



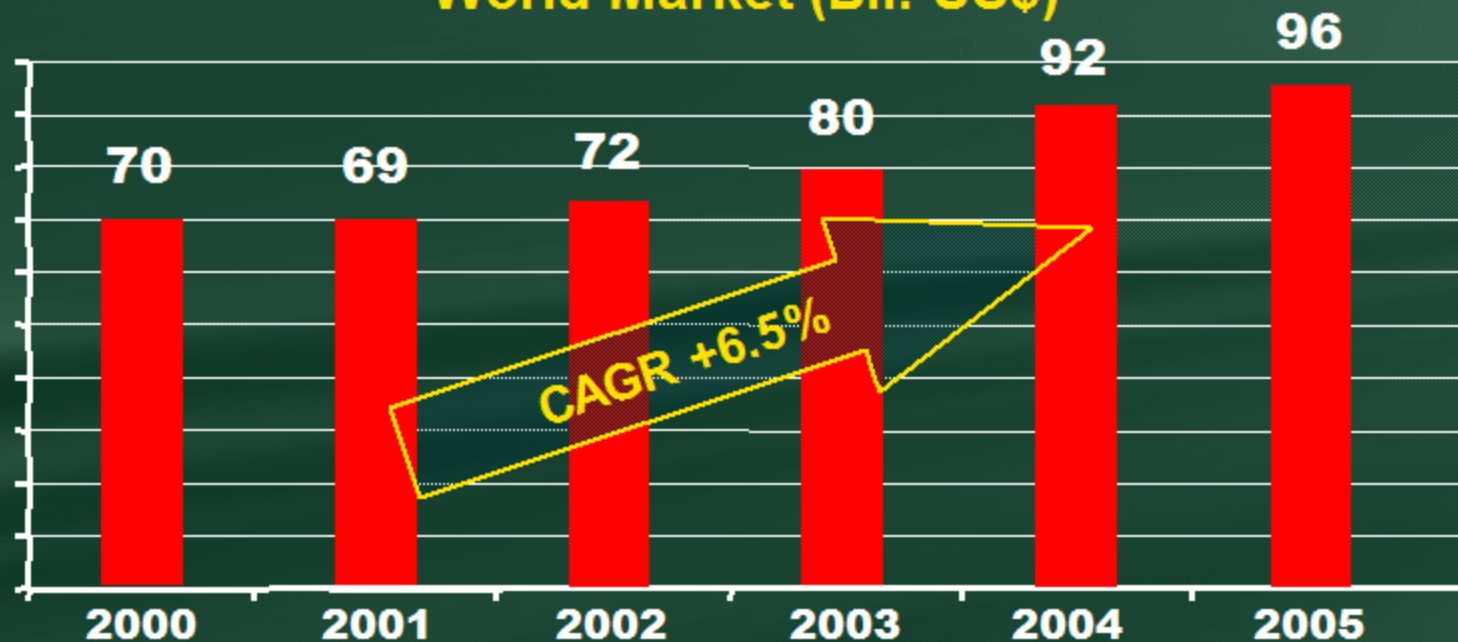
ANOTHER
TYRE
REVOLUTION

Scorpion
SPY
PIRELLI



2005 World Tyre Market

World Market (Bil. US\$)



