

**White Paper**

# **Digital Tire Management**

Smart solutions for efficient and sustainable commercial transport

# Table of Contents

<b>Digital and High Performing</b>	<b>2</b>
Tire Pressure in the Spotlight	3
Digital Services	4
Digital Tire Management	5
Valve Cap Sensor as Entry-level Solution	6
Mobile App for Advice on the Move	7
Sensors Today and Tomorrow	8
Integrated Solution Portfolio	9
Contact	10

# Digital and High Performing

If tires are  
**underinflated** by just  
**20%**  
they will achieve around  
20 percent less mileage.



## Tire pressure in the spotlight

Pressure that is too high causes excessive wear in the center of the tread. And if it's too low, the tire's outer ribs will suffer.

## Smart family of tires

Since August 2023, Continental has been factory fitting its entire **Conti Urban tire family** with latest-generation sensors. This makes Continental the first manufacturer to offer an entire family of tires with sensors, allowing it to continue driving forward fleet digitalization.



## ContiConnect & Co.

**High-precision sensor technology** combines with the intelligent tire management solution ContiConnect to provide a continuous stream of tire data.



**With the Continental Tire Tech App, we are continuing the digitalization of tire service.**

*Catherine Loss, Head of Technical Customer Services EMEA at Continental*



## App calculates optimum pressure

With the **Pressure-Load Calculator**, fleet managers, technicians and tire dealers are able to determine the optimum inflation pressure for their tires, depending on the application. The **Continental TireTech app** helps to increase fleet efficiency and reduce tire operating costs.



# Tire Pressure in the Spotlight

Inflating tires to the optimum pressure increases their dynamic stability and mileage at the same time as reducing fuel consumption and therefore CO<sub>2</sub> emissions.

## Optimum tire pressure

User manuals from vehicle manufacturers and technical documentation from tire makers provide information on the correct tire pressures. These values always apply to cold tires because the internal pressure of the tire increases as it warms up out on the road. The pressures should be checked every two weeks, or every four weeks at most, when the tires are cold – and without forgetting the spare wheels.

## Causes of pressure loss

Tire pressure impacts the safe handling and fuel consumption of the vehicle and the mileage of the tires. Tires invariably lose some air as a result of diffusion through the sidewall. And although this is initially a

tiny proportion, over time it adds up to a noticeable loss of pressure. As a result of this, the lateral guidance forces in the tire are no longer sufficient. The vehicle will respond sluggishly to steering commands, and there will be a deterioration in both directional stability and braking distances.

## Consequences of underinflation

When a tire is underinflated, the contact patch becomes larger. As a result, a greater part of the wheel load acts on the outer edges of the tire, with reduced pressure on the center of the tread. Depending on the speed and weight of the vehicle, this variation in the distribution of forces causes the tire to flex more and reach temperatures in excess of 150°C. The tire over-

heats in the shoulder area, weakening the sub-structure and causing parts of the tread and belt to break off. Flexing also means greater rolling resistance with a corresponding rise in fuel consumption. Even a prolonged reduction in pressure of around 20 percent can reduce tire life by around 20 percent.

## Reasons for air leaks

Objects embedded in the tread, damage to the sidewall or a defective valve can all cause an air leak when the tire is subjected to high loads. Dirt, dust and moisture can affect the functioning of a valve.

Regular checks are the answer

The quality and performance capabilities of modern premium tires can only be fully leveraged by regularly checking all the relevant parameters. This includes continuous monitoring of the pressure and regular visual inspections of the inner and outer sidewalls of all the tires fitted on the vehicle.



More information  
Saving fuel



More information  
Rolling resistance and  
fuel consumption



Video  
Rolling resistance

# Digital Services

The ContiConnect digital tire management system offers haulage and fleet companies a modular product that can be individually tailored to their needs and specifications.

Providing a solution for a range of use cases: the components of the intelligent tire management solution supply real-time tire data and reinforce the four key pillars of fleet efficiency.

