# LOW ROLLING TECHNOLOGY PACKAGE - MATERIALI E PROCESSI PER PNEUMATICI A BASSISSIMA RESISTENZA AL ROTOLAMENTO PER LA MOBILITA' SOSTENIBILE COMBINATA A SICUREZZA DI GUIDA

AIRI - PREMIO OSCAR MASI PER L'INNOVAZIONE INDUSTRIALE 2017

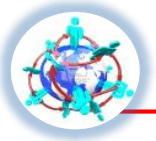
Roma, 24/05/2018

# INNOVATION TECHNOLOGY DRIVEN BY TRENDS

## MACRO TRENDS

URBANIZATION/
MEGA SMART
CITIES

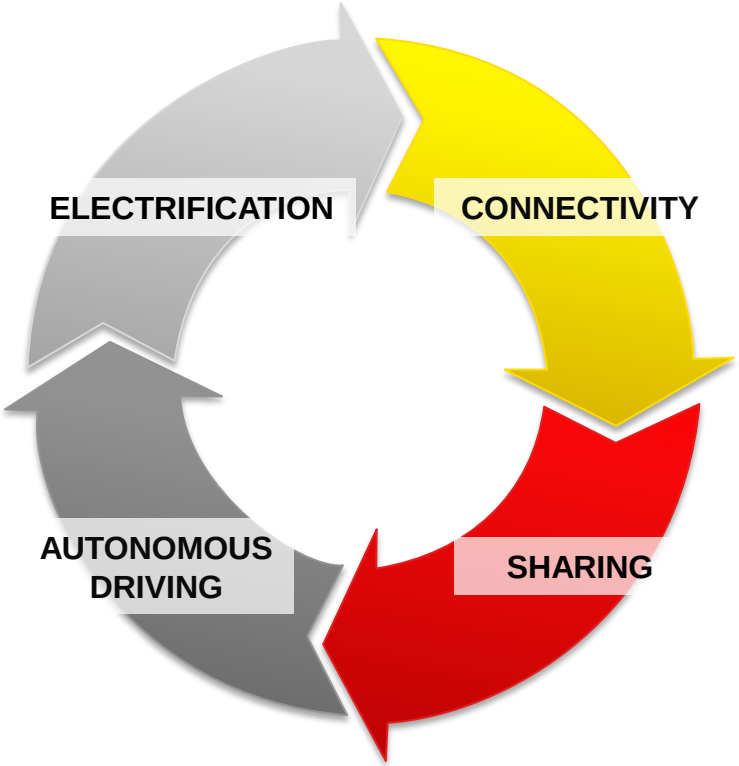
ENVIRONMENT
& SAFETY



CONNECTIVITY
E-MOBILITY

MILLENNIALS
Y GENERATION

## AUTOMOTIVE REVOLUTION




## PIRELLI TECHNOLOGY

ULTRA LOW
ROLLING
RESISTANCE

RUN FLAT

SELF SEALING

PNCS

COLOURED
TYRES

CYBER TYRE

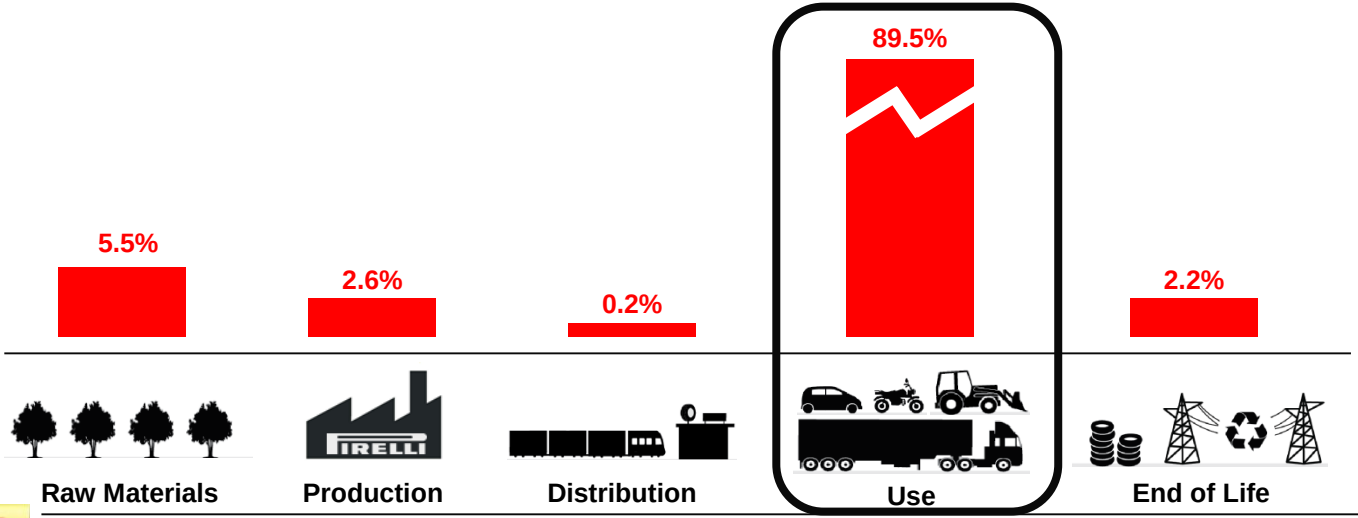
# PRODUCT INNOVATION: Life Cycle thinking

The EU medium car carbon footprint

of which

≈ 15 – 20 % is the average contribution of FOUR TYRES

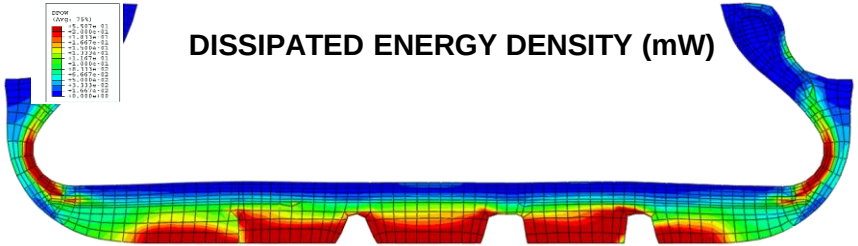
LIFE CYCLE ASSESSMENT: GLOBAL WARMING POTENTIAL OF OUR REPRESENTATIVE TYRE

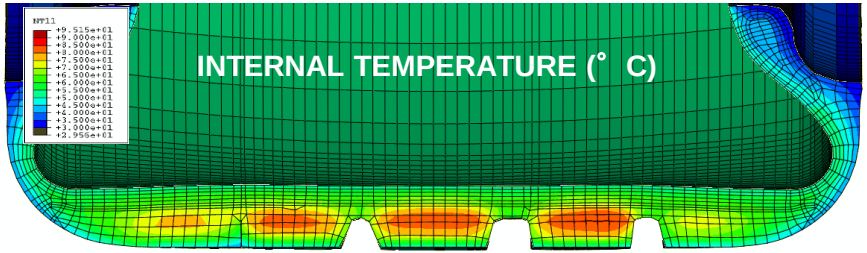


# ENERGY LOSSES – BASIC CONCEPTS

*From COMPUTER SIMULATIONS for ENERGY DISSIPATION***

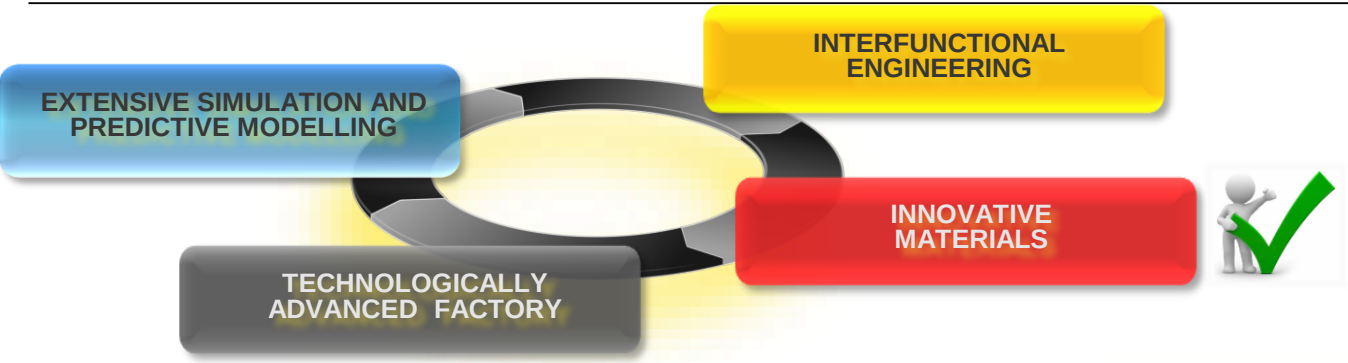
**The deformations taking place in the contact area account for 85-90% of the total tyre energy dissipation where the heat build-up is also evident**



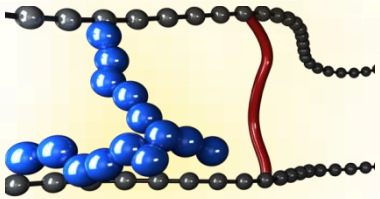




***Excluding aerodynamic drag*

# THE INTERACTIVE DEVELOPMENT PROCESS

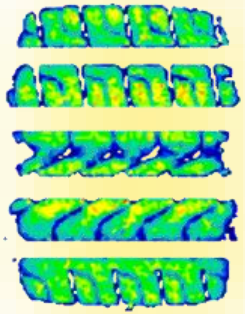



## TREAD - COMPOUND



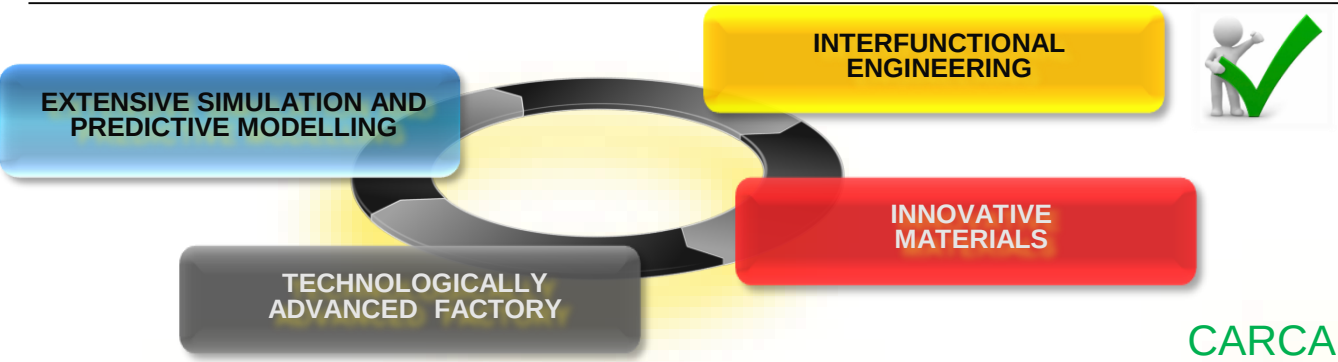
- INNOVATIVE POLYMERS
- NEW PLASTICIZERS
- MULTI – Layer Concept

## TREAD - BELT PACKAGE



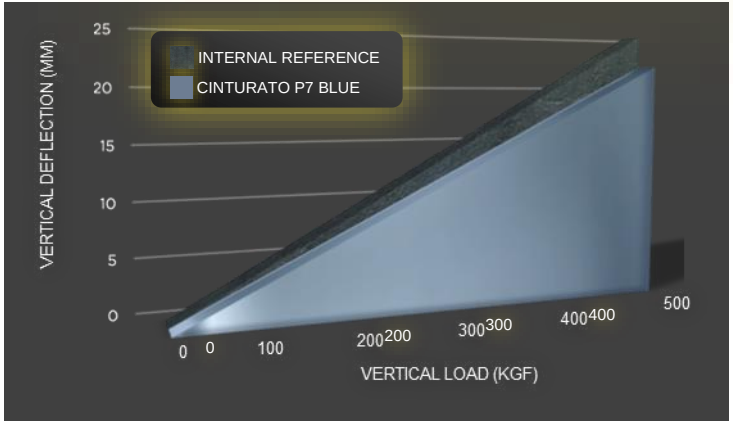
- HYBRID REINFORCEMENTS
- LIGHT WEIGHT REINFORCEMENTS
- NEW APPPLICATION PROCESS

# THE INTERACTIVE DEVELOPMENT PROCESS



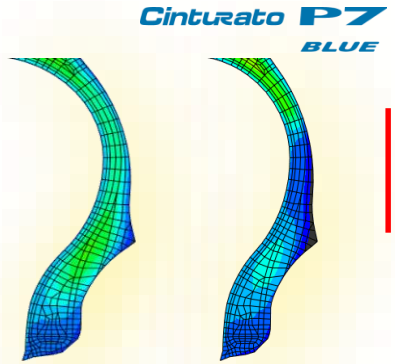



## LOAD vs VERTICAL DEFLECTION




## CARCASS RIGIDITY

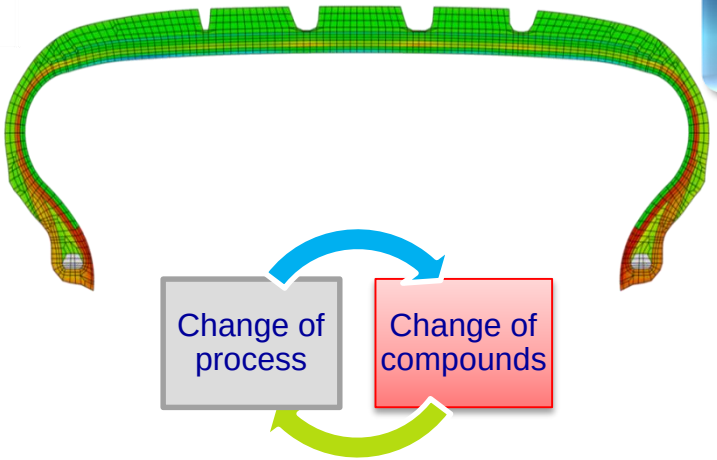
LATEST GENERATION OF PLY MATERIAL & TOPPING COMPOUND
PROGRESSIVE SIDEWALL RIGIDITY
REINFORCED BEAD AREA

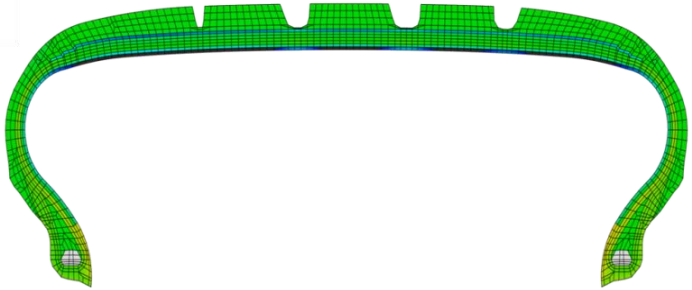


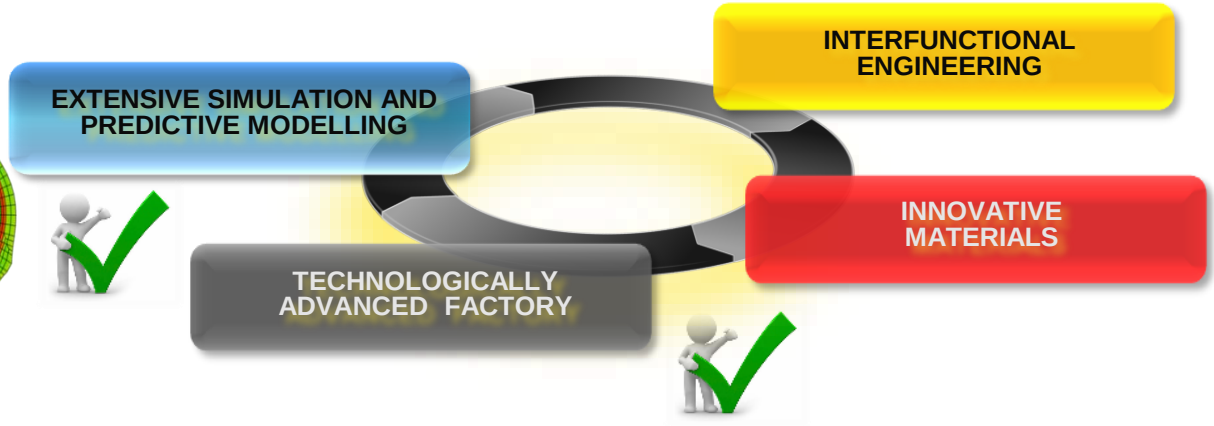

- WEIGHT: -10%
- VERTICAL STIFFNESS: +7%

# THE INTERACTIVE DEVELOPMENT PROCESS

## VULCANIZATION SIMULATIONS



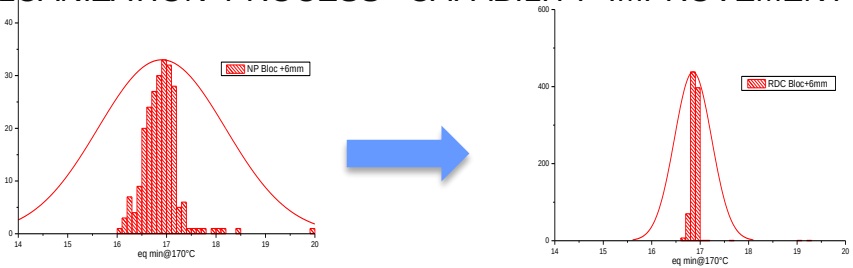






## ADVANCED SENSORS IN CURING*

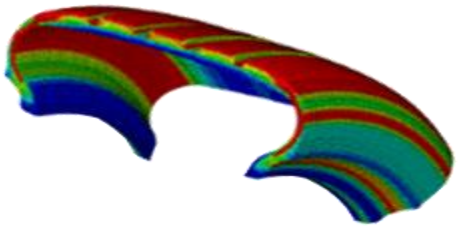
* EUROPEAN PATENT 1 945 432 B1

VULCANIZATION PROCESS CAPABILITY IMPROVEMENT



# ROLLING RESISTANCE IMPROVEMENT: FROM GREEN TO BLUE

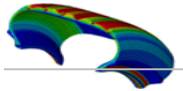
## Cinturato P7™




Considering the size **235/45-17 97W** for a medium sedan…

## Cinturato P7™ BLUE

- **Low Rolling Technology Package**: materials and processes
- **Geometry:** tread and belt optimization
- **Tyre weight reduction**
- **Design:** supported by predictive modelling




- **Rolling resistance** reduction: up to 20%

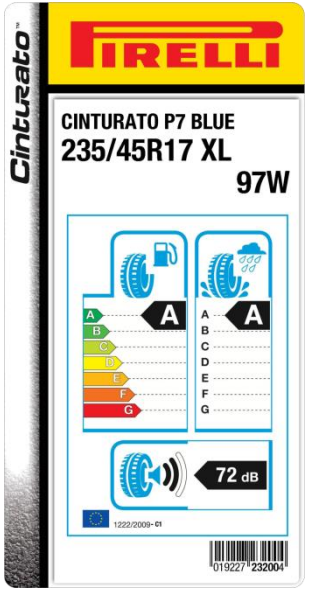
…with an average mileage of 15k km/year:

- **- 6%** fuel consumption
- **- 156Kg** CO2 emissions
- **>300 €** potential savings in 3 years

## RESULT

- On average 15 - 20% reduction in rolling resistance by 2017

# THE EURO TYRE LABEL FOR CINTURATO P7 BLUE





## AA GRADED TYRES IN PRODUCTION SINCE 2017

| Product Id | Product description | RR | WG | Availability |
|---|---|---|---|---|
| 3116100 | 215/55R16 97W XL P7Blue | A | A | 15/04/17 |
| 3116200 | 225/55R16 95V P7Blue | A | A | 15/04/17 |
| 3116300 | 225/45R17 91Y P7Blue | A | A | 15/05/17 |
| 3116400 | 215/50R17 95W XL P7Blue | A | A | 15/06/17 |
| 3116500 | 225/50R17 98Y XL P7Blue | A | A | 15/06/17 |
| 3116600 | 245/40R18 97Y XL P7Blue | A | A | 02/08/17 |
| 3151600 | 225/55R16 99W XL P7Blue | A | A | 15/06/17 |
| 3151700 | 205/50R17 93W XL P7Blue | A | A | 15/07/17 |
| 3151800 | 225/40R18 92W XL P7Blue | A | A | 15/07/17 |
| 3151900 | 235/45R17 97W XL P7Blue | A | A | 15/07/17 |
| 3152000 | 215/55R17 98W XL P7Blue | A | A | 15/08/17 |
| 3152100 | 225/55R17 101W XL P7Blue | A | A | 15/08/17 |
| 3152200 | 245/45R17 99Y XL P7Blue | A | A | 15/08/17 |
| 3152300 | 235/40R18 95Y XL P7Blue | A | A | 15/09/17 |

# thank you!

# ENERGY LOSSES – BASIC CONCEPTS