BY AREA

North America

33%

South America

5%

Europe

29%

rest of the world

33%

BY SEGMENT

Car

56%

M+H truck

29%

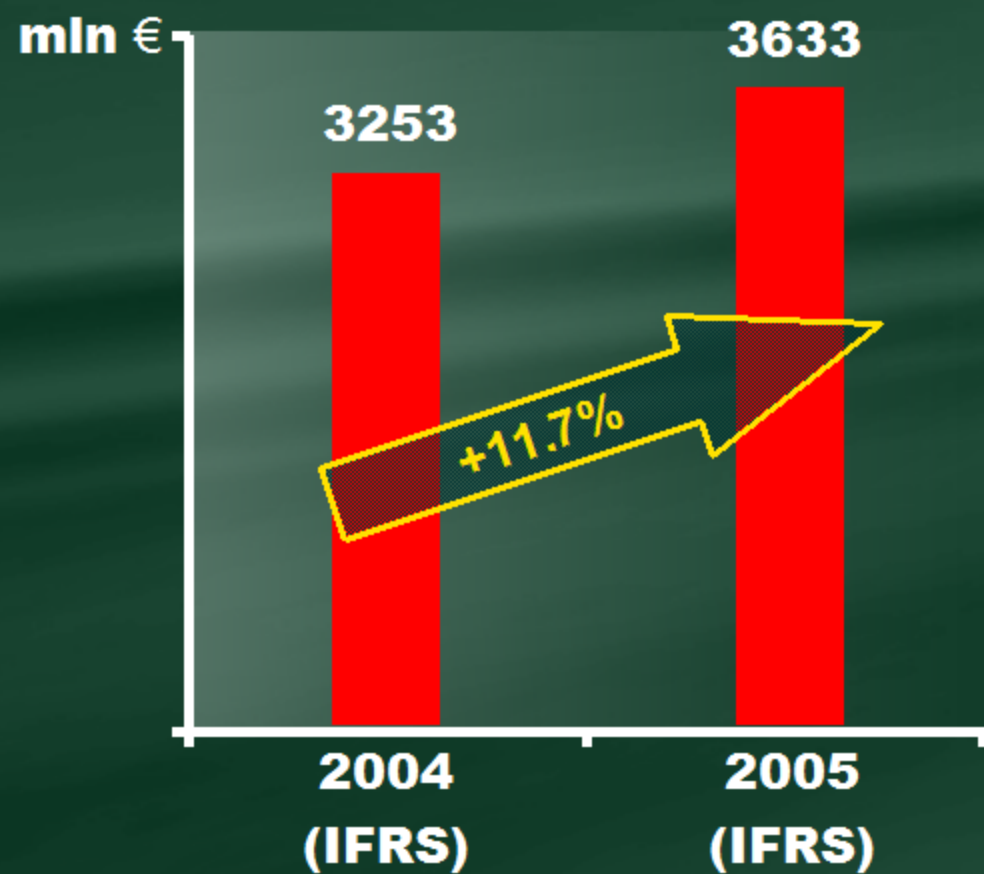
Other

15%

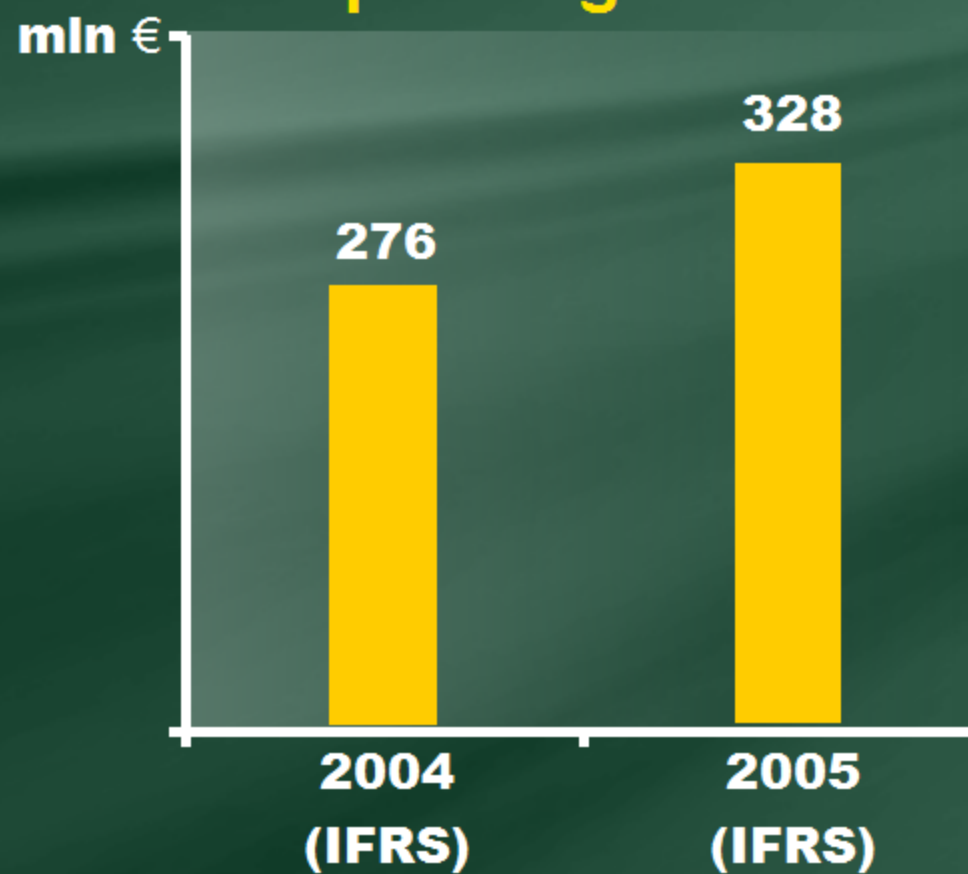


Pirelli Tyre Results - 2005

Sales



Operating result *

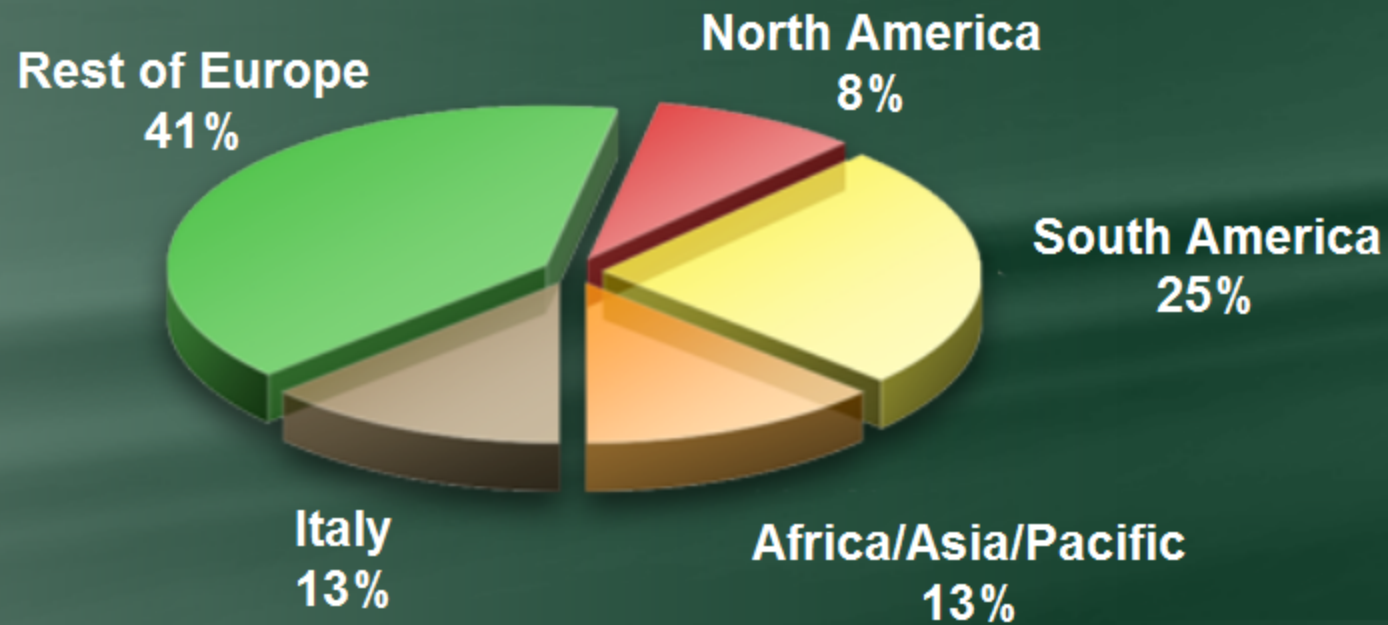


* before interest and taxes

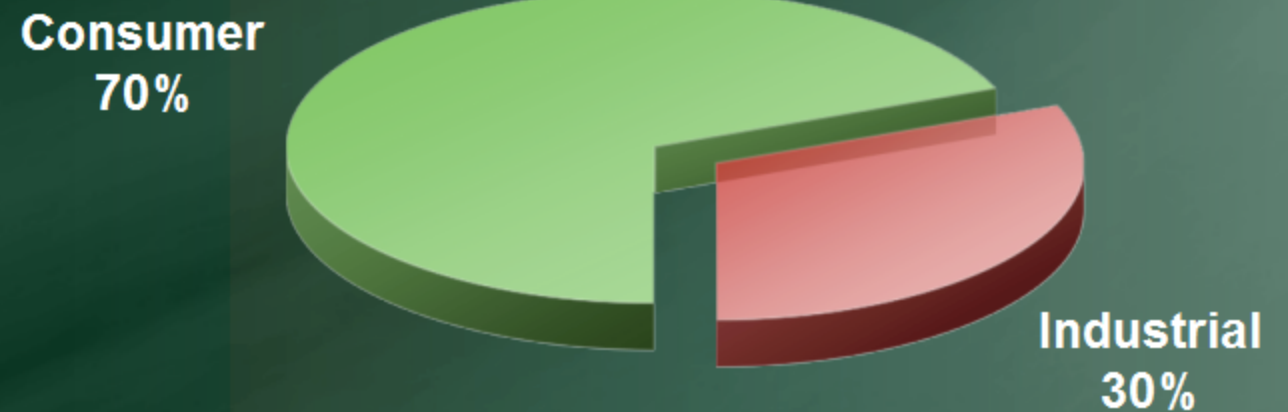


Pirelli Tyre Sales 2005

BY AREA

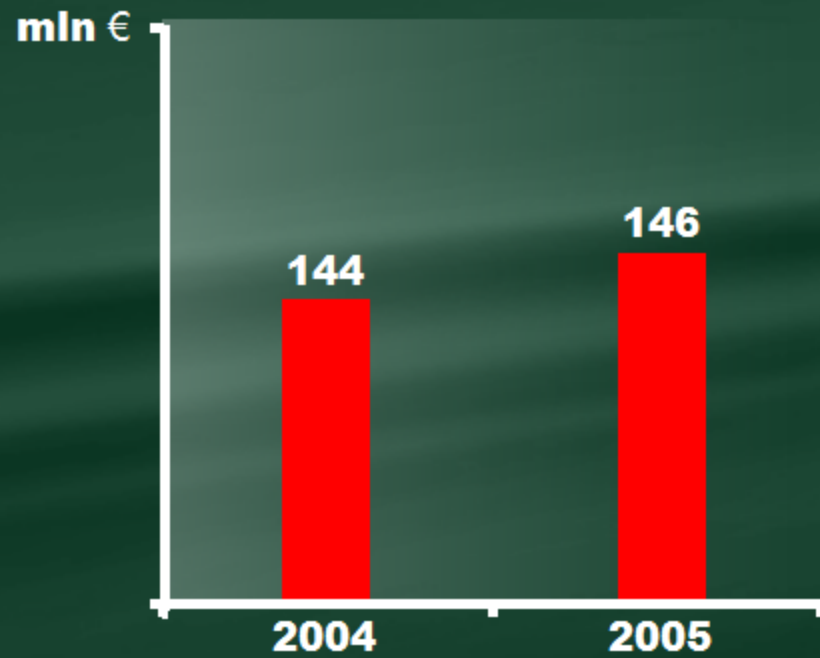


BY BUSINESS

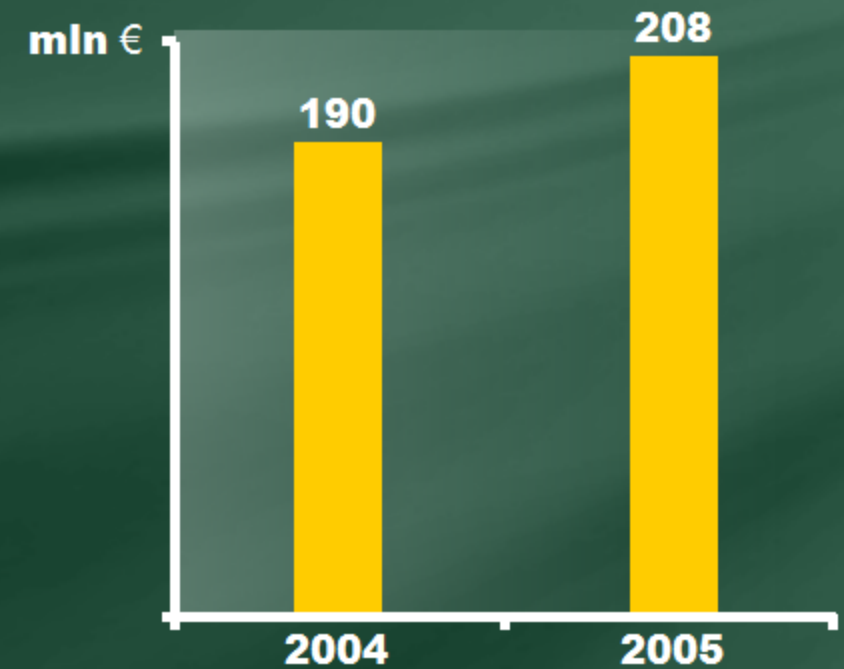


Innovation and Growth Strategy

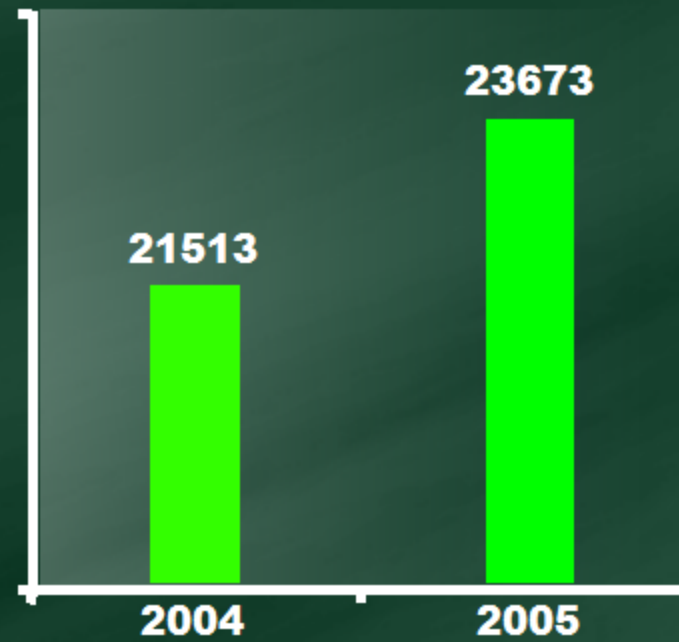
R&D expenditure



Investments in tangible assets



Headcount



Scorpion
by



PIRELLI



PIRELLI

The Scorpion™ Brand within the Pirelli Range

4x4



Ultra High Performance



High Performance

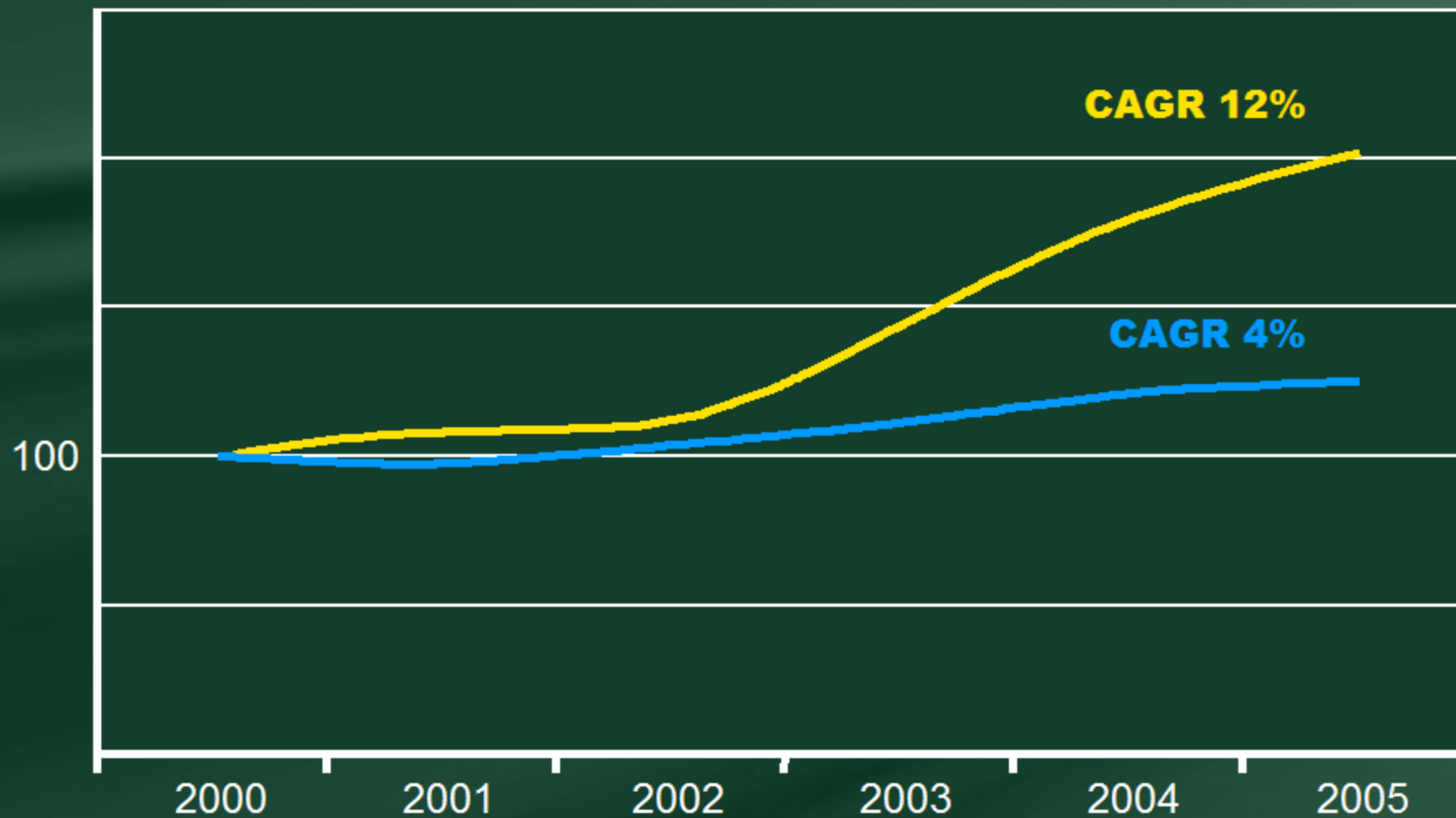
Winter



Scorpion™ Growth vs Pirelli

World 2000 - 2005

- SCORPION™
- AVERAGE PIRELLI



SCORPION™ is the fastest growing Brand in Pirelli












The Scorpion™ Endorsement at OEMs



Scorpion™ History

1981 SCORPION™ Run Flat (Lamborghini LM002)



- 1987  SCORPION™ FD44
- 1989  SCORPION™ AKROS
- 1993  SCORPION™ AS
- 1996  SCORPION™ A/T
- 1997  SCORPION™ S/T
- 1997  SCORPION ZERO™
- 2001  SCORPION™ ICE & SNOW
- 2003  SCORPION™ STR
- 2003  SCORPION ZERO™ ASIMMETRICO