Sustainability

Cost Effectiveness

Predictive Maintenance

New Forms of Mobility





# Digital Tire Management

High-precision sensor technology combines with the intelligent tire management solution ContiConnect to provide a continuous stream of tire data. If there are any anomalies, the fleet management team can take action fast.

## **Tire pressure monitoring systems**

Today, the task of continuously monitoring the condition of the tires on a vehicle is made simpler by state-of-the-art tire pressure monitoring systems (TPMS) emerging out of the shift to Logistics 4.0. These smart data-system solutions provide a timely warning of tire failure.

## **Tire pressure monitoring with Continental**

In 2013, Continental's Commercial Vehicle Tires unit started to roll out the ContiPressureCheck tire monitoring system globally. Designed for monitoring the tires on individual vehicles, it has now been integrated into more than 35 different telematics systems.

2017 saw the advent of ContiConnect - a tire monitoring solution for multiple vehicles, based on a reader station installed at the fleet yard. The Yard Reader, as it is known, is the connectivity component of ContiConnect that receives the data from the vehicles and transmits it to fleet management. It reads the data from the tire sensors and sends it via the cellular network to the backend.

The ContiConnect web portal is the interface where fleet managers can proactively monitor tire condition on all their vehicles. The web portal is a browser-based application and can be accessed from any web-enabled device.

ContiConnect is based on smart sensors that continuously measure the temperature and pressure inside the tires. Each sensor sends its readings in real time to the selected tire pressure monitoring system. Since August 2023, Continental has factory fitted its entire Conti Urban tire family with latest-generation sensors. This makes Continental the first manufacturer to offer an entire family of tires with sensors, allowing it to continue driving forward fleet digitalization.

## **Flexible monitoring regardless of vehicle location**

This is achieved using ContiConnect Yard and, since 2022, ContiConnect Live. These systems enable digital tire monitoring anytime, anywhere. High-precision

sensors fitted inside the tires measure their pressure and temperature, making it possible to keep an eye on the condition of the tires at all times. ContiConnect Live is the ideal solution for fleets that are constantly in use and seldom return to the depot. The fleet's tire data can be accessed in real time, regardless of where the vehicles are located. The readings are relayed to the Continental backend, where they are processed and made available via the ContiConnect portal or the ContiConnect app - complete with detailed analyses and reports on tire status together with alerts sent by email or SMS.



# Valve Cap Sensor as Entry-level Solution

The valve cap sensor from Continental is the company's quick entry-level digital tire monitoring solution. It helps to ensure safe, sustainable and cost-efficient fleet operations.

Continental offers entry-level digital tire monitoring tech in the form of a sensor that transmits data on the condition of the tires, regardless of the manufacturer. Tires can therefore be kept at the optimum pressure, leading to greater fuel efficiency and a longer tire life. "Our valve cap sensor solution offers fleets a quick entry into the world of ContiConnect," says Clarisa Doval, Head of Digital Solutions at Continental Tires. "The tires don't even have to be removed to install it." This has the benefit of allowing truck downtime to be reduced to a minimum. The information processed via the tire management platform enables fleet operators to optimize maintenance intervals and extend the operating times of their vehicles. This helps haulage and transport companies to operate their fleets in a safer, more sustainable and more cost-efficient manner.

#### **Sensor technology for real-time data**

A valve cap sensor is screwed onto the tire valve of buses, trucks, or trailers. From there, the sensor measures the tire pressure in real time. The sensor is compatible with commercial vehicle tires from all the main manufacturers and connects to ContiConnect receiver units with plug-and-play simplicity. Any deviations from the target values are registered via the ContiConnect tire management platform and forwarded to the user.

#### **Vehicle configuration using On-Site app**

A QR code on the valve cap sensor is used to assign the sensor to the respective tire position. The position can be set from a mobile device using the

ContiConnect On-Site app without the need for a special scanner.

