SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution

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DEPARTMENT OF AUTOMOBILE ENGINEERING

AUTOMOTIVE SAFETY & INFOTRONICS

UNIT 3 – SAFETY EQUIPMENTS AND COMFORT SYSTEM

TOPIC 12: TIRE PRESSURE MONITORING SYSTEM

PRESENTATION OUTLINE

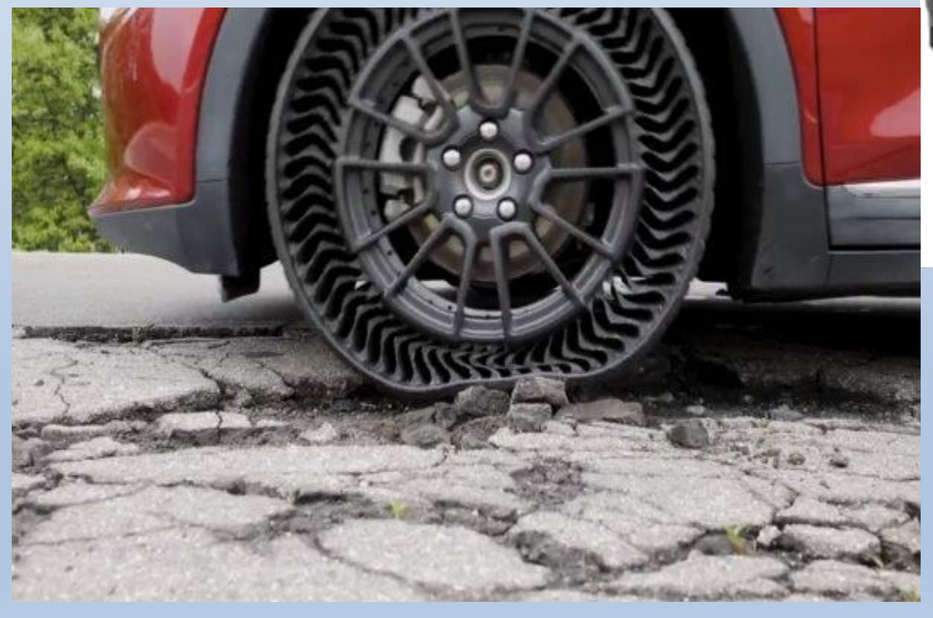
- Causes of Tire Burst
- Prevent Tire Burst
- RF Communication
- Main Functions
- Product Features
- Direct Type
- Working

CAUSES OF TIRE BURST

- Low Tire Pressure
- Contact area between the tires and ground increases
- Temperature of the tire increases
- Friction with the tire increases
- Too high tire pressure

PREVENT TIRE BURST

- Install Tire Pressure Monitoring System
- Install blowout resistant tire



TIRE PRESSURE MONITORING SYSTEM

- A receiver connected to navigation device
- 4 transmitters installed on tire

RF COMMUNICATION

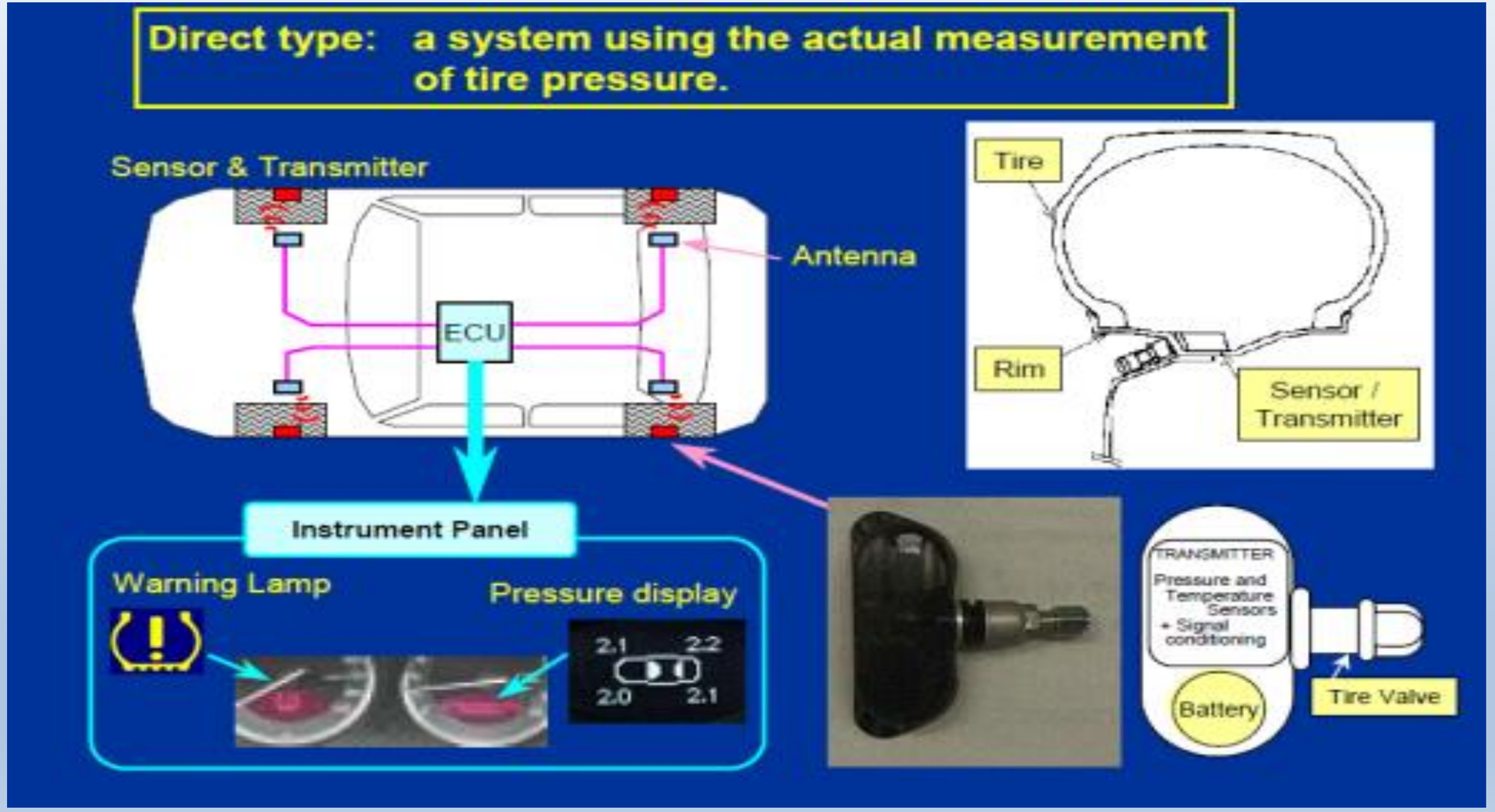
- The TPMS is made of divisive receiver and transmitters
- Through radio-frequency signal, transmitters transmit the data of tire pressure and temperature to the receiver so that the air pressure and temperature of tires can be monitored real timely