2006 SCORPION™ ATR

25 YEARS



Vehicle Classification

Pick-up B: car derived pick-up



Chevrolet Montana,
Fiat Strada,
VW Saviero

Pick-up C: compact pick-up



Ford Ranger
Toyota Tacoma
Chevrolet Colorado

Pick-up D: full size pick-up



Dodge Ram
Ford F-series
Chevrolet Silverado

SUV – A: Mini SUV



Daihatsu Terios Kid,
Mitsubishi Pajero PininMini

SUV – B: Sub Compact SUV



Suzuki Jimny,
Daihatsu Terios,
Ford Ecosport

SUV – C: Compact SUV



Toyota Rav4
Honda CR-V
Nissan X-trail

SUV – D: Standard SUV



BMW X3
Hyundai Santa Fe
Kia Sorento

SUV – E: Luxury SUV



Porsche Cayenne, BMW X5
Jeep Grand Cherokee
Lexus RX

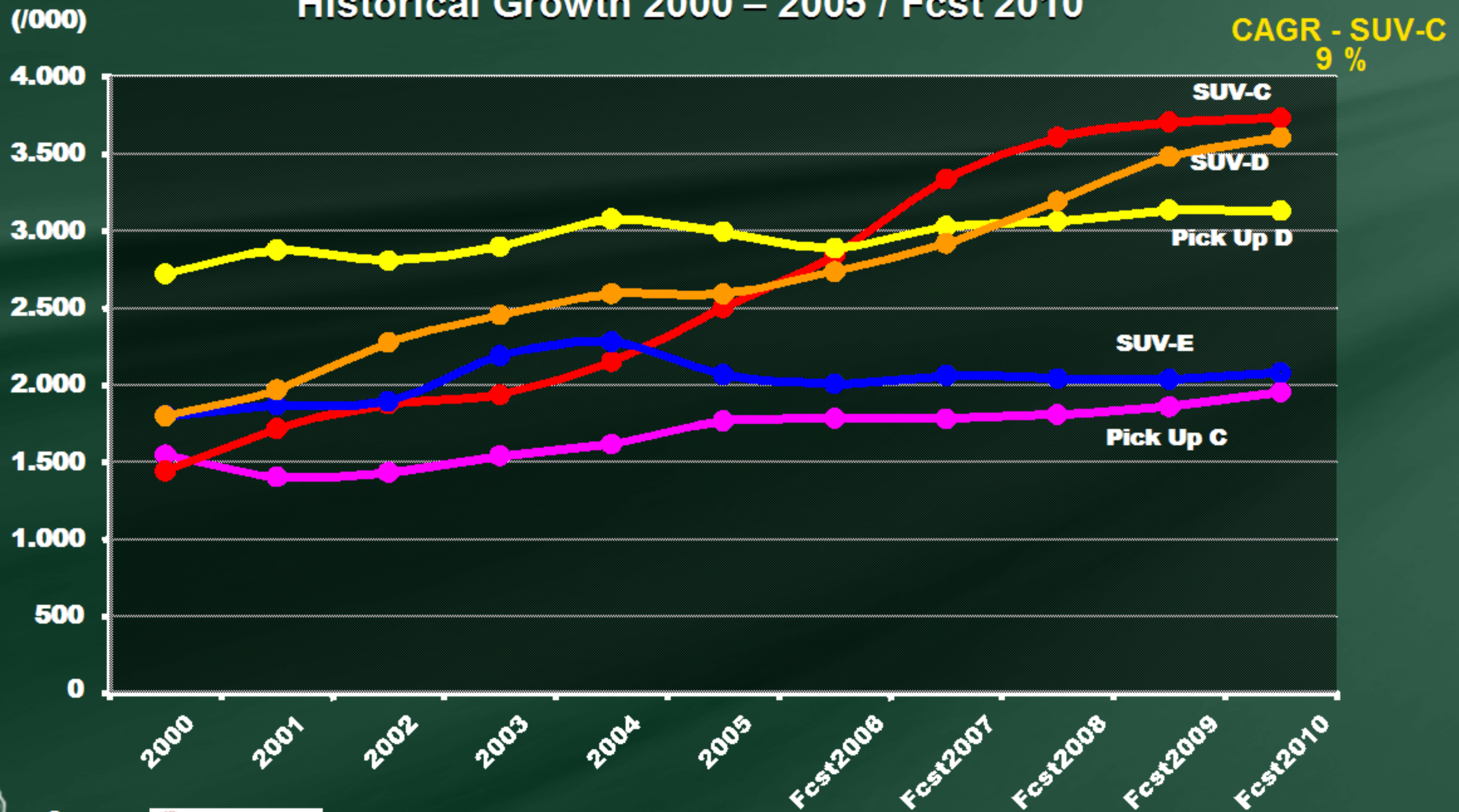


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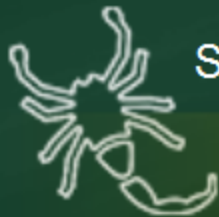
SUV & Pick-Up Vehicle Market