#### **Analysis of the tire data**

There are two options for transmitting the data gathered by the valve cap sensor: via a Yard Reader station or as a live stream using a telematics unit. With the Yard Reader solution, the station is installed at the fleet's frequently used touchpoints within the depot, such as washing bays, filling stations or other checkpoints. The data from the tire sensors is read as the vehicles drive past the station and sent to the Continental IoT platform. In the case of the live solution, a receiver unit is installed in the tractor unit or trailer. These telematics units transmit the data to the Continental IoT platform in real time. All collected and transmitted data is displayed in the ContiConnect On-Site app and can be accessed in the web portal - via desktop app or mobile device.

#### **For small and large fleets alike**

Both small and large fleets can benefit from this entry-level solution. It only takes a few minutes to equip a vehicle with the valve cap sensor, while an entire fleet can be retrofitted in just a few hours. So when a vehicle is next due to have its tires changed, fleet operators can choose to opt for intelligent tires with a factory-fitted sensor from Continental, opening the door to a comprehensive package of digital-based tire services.



# Mobile App for Advice on the Move

## TireTech app drives forward the digitalization of tire servicing

Since early 2023, Continental has been helping fleet operators, dealers and service technicians to maximize the safety and efficiency of their tires with the TireTech mobile app. The tool is designed to ensure optimum tire pressures and the right tire selection in order to maximize tire performance and therefore fleet efficiency.

### The added value of the TireTech app

The Continental TireTech app is a technical advice tool that has been carefully honed for dealers, fleet managers and technicians. It can be downloaded free of charge for iOS and Android. It provides quick and easy access to up-to-date tire and servicing information for Continental's full range of tires for agricultural and commercial vehicles. The app offers its content in multiple languages, is ready to use

within seconds of installation, and can be easily configured to suit users' individual needs.

### Straightforward and relevant information

Amongst the features offered by the Continental TireTech app is a built-in Pressure-Load Calculator, which helps users to determine the correct pressure for each tire based on the vehicle's axle load and tire size. The database of technical tire data and library of supporting images further enhance the app's functionality. The technical data can even be accessed without an internet connection. Completing the service app's features is a contact form that enables customers to get in touch with Continental's technical service team directly.



