



# **DOTTO Auto Tire Inflation System---DTIS**

About Safety/Efficiency/  
Fuel & Tire Saving



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- DOTTO Auto Tire Inflation System---DTIS



## Global Supplier Award---Products From China

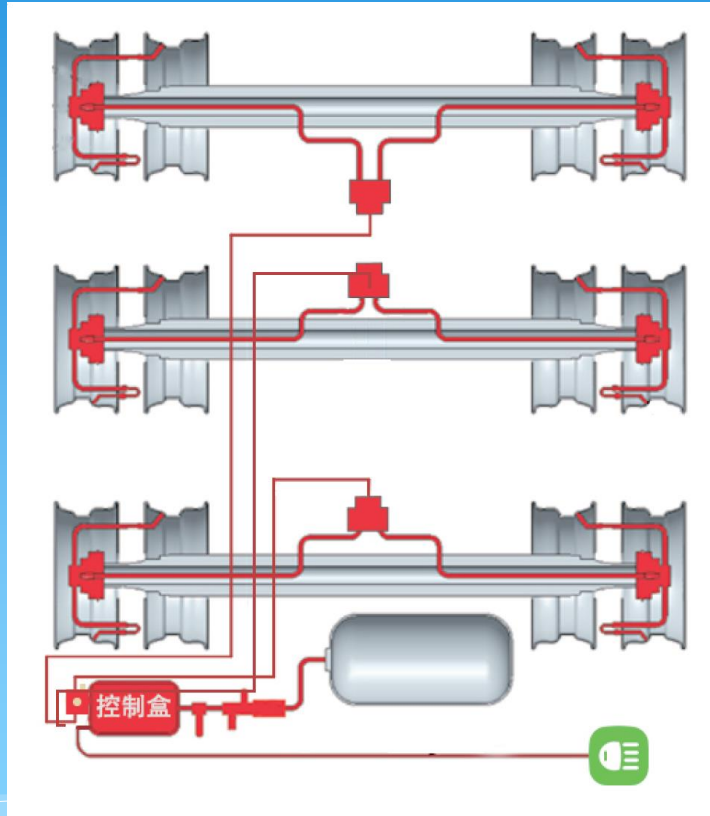


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# DOTTO Auto Tire Inflation System (DTIS)

## New Rotary Union/New Control Box



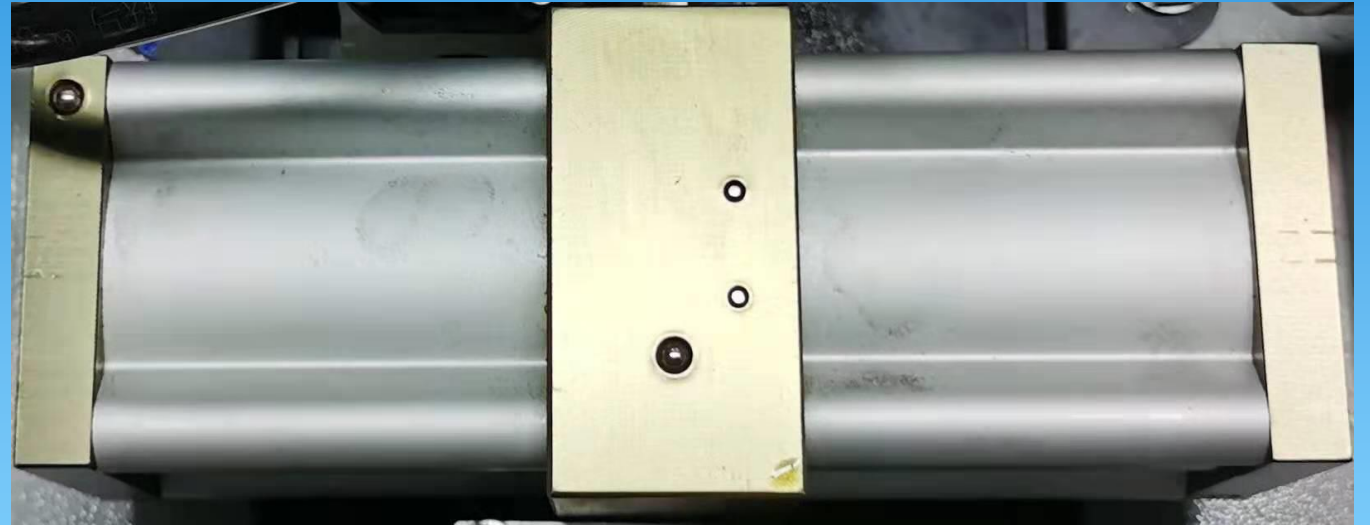
*More than 2 million units of Automatic Tire Inflation Systems sold in the world for the last 20+ years*

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# DOTTO Auto Tire Inflation System (DTIS) Control Box w/Pressure Booster inside



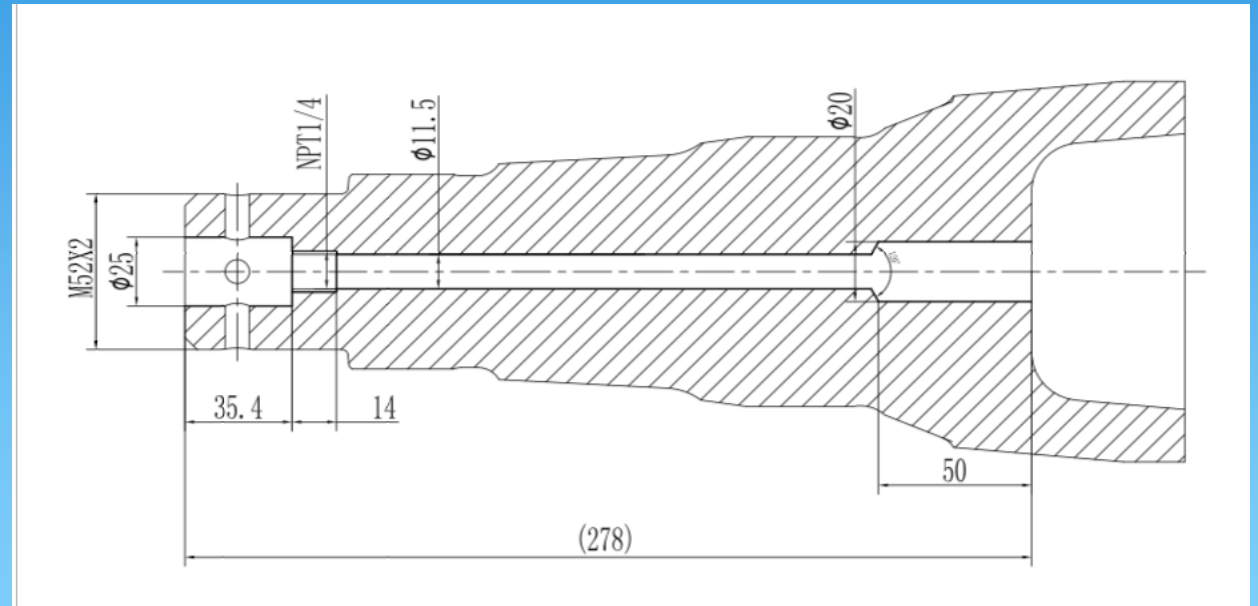
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# Longer Life, better Sealing Tech!

## Fits for all kinds of axles, tires(tubeless better)



Solid Spindle, such as BPW etc. needs prepped spindle like above,

Also could be retrofitted on site.

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# Prepped Solid Spindles