World

Historical Growth 2000 – 2005 / Fcst 2010



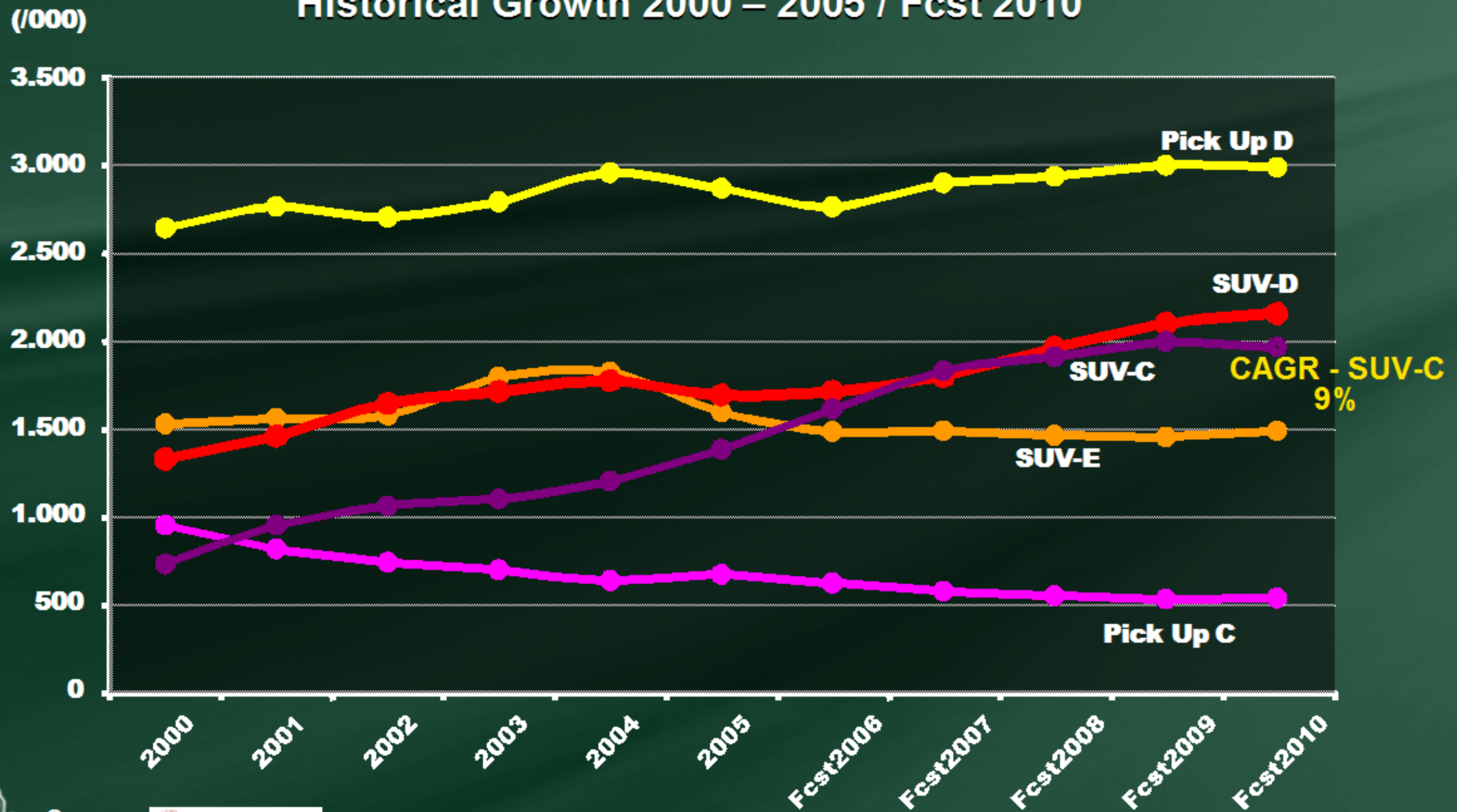
Source: GLOBAL INSIGHT



SUV & Pick-Up Vehicle Market

North America

Historical Growth 2000 – 2005 / Fcst 2010



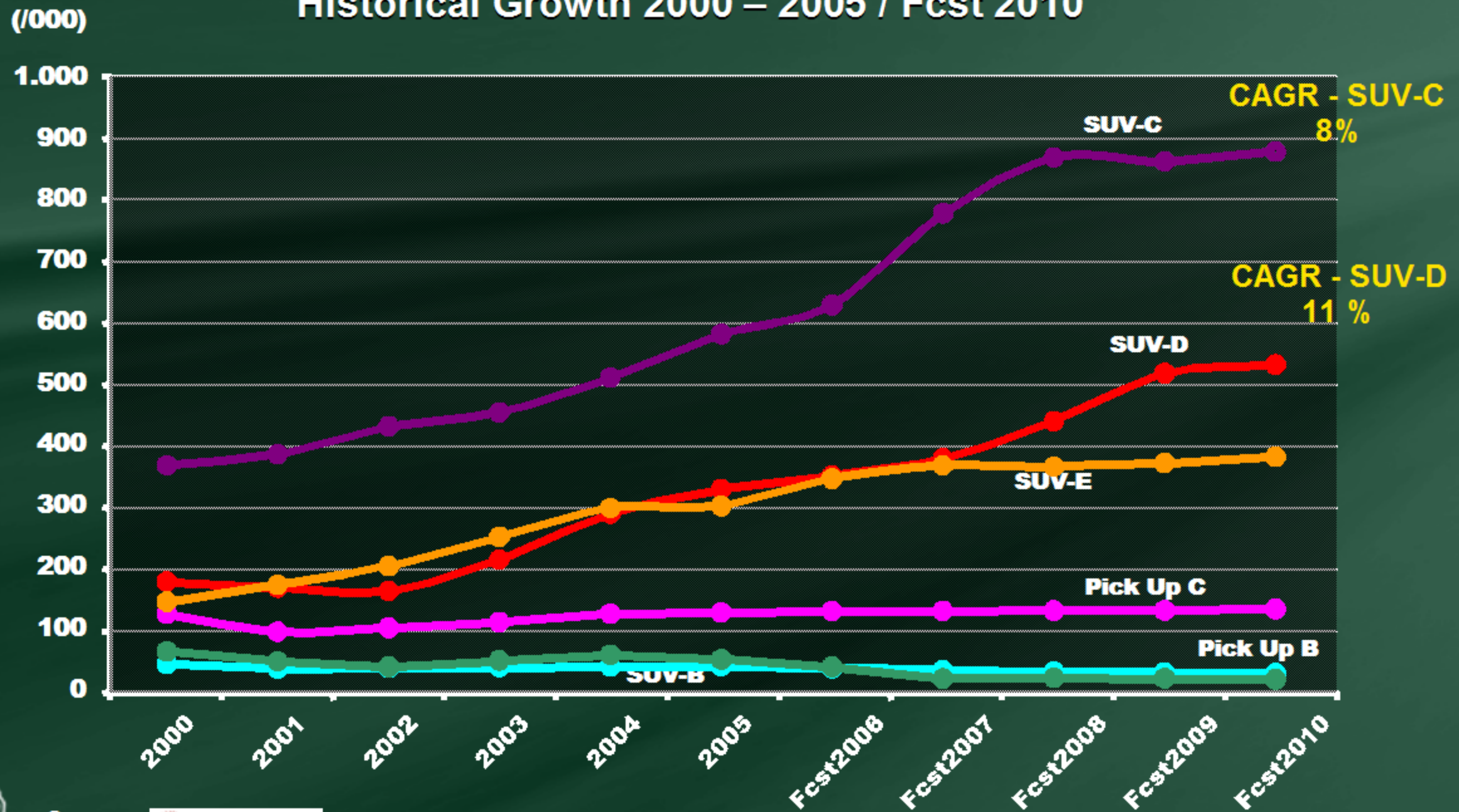
Source: GLOBAL INSIGHT



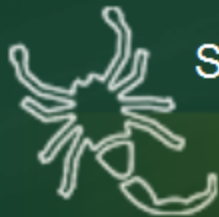
SUV & Pick-Up Vehicle Market

Europe

Historical Growth 2000 – 2005 / Fcst 2010

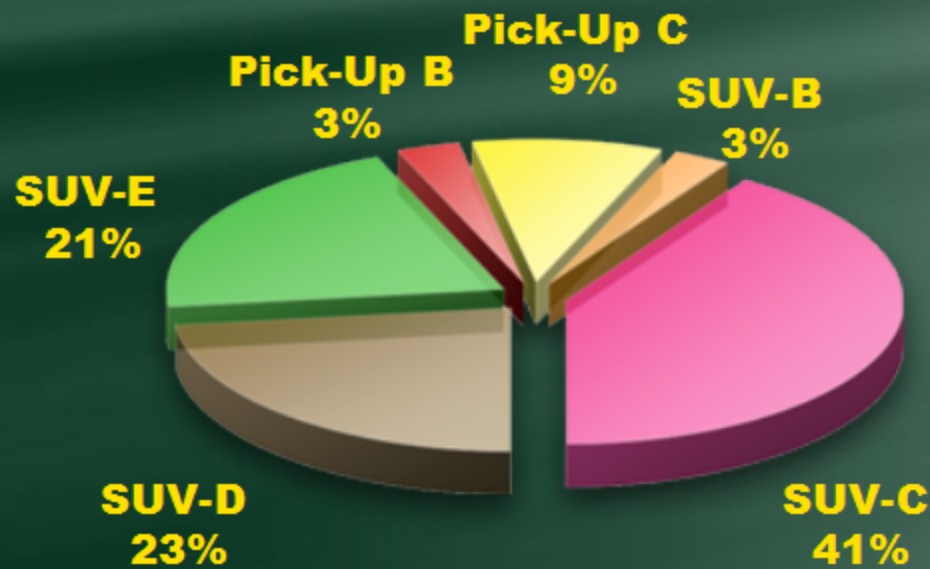


Source: GLOBAL INSIGHT



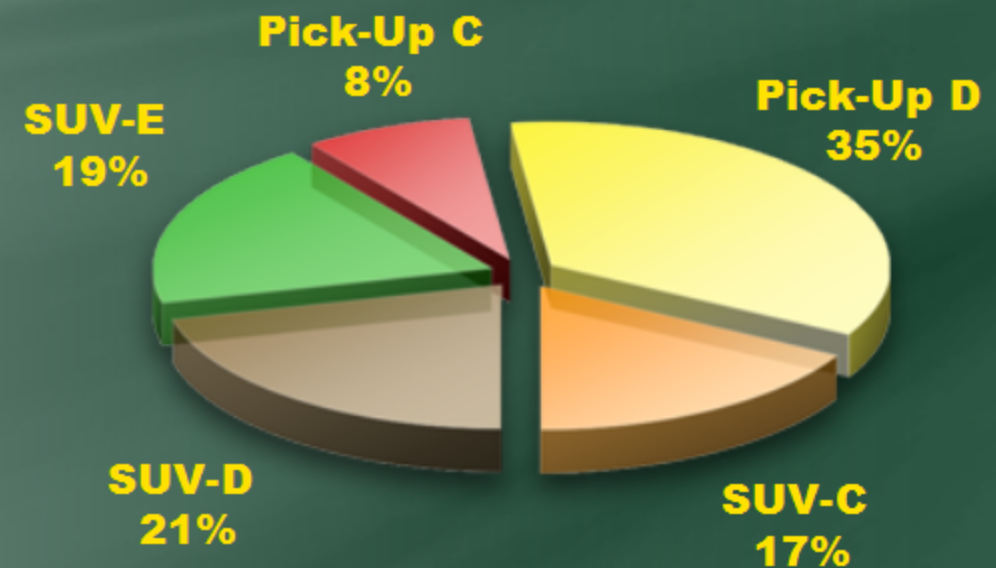
Vehicle Segmentation – EU vs. NA

SUV SEGMENTATION 2005 EUROPE



Europe
leading segment:
SUV-C

SUV SEGMENTATION 2005 NORTH AMERICA



North America
leading segment:
Pick-Up D



The 4x4 Vehicle Evolution

4x4



4x4



4x4



SUV



SUV



CUV



Technical Evolution in SUV/4x4

Range Rover	70's	80's	90's	today
Engine Capacity	3.500	3.900	2.500 - 4.400	3.000 - 4.400
HorsePower	150	188	225	180 - 395
Weight	1.750	2.100	2.100	2.570
Top Speed	140	183	195	200 - 210
Fitment	205R16 S	205R16 T	235/70R16 255/65R16 255/55R18	255/60R18 255/55R19 255/50R20

Toyota LandCruiser	70's	80's	90's	today
Engine Capacity	3.878	3.400 - 4.000	4.200	3.000 - 4.200
HorsePower	145	98 - 155	135 - 170	204 - 249
Weight	1.810	2.400 - 2.600	2.561 - 2.720	2.600 - 3.270
Top Speed	130	130	150	170 - 180
Fitment	7.50R16	31 x 10.5R15 215SR15	215/80R16 265/70R16 275/70R16	225/70R17 265/65R17 275/65R17

Mercedes G class	70's	80's	90's	today
Engine Capacity	2.300	2.300 - 2800	2.000 - 5.000	2.700 - 5.500
HorsePower	102	72 - 150	95 - 297	156 - 476
Weight	2.500	2.500 - 2.800	2.620 - 3.200	2.850 - 3.200
Top Speed	145	115 - 155	132 - 190	157 - 210
Fitment	6.50R16	205R16	265/70R16 255/65R16 265/60R18	265/60R18 275/55R19 275/50R20



European Vehicles Tyre Complexity

Volkswagen TOUAREG

3.200 – 5.000 cc

250 - 450 HP

A/T & winter tyres become specialist option fitments on demand

255/55R18 XL Y Summer
275/45R19 XL Y Summer
275/40R20 XL Y Summer



235/65R17 XL T Winter
235/60R18 XL H Winter
255/55R18 XL V Winter
255/50R19 XL V Winter



235/70R16 T All Terrain
235/65R17 XL T All Terrain
255/60R17 V All Season
235/60R18 XL T All Terrain
235/60R18 XL V All Season
255/55R18 XL V All Season



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American Vehicles Tyre Complexity



FORD F150

P235/70R17 BSW all-season
P235/75R17 BSW all-terrain
P255/65R17 OWL all-season
P255/70R17 OWL all-terrain
P265/60R18 OWL all-season
P275/65R18 OWL all-terrain
P275/55R20 OWL all-terrain
P275/45R22 BSW all-season

LT245/70R17D BSW all-terrain
LT275/65R18C OWL all-terrain



FORD F250 / F350

LT245/75R17E BSW all-season
LT265/70R17E BSW all-season
LT265/70R17E OWL all-season
LT265/70R17E BSW all-season
LT275/70R18E BSW all-season
LT275/65R18E BSW all-season
LT275/70R18E BSW all-season

LT245/75R17E BSW all-terrain
LT245/75R17E OWL all-terrain
LT265/70R17E BSW all-terrain
LT265/70R17E OWL all-terrain
LT275/70R18E BSW all-terrain
LT265/70R17E BSW all-terrain
LT275/70R18E BSW all-terrain
LT275/70R18E OWL all-terrain
LT275/65R20E OWL all-terrain