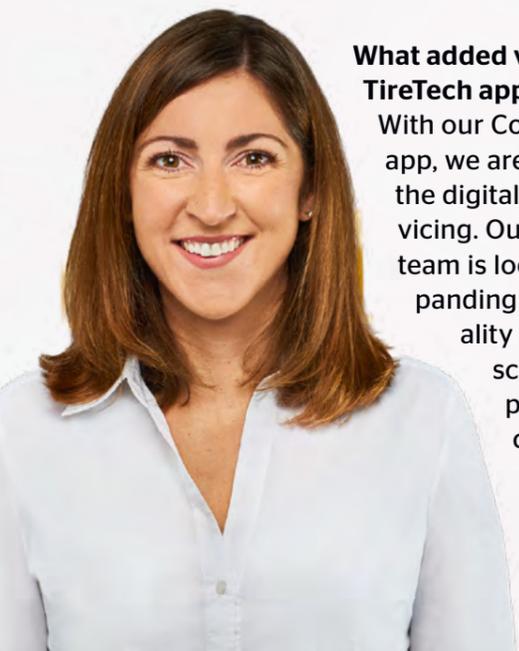
More information  
TireTech App



More information  
Update TireTech App

## Three questions for Catherine Loss

Head of Technical Customer Services EMEA at Continental



### What added value does the TireTech app have to offer?

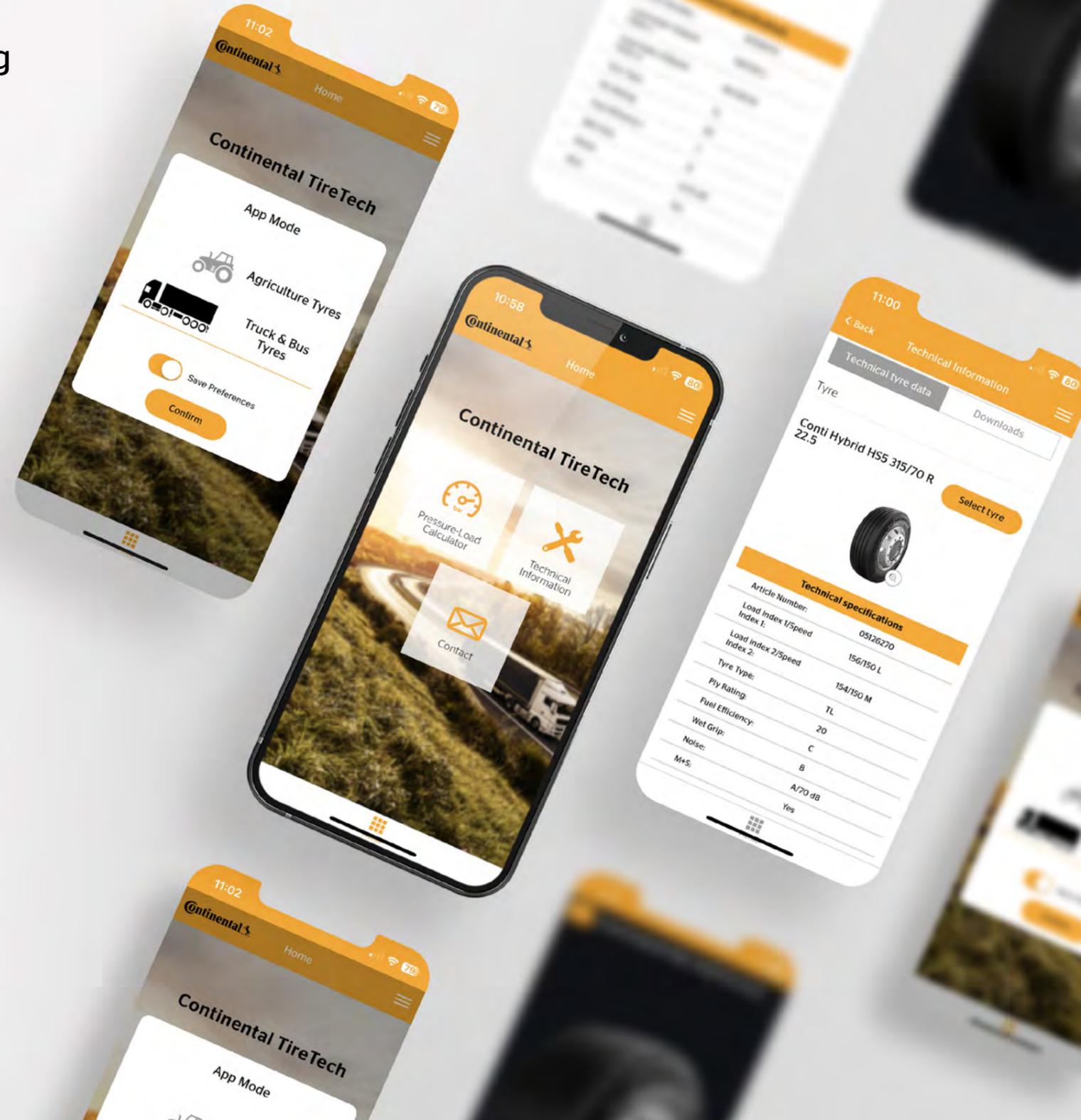
With our Continental TireTech app, we are driving forward the digitalization of tire servicing. Our technical service team is looking forward to expanding this app's functionality and adding further scope to our existing product offering for customers.

### What is the app capable of?

With the Pressure-Load Calculator, fleet managers, technicians and tire dealers are able to determine the optimum inflation pressure for their tires, depending on the application. The Continental TireTech app helps to increase fleet efficiency and reduce tire operating costs.

