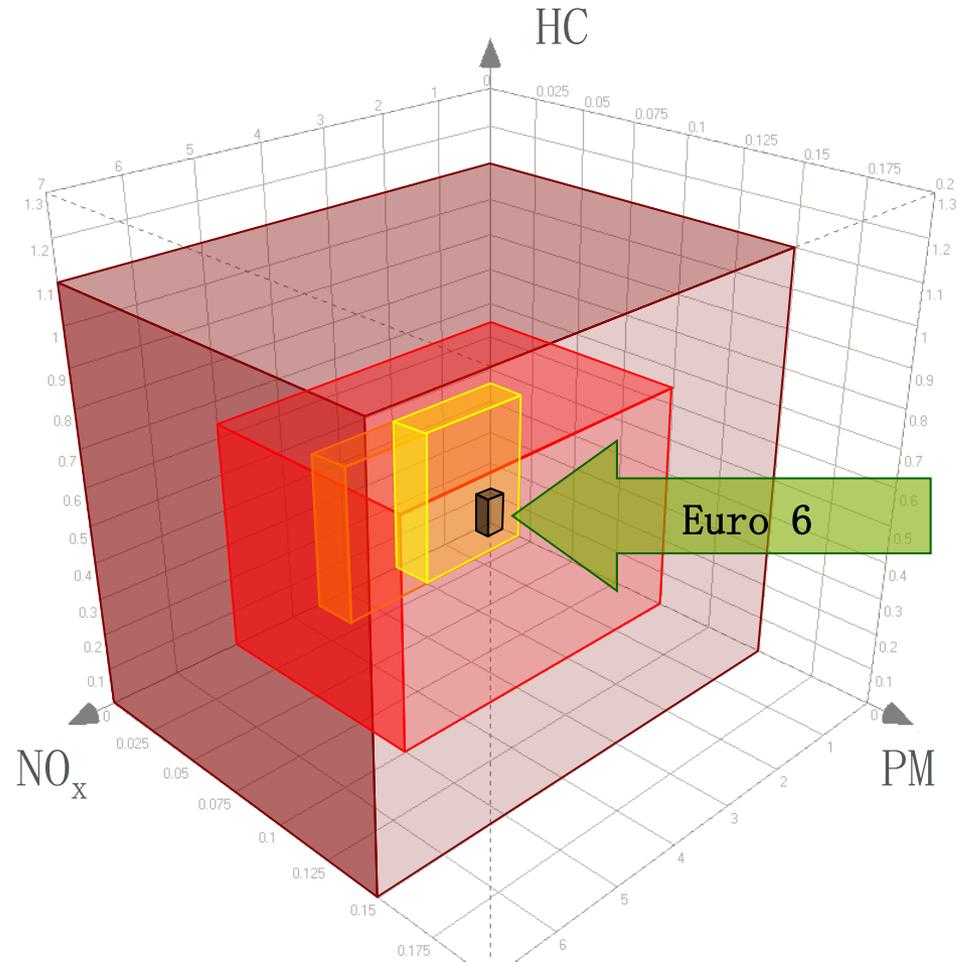
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Emission reduction - Trucks



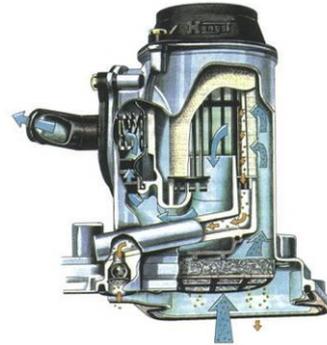
- Euro 2
- Euro 3
- Euro 4
- Euro 5
- Euro 6