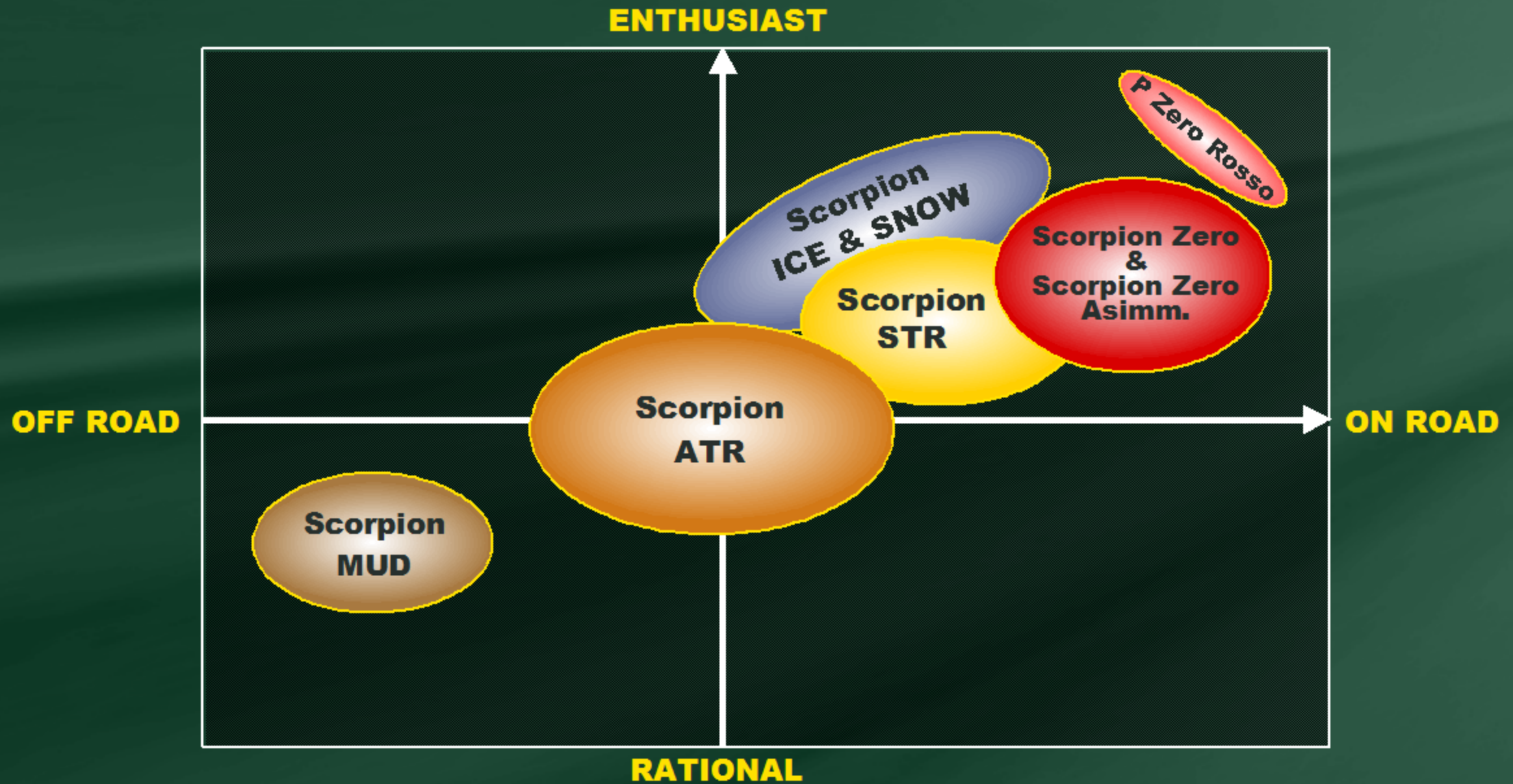
Scorpion™

ATR



PIRELLI

The Role of ATR within Piorelli's SUV Range



The New Scorpion™ ATR – Size Range

LT215/75 R 15	100/97T	RWOL	205/70 R 15	96T	RBL
LT235/75 R 15	110/107S	RWOL	P235/75 R 15	108 T	RBL
LT255/75 R 15	109/105S	RWOL	P225/70 R 16	102T	RWOL
LT225/75 R 16	110/107S	RBL	P235/70 R 16	105T	RWOL
LT235/85 R 16	120/116R	RWOL	P245/70 R 16	107T	RWOL
LT245/75 R 16	120/116R	RBL	P255/70 R 16	109T	RWOL
LT265/75 R 16	123/120 S	RWOL	P265/70 R 16	112T	RWOL
LT285/75 R 16	122/119 R	RWOL	P275/70 R 16	114T	RWOL
LT235/80 R 17	120/117R	RWOL	P245/65 R 17	107T	RWOL
LT245/70 R 17	119/116R	RBL	P265/65 R 17	112T	RWOL
LT265/70 R 17	121/118S	RWOL	P265/70 R 17	113T	RWOL
LT285/70 R 17	121/118S	RWOL	255/55 R 18	109H	RBL
LT325/65 R 18	121/118S	RBL	P275/55 R 20	111S	RBL
LT305/55 R 20	121/118S	RBL	P275/55 R 20	111S	RWOL
LT325/60 R 20	121/118R	RBL	P305/45 R 22	118 T	RBL
LT325/55 R 22	120/117S	RBL	30X9.50R15	104S	RWOL
LT325/45 R 24	120/117S	RBL	31X10.50R15	109S	RWOL

Section width: 205 - 325

Technical series: 85 - 45

Rim: 15" - 24"

Speed codes: R, S, T, H



PIRELLI

Another Tyre Revolution



The Product Development Resources

Multi task approach to arrive at target performance in defined time scale dictated by OE deadline

Predictive tools & calculations:

Wear – mould profile - durability

Materials, laboratory evaluation:

Compound performance optimization

Indoor testing:

Durability – noise – RR – force & moment

Outdoor testing:

Wet – Dry – Winter – Severe off road

Existing product knowledge:

UHP - Existing SUV range

Motorsport technology fallout:

Rally on/off road experience

Advanced studies

Testing worldwide

Rally & UHP technology



Modelling

Materials

Laboratory

Motorsport

UHP

Outdoor test

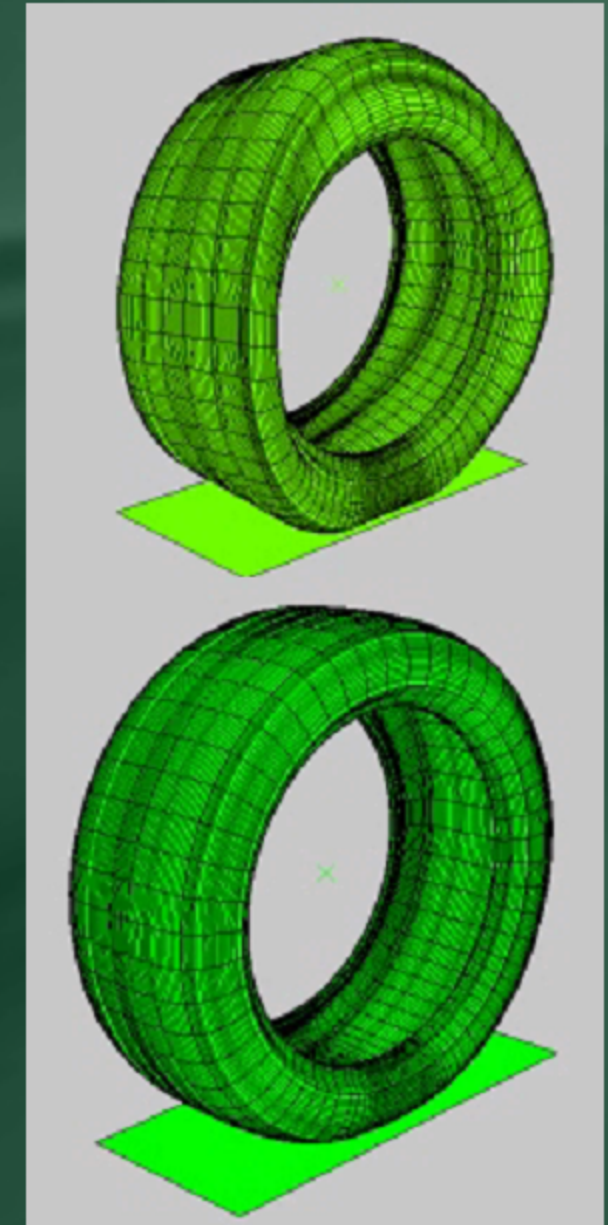
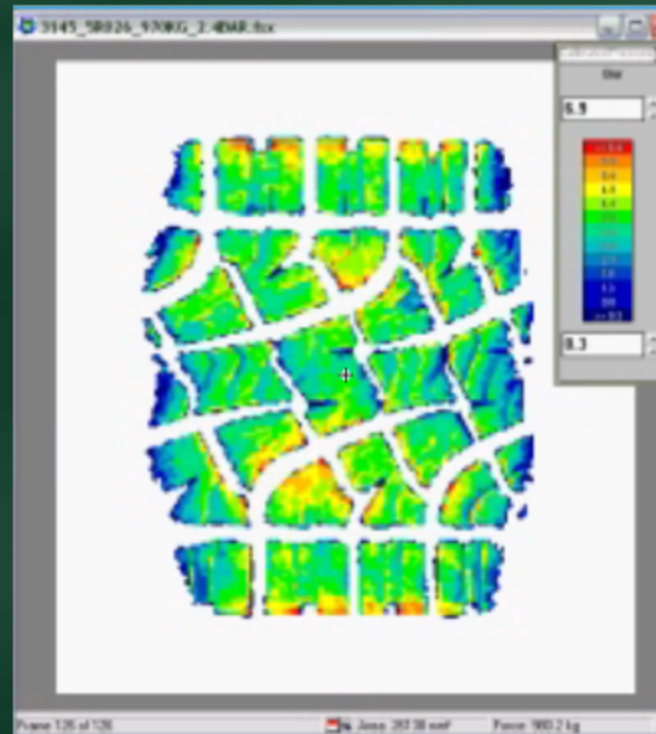
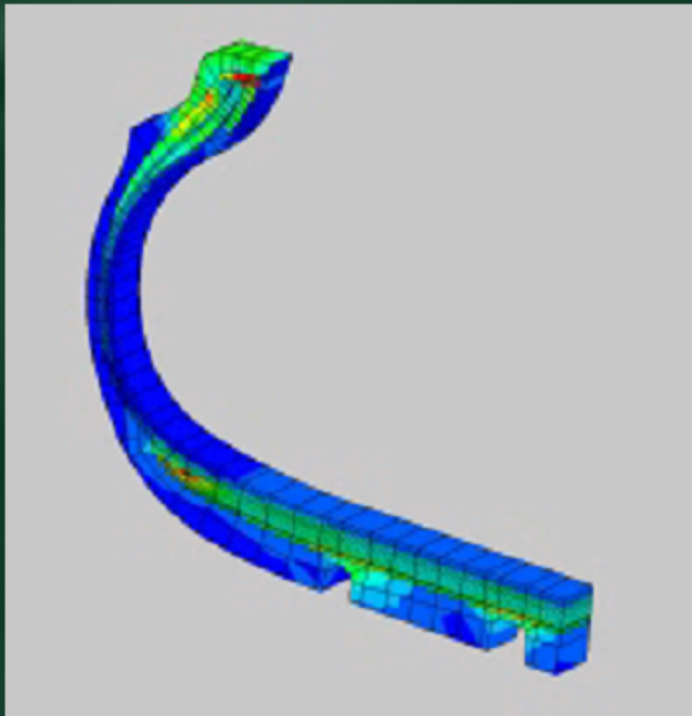
Indoor test

Integrity



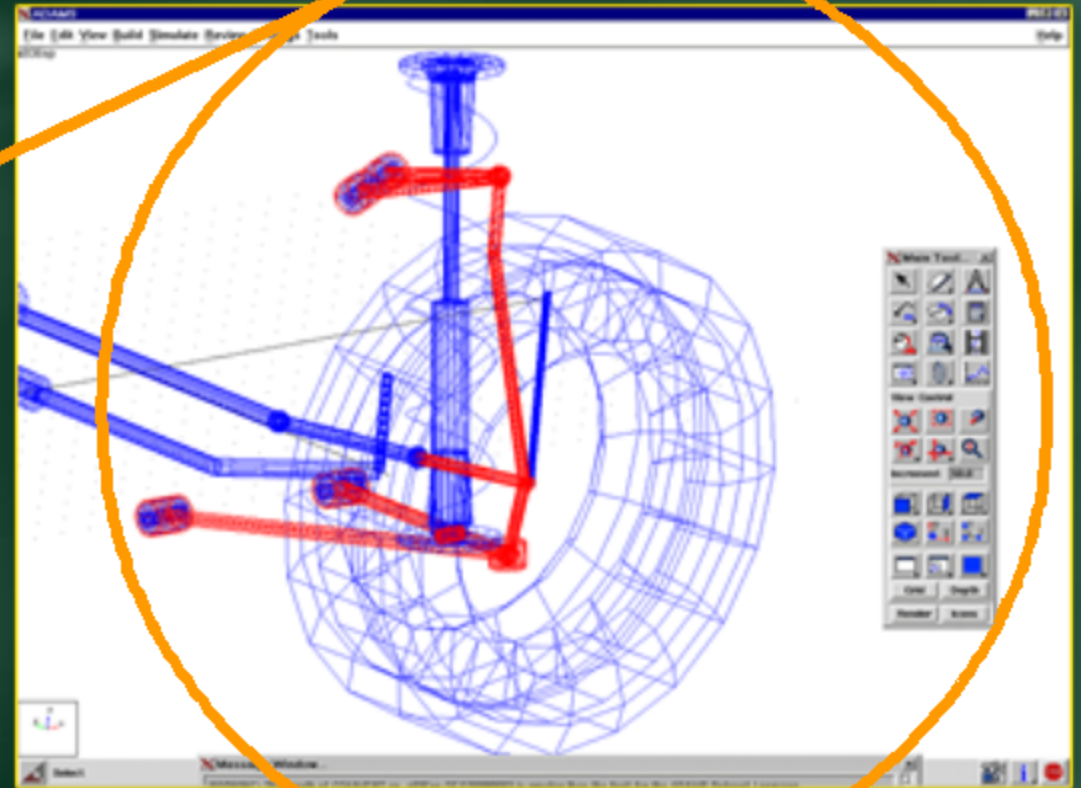
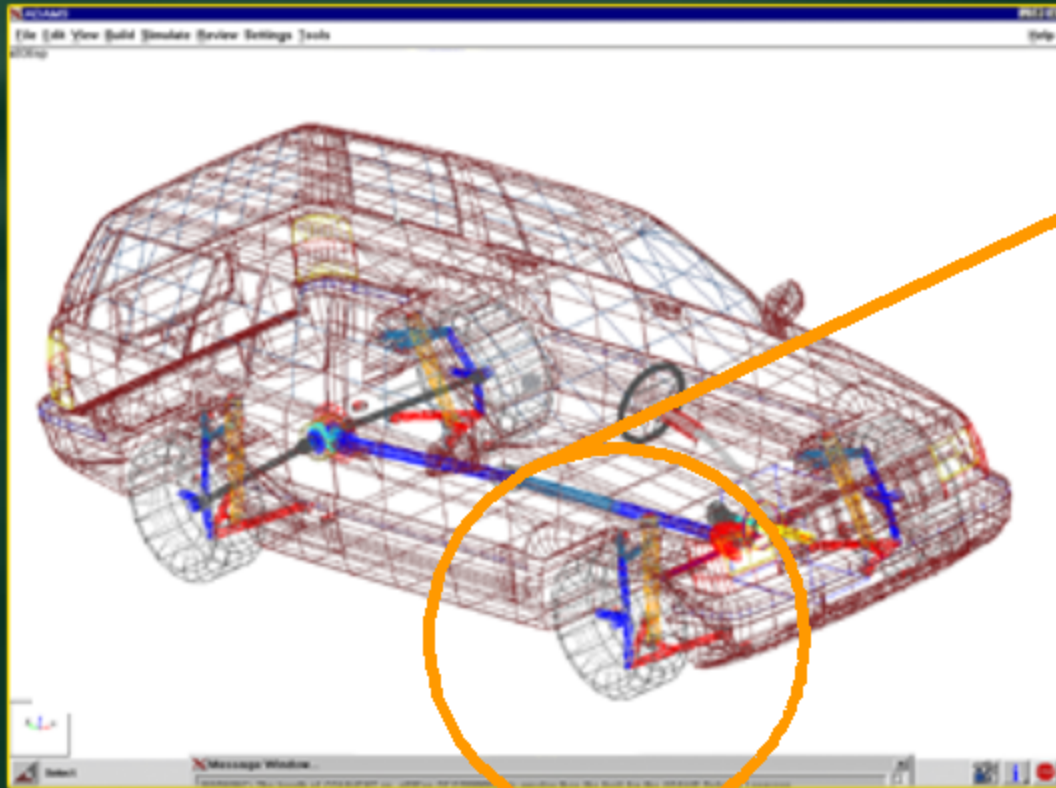
Tyre Modelling and Simulation Tools

- ▶ FEA definition of structure & profile design
- ▶ Footprint shape and pressure optimisation
- ▶ Modal Model refinement of ride quality



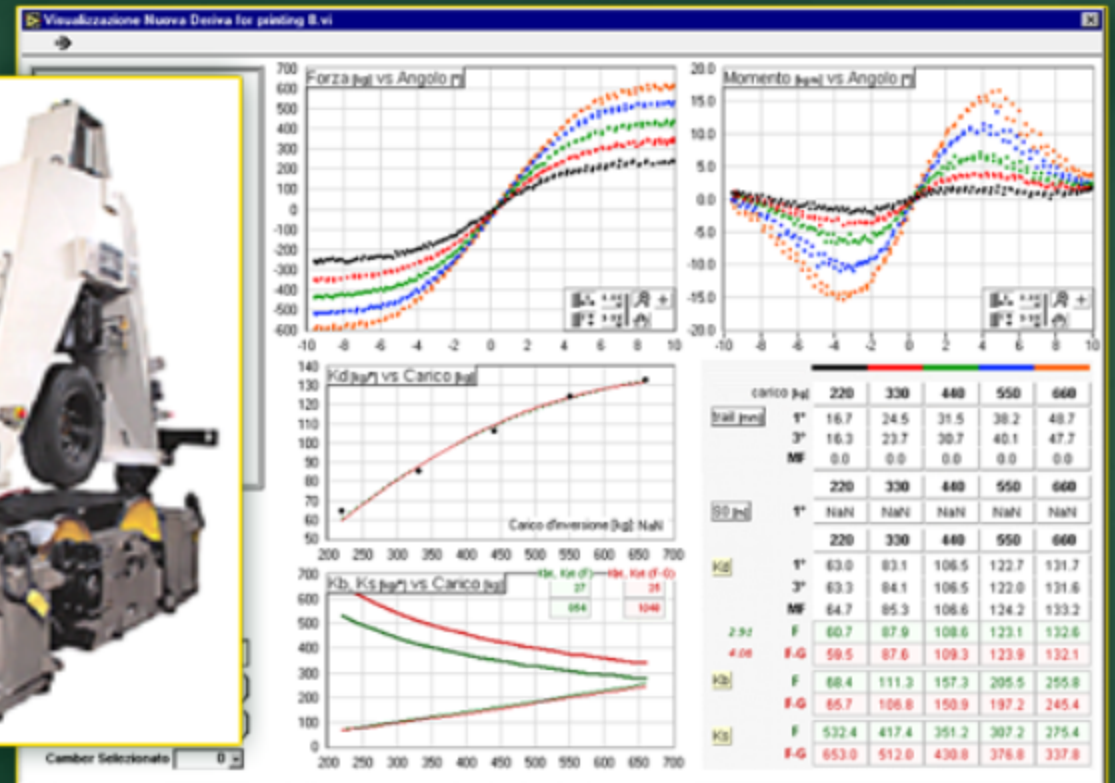
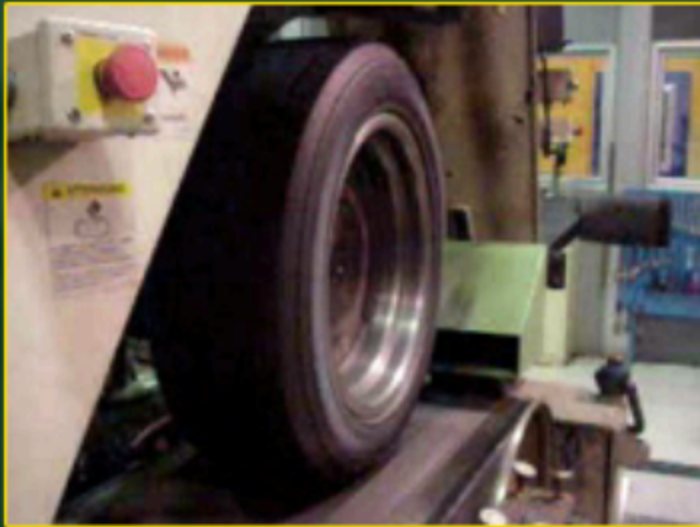
Vehicle Stability and Safety

- ▶ Multibody vehicle dynamics to simulate critical manoeuvres
- ▶ Design data exchange with development partners