### Does the TireTech app help efforts to increase fleet efficiency?

The app does play a part in lowering exhaust emissions significantly, as correct tire pressure helps to reduce rolling resistance. The Continental TireTech app is therefore another building block in Continental's holistic Lowest Overall Driving Costs (LODC) approach.



# The integrated solution portfolio

**Tansu Isik**, Head of Fleet Solutions EMEA at Continental Tires, on Continental's holistic consulting approach LODC and the LifeCycle concept

## **How does the new Conti Eco Gen 5 tire line fit into the solution portfolio for fleet customers?**

Our holistic consulting approach focuses on the Low Overall Driving Costs, or LODC for short. We support our fleet customers in reducing their tire-related operating costs. The LODC incorporates all of our expertise in the areas of tires, tire service, digitalization,

data analysis and process optimization. The new Conti Eco Gen 5 is a tire with balanced rolling resistance, extra traction and a long service life. This makes it an ideal addition to our tire range and exactly the right tire for our LODC approach.

## **How does the Conti Eco Gen 5 fit into the LODC advisory concept?**

Compared to its predecessors, the new Conti Eco Gen 5 offers a significantly better CO<sub>2</sub> balance. At the same time, it helps to further reduce tire-related operating costs. As a result, it fits perfectly into the LODC concept and strives for a balance between economic, ecological and safety-related aspects of fleet operation. When developing the Conti Eco Gen 5, our tire developers took both ecology and economy into account.

## **What are the most important levers in the LODC method?**

The most important levers for LODC are optimal tire selection, introduction of lifecycle solutions, data-driven service management with tire checks at the right time, 24/7 breakdown service and digital services for maximizing uptime, increasing tire mileage and fuel efficiency, reducing repair and maintenance costs and the optimization of ordering, administration and billing processes. Basically, a complete lifecycle solution helps to fully exploit the potential of tires. For us, this includes tools and services such as digital solutions, carcass management and data transparency during tire use. During the usage phase, we are able to use

digital solutions to monitor tire inflation pressure and optimize tire maintenance. Such solutions extends tire life, increases uptime and helps to save fuel.

## **How does the Conti Eco Gen 5 help fleet operators to reduce CO<sub>2</sub> emissions?**

When developing the Conti Eco Gen 5, we succeeded in harmonizing the interplay between low rolling resistance and high mileage. To achieve this, our development has focused on mileage-neutral measures to improve rolling resistance. To achieve this, new technologies were used in all tire components, for example in the carcass construction, in the tread area and in the development of the overall contour and tread design. After all, the greatest leverage in tire development to improve the CO<sub>2</sub> balance of fleets is low rolling resistance and a long tire life.

## **How important is retreading in terms of LODC and fleet efficiency?**

As part of the holistic LODC concept, we always consider the appropriate retreading solution that is best suited to the customer's application profile when selecting tires - hot retreaded ContiRe or cold retreaded ContiTread tires. Our engineering teams for new tires and retreads work hand in hand. This makes retreading an important factor for our LODC approach and for more sustainability for the entire fleet.

## **Is the new Conti Eco Gen 5 suitable for retreading?**

With the Conti Eco Gen 5, it was important to us to improve criteria such as rolling resistance and durabil-

ity without compromising on recyclability. This means that the Conti Eco Gen 5 and its carcass are fully retreadable. Retreading was taken into account during tire development.