Enabling Technology



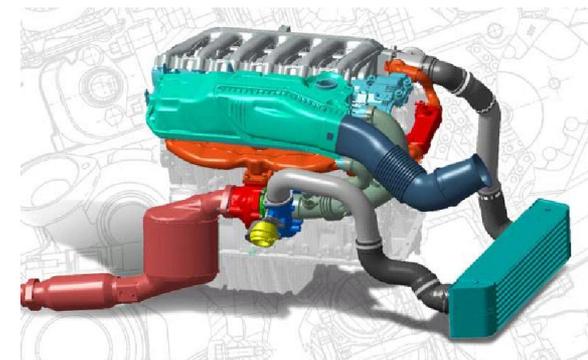
Fuel Injection



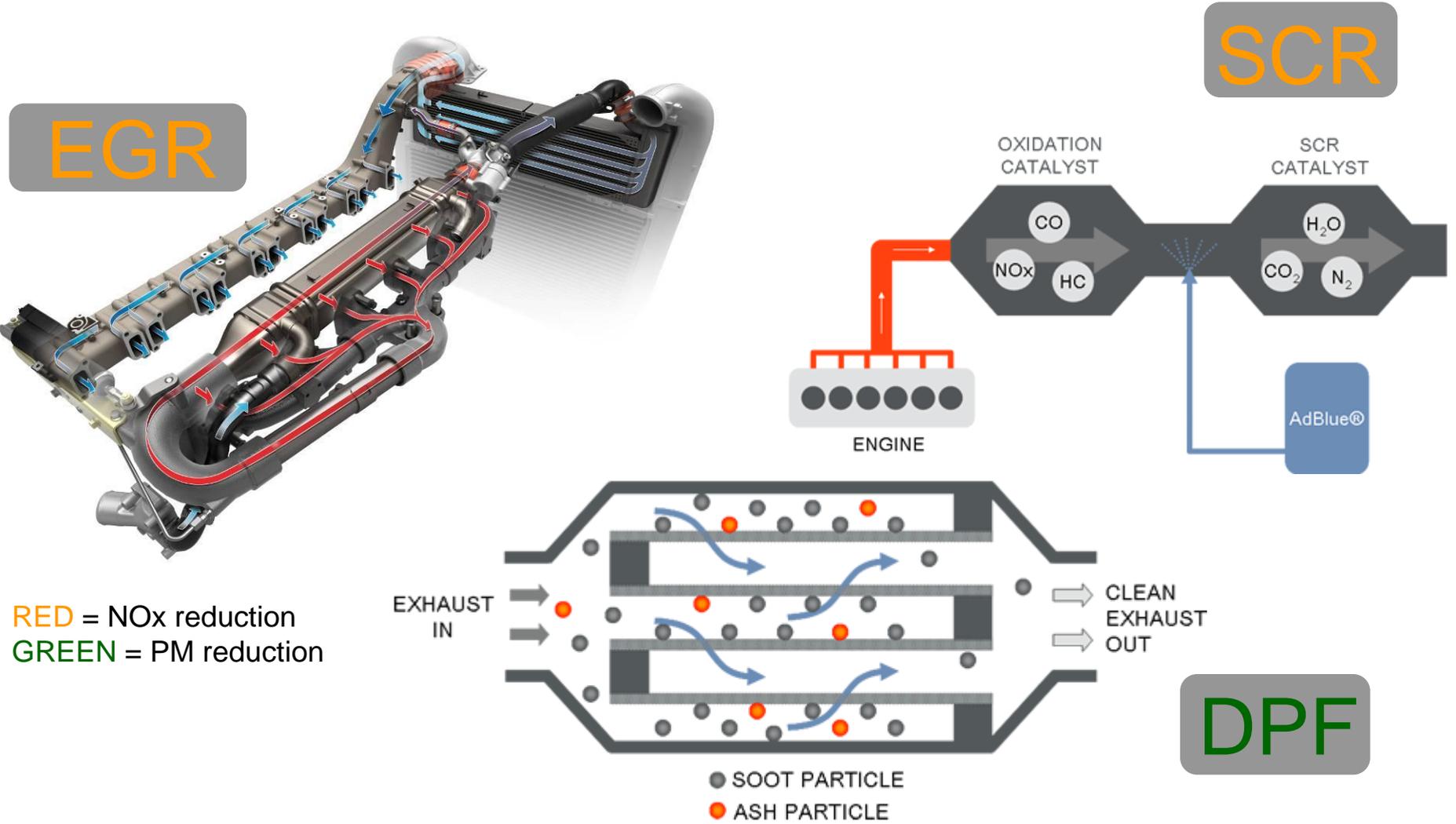
Piston Design

Turbo & Air Handling

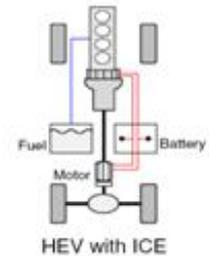
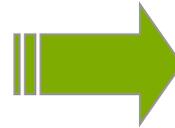
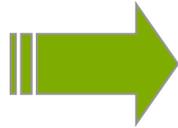
Cooling System



Emission Technology



Enabling Technology 1



- **2009:**

Latest 4-cylinder 2.0 litre technology downsized boosted replaces larger 2.5-3.0 litre V engine