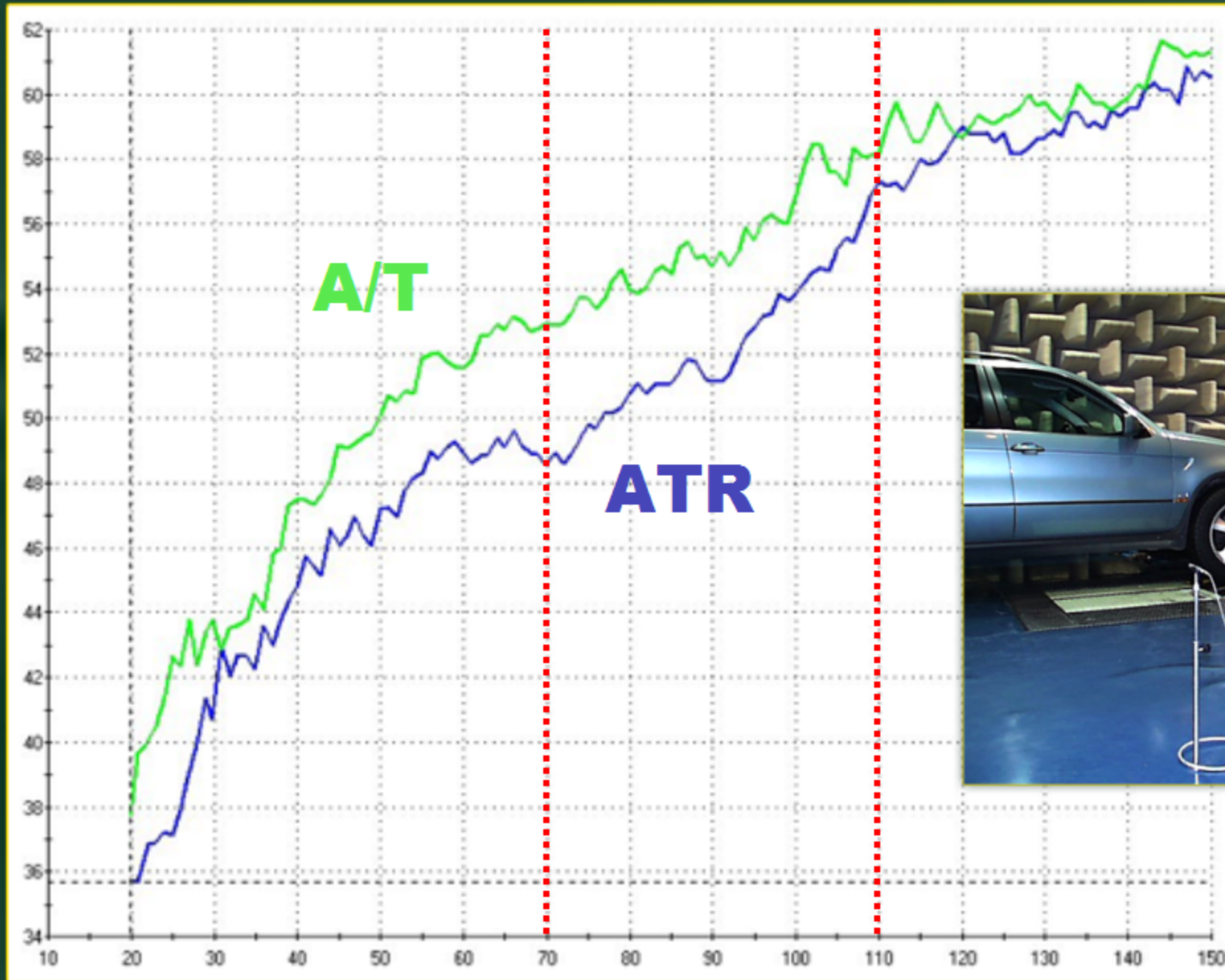
Indoor Testing for Handling Optimization

- ▶ Force & moment characteristics
- ▶ Data acquisition to support modelling



Indoor Tread Noise Optimization

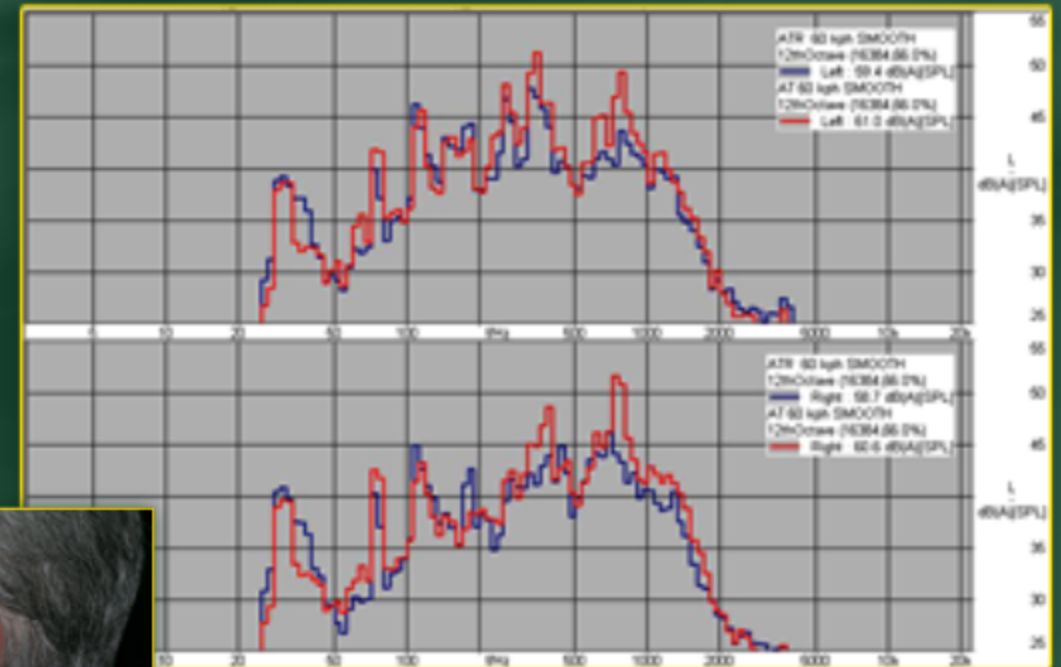
Noise level db(A)



Speed km/h

Outdoor Noise Verification

State of the art instrumentation measuring driver perceived noise through headphones relayed directly to PC for elaboration



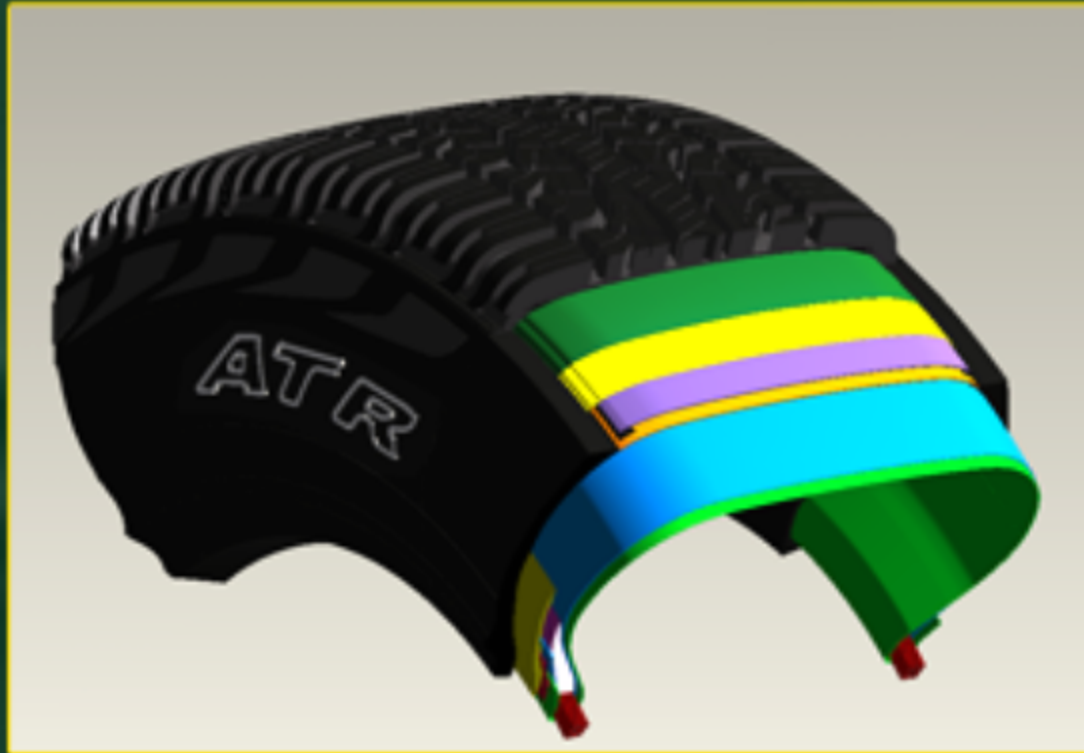
Motorsport Technology

Rally on/off road

- ▶ Carcass, bead & sidewall geometry directly derived from World Rally Championship activity
- ▶ Construction materials fully tested in motorsport



Tyre Construction Highlights



- ▶ Rigid composite belt pack
- ▶ 2 steel belts with double layer Nylon 0° overlay



- ▶ Consolidated construction scheme & materials
- ▶ Robust dual ply polyester carcass
- ▶ Reinforced bead and lower sidewall area



Materials Research and Analysis

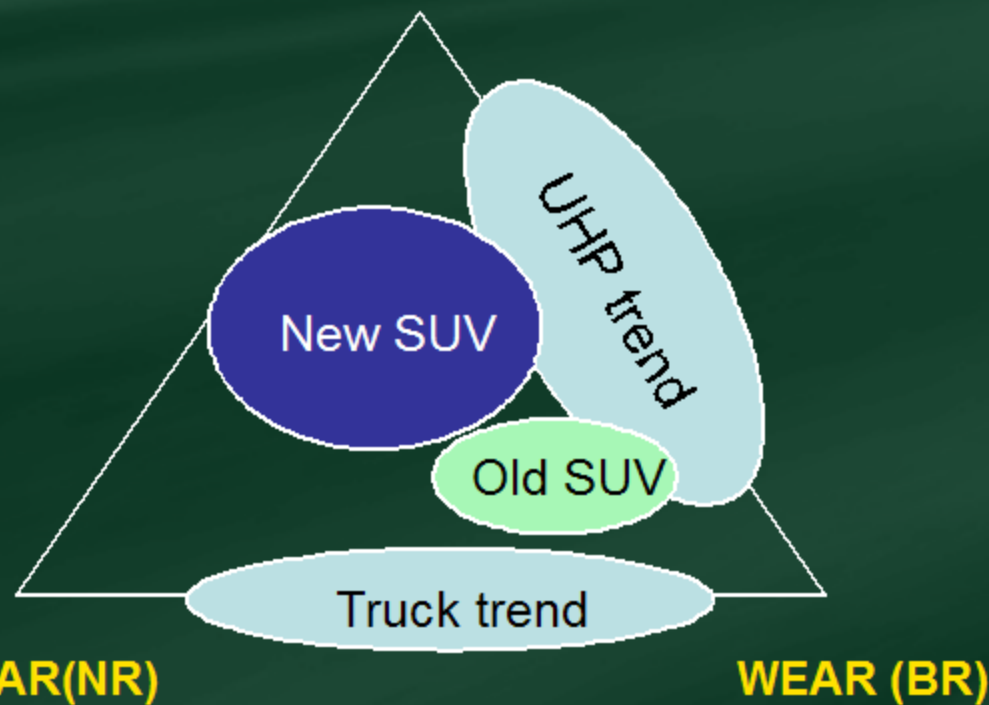
Materials, the specialist cocktail

Polymers; use of three way blend applied to SUV tyres to optimise:

- ▶ Tread wear, BUTADIENE RUBBER
- ▶ Cut & chipping and tear resistance, NATURAL RUBBER
- ▶ Tailor wet/dry grip level, STYRENE BUTADIENE RUBBER

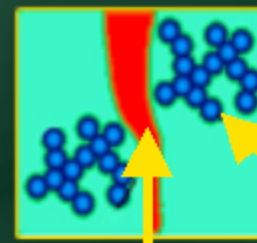


GRIP (SBR)

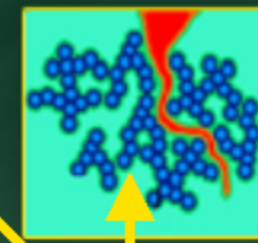


Reinforcing fillers - interactive carbon black-silica system

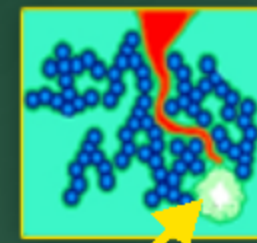
- ▶ High structure carbon black for improved tread wear
- ▶ Silica used for well known benefit in RR and wet grip but also as a major inhibitor of laceration crack propagation



Crack propagation



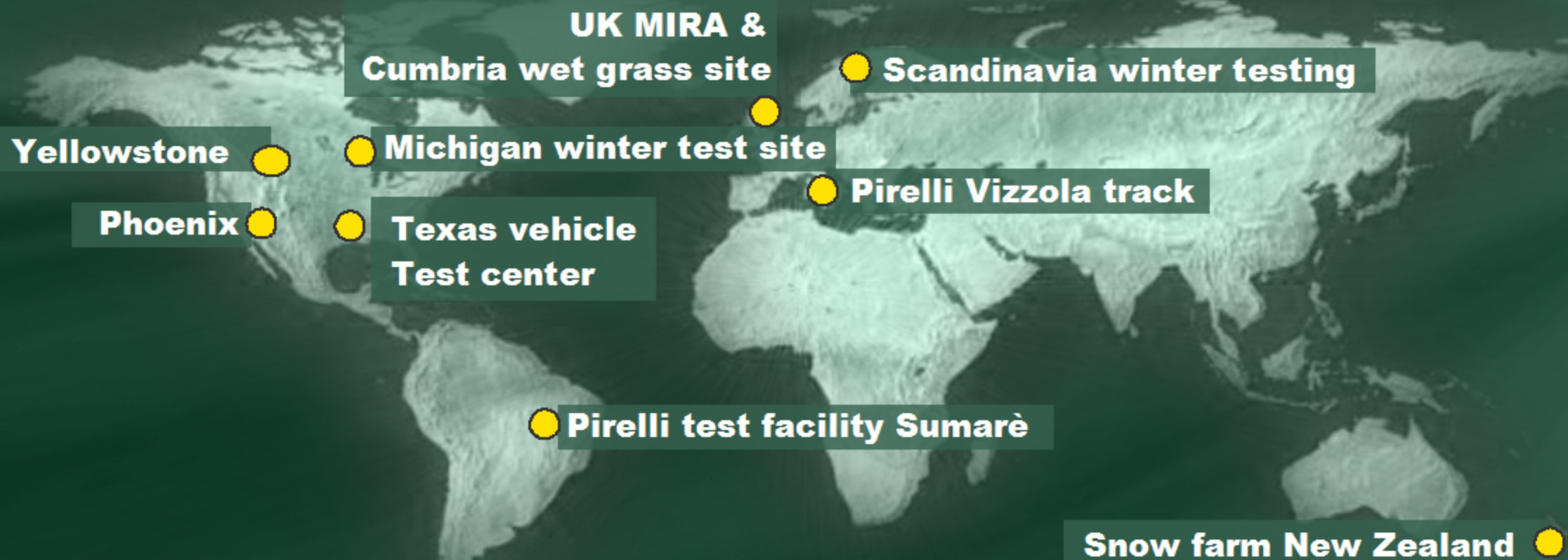
Carbon black aggregates



Silica particle



Outdoor Tests: All Terrain Around the World



Dry Handling Performance



A/T = 100



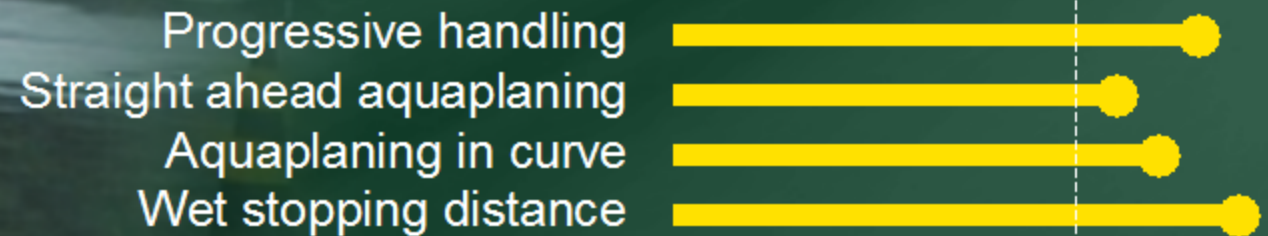
Higher values are better



Wet Braking and Handling Performance



A/T = 100



Higher values are better



PIRELLI

Extreme Off-Road Performance



Optimized Winter Performance



Trailer Towing Performance



Load capacity is not the entire story

- ▶ Safe and predictable handling is fundamental
- ▶ American vehicle manufacturers place high importance to testing in both fully loaded vehicle and trailer pulling conditions



Scorpion™ ATR Tread Pattern Features

Main performance features to distinguish ATR from other products in the market...

come from the tread !

PATENT PENDING

Continuous Central Rib:

- ▶ Enhanced stability
- ▶ Improved steering precision



Central area:

Single blocks with sipes:

- ▶ Increase tread life
- ▶ Optimize wear uniformity
- ▶ Increase traction & braking
- ▶ Reduce tread noise



Scorpion™ ATR Tread Pattern: the Grooves

Longitudinal grooves:

- ▶ Improve aquaplaning resistance
- ▶ Optimize contact area and pressure distribution

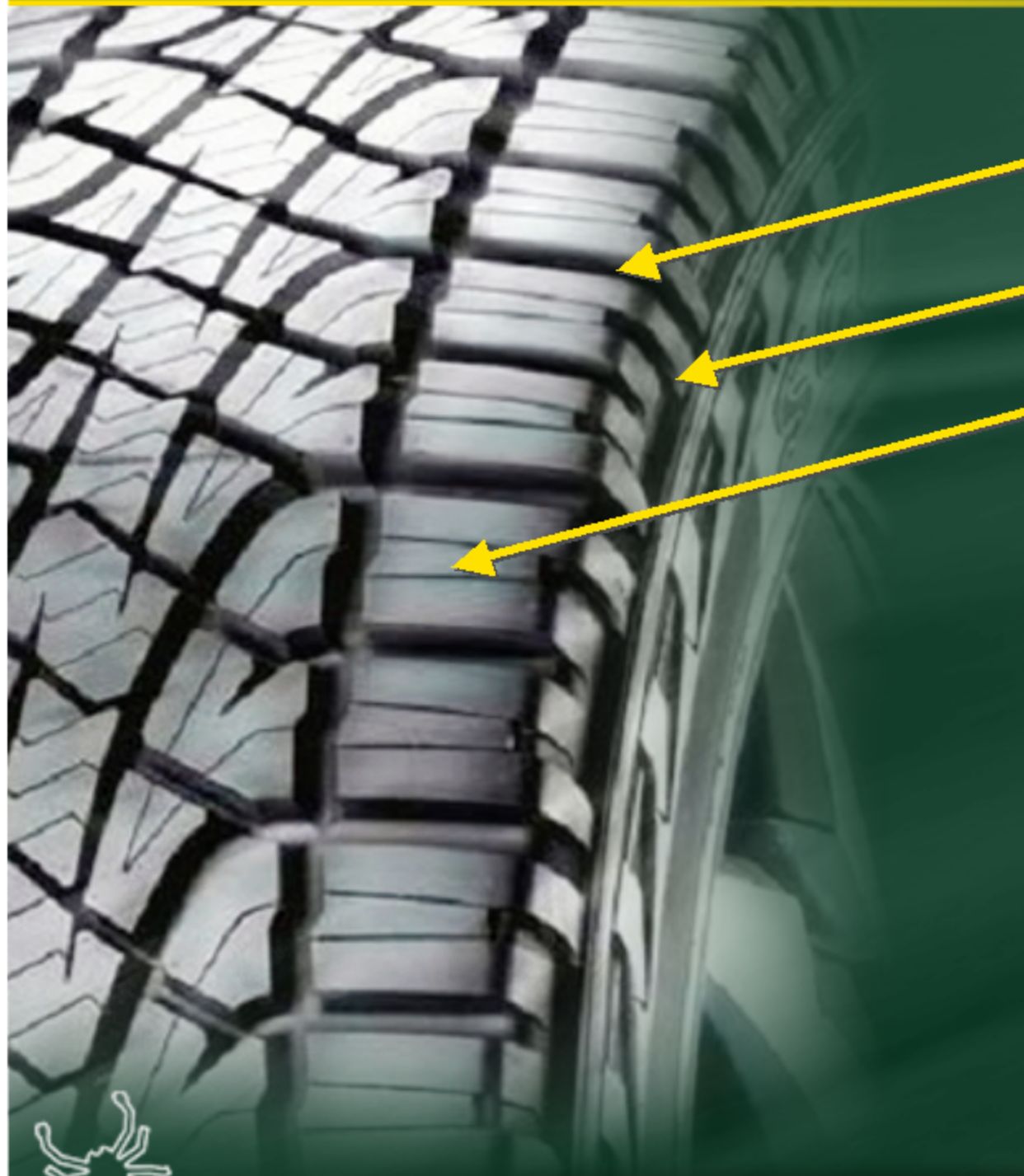


Principal grooves:

- ▶ Massive curved lateral grooves for maximum mechanical grip on loose surfaces
- ▶ Excellent water drainage & stability in critical aquaplaning conditions
- ▶ Variable inclination groove walls to facilitate self cleaning



Scorpion™ ATR Tread Pattern: the Shoulder



Shoulder area:

- ▶ Perfectly radial grooves for maximum traction & braking efficiency
- ▶ Staggered external blocks for mechanical grip on loose surfaces
- ▶ Sipes - reduce tread noise & optimize wear uniformity of contact area



The Scorpion™ All Terrain Revolution

Driven by the market evolution



Advanced technology
and materials

Tread, traction, wear and
noise optimization

Revolutionary performance
for a new market segment

A unique combination of All Terrain handling and comfort



PIRELLI

THE NEW SCORPION ATR

IMPROVE YOUR SUV.



www.pirelli.com

ANOTHER TYRE REVOLUTION FOR THE BEST SELLING SUV'S.

When you drive a top of the range SUV, you don't want to compromise on all-terrain performance, comfort and silence. That's why Pirelli Scorpion ATR is your best equipment, for ultimate control. Nothing less than the leader because power is nothing without control.

PIRELLI

POWER IS NOTHING WITHOUT CONTROL