## **What proportion of the total costs of a fleet do tire costs account for?**

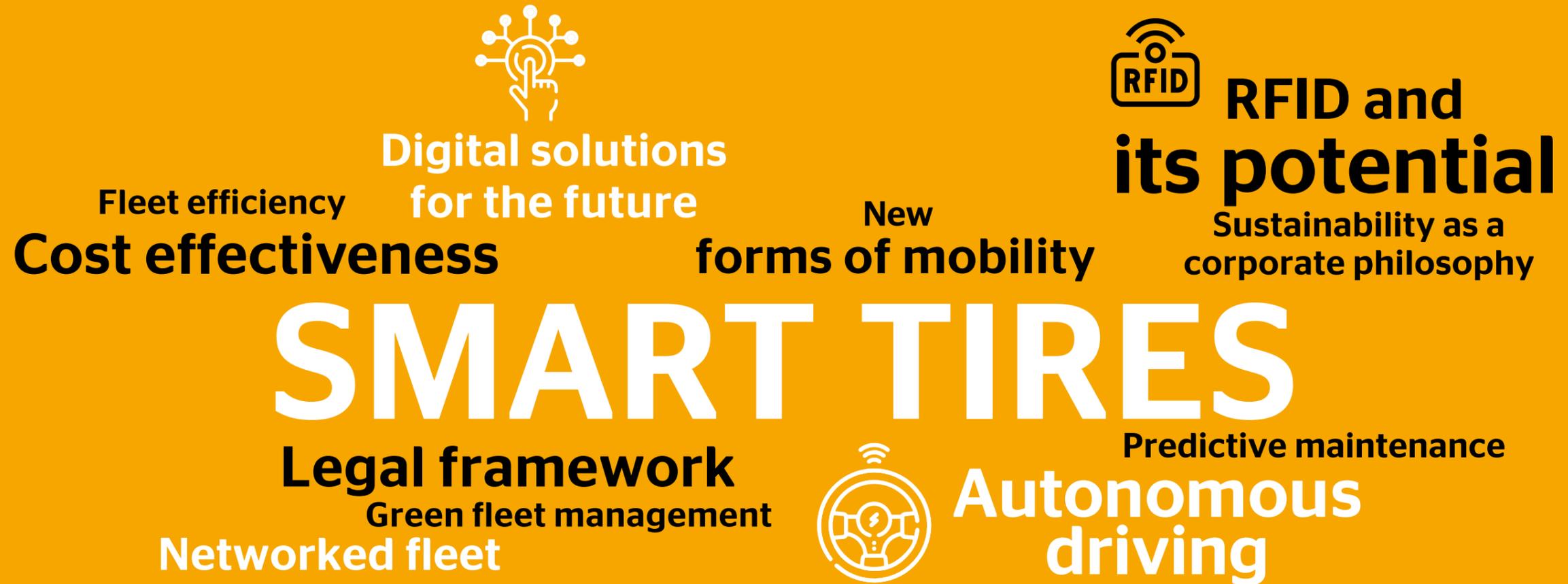
At first glance, tires only account for around 2 percent of the total operating costs of a truck. However, they also have a significant impact on fuel, maintenance and repair costs, administrative efforts, as well as tolls, which account for on average 50 percent of total costs. This makes tires an important cost-saving lever and the LODC concept a real success factor for our fleet customers.

## **How will the general market conditions for your fleet customers develop in the future?**

Forecasts are always difficult, but cost pressures are likely to increase further. Fuel prices will remain high for the foreseeable future and this will be exacerbated by the European CO<sub>2</sub> tax on fossil fuels. Besides, overall inflation and shortage of labor will add additional burden on our customers. European and national regulations will push fleet operators to invest heavily on the domain of sustainability as well, such as zero-emission vehicles, or circular solutions. Through such investments, they can avoid tolls and restrictions and take advantage of incentives. So, there is strong economic pressure to reduce operating costs, at the same time improve sustainability by choosing the right tires and effective solutions beyond tires.



# Related Topics



**Download  
Media  
Center**

## Contacts

On request, we can put you in touch with our colleagues from the various departments at Continental, who will provide expert information and answers to your questions.

**Marketing & Communications**  
Truck and Bus Tires US  
Continental Tires the Americas  
E-Mail: [ttusa@continental.com](mailto:ttusa@continental.com)  
[www.continental-truck.com](http://www.continental-truck.com)