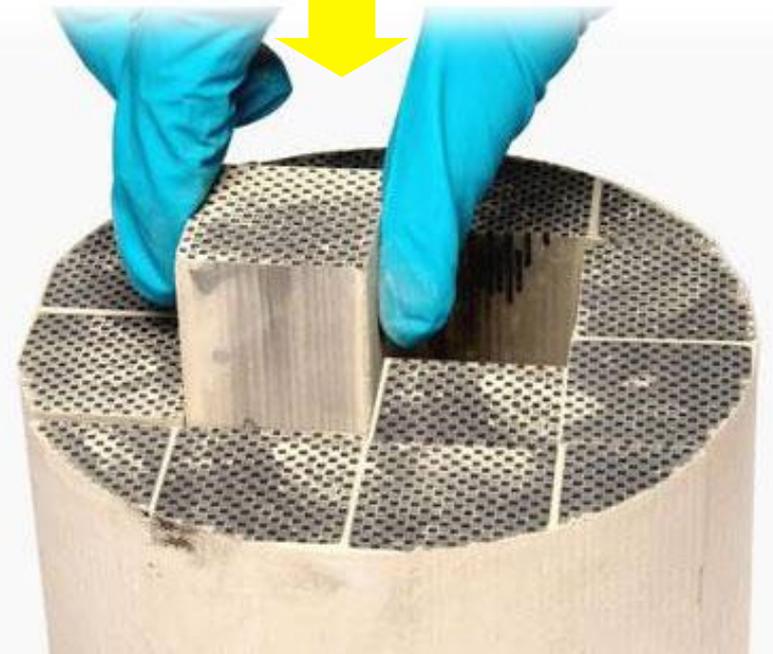
- **2015:**

1.2 litre sequentially boosted 3-cylinder replaces 4-cylinder 2.0 litre current downsized boosted engine

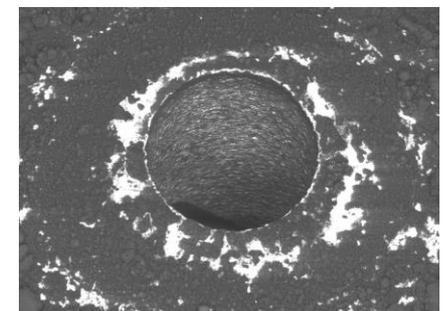
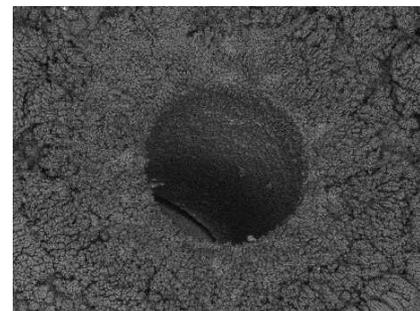
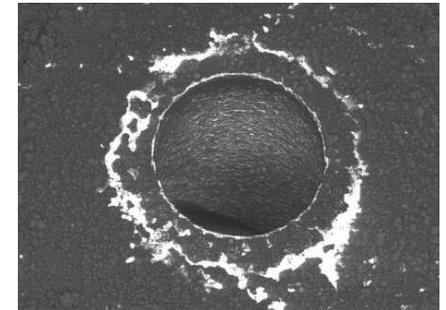
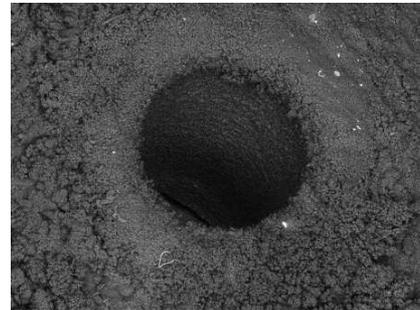
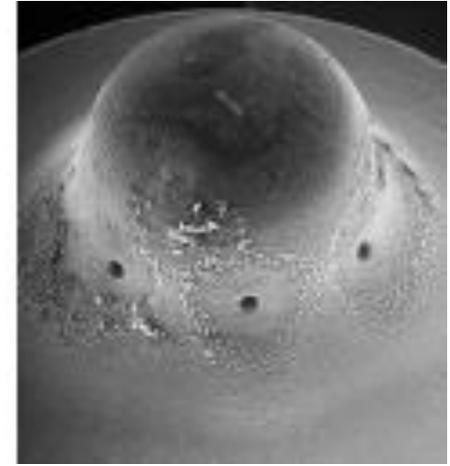
- **2020+:**

2015 type or 2 cylinder engine with aggressive boosting and “down-speeding” allied to hybridisation

Lubricant Design



Fuel Properties



3.3

PACKAGING DESIGN

Reducing the waste



Enviro-Pack

- Winner of the Wal-Mart Sustainability Award



INTRODUCING THE CASTROL ENVIRO-PACK

A unique pack size that helps drive profits



24 quarts / 6 gallons in each e-pack

IT'S MORE THAN JUST OIL. IT'S LIQUID ENGINEERING.™



Environmental Impact



x 24

=



x 6



89% reduction
in plastic used

10% reduction
in oil wasted



Summary



- The future city will be a densely populated
- It will offer many opportunities and challenges for transportation
- Commuters will be managed and charged according to travel time, and will be provided with an array of transport options
- Vehicles will be a mix of Electric, hybrid and conventional, each will require an infrastructure to support, and fluids to enable them to operate efficiently.
- BP is watching closely the developments.

Questions...?



TRUCK & HIGHWAY. CORBIS