MAIN FUNCTIONS

- Temperature and Tire Pressure Monitoring
- Low Pressure or High Pressure Alert
- High Temperature Alert

PRODUCT FEATURES

DIRECT TYPE


Direct type: a system using the actual measurement of tire pressure.
Sensor & Transmitter
Antenna
ECU
Instrument Panel
Warning Lamp
Pressure display
2.1
2.2
2.0
2.1
Tire
Rim
Sensor / Transmitter
TRANSMITTER
Pressure and Temperature Sensors
+ Signal conditioning
Battery
Tire Valve

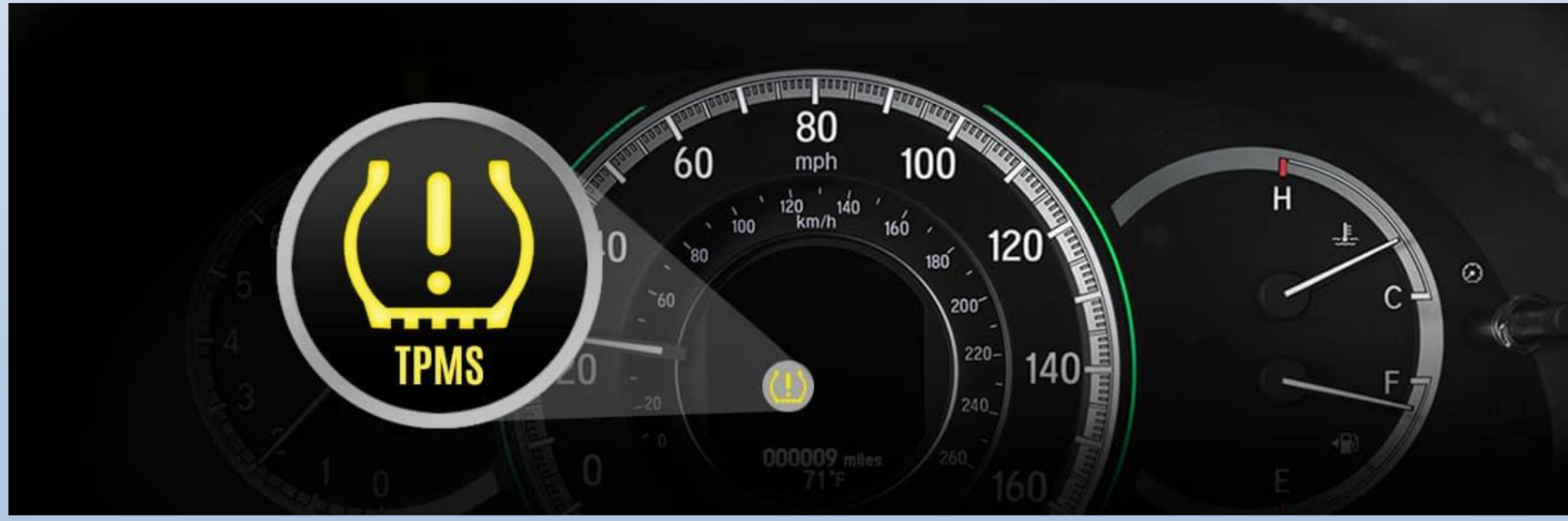
WORKING

- Direct TPMS uses a sensor mounted in the wheel to measure air pressure in each tire

- When air pressure drops 25% below the manufacturer's recommended level, the sensor transmits that information to your car's computer system and triggers your dashboard indicator light

ADVANTAGES

- Deliver Actual Tire Pressure Reading
- Not Prone to inaccuracies
- Simple Resynchronization
- Batteries Inside the system



DRAWBACKS

- More Expensive
- Need Costly Tools
- If battery is drained then the whole system to be changed

REFERENCES

- George A. Peters, Barbara J. Peters, “Automotive Vehicle Safety” CRC Press, 2002
- Richard Bishop, “Intelligent Vehicle Technology and Trends” Artech House, 2005

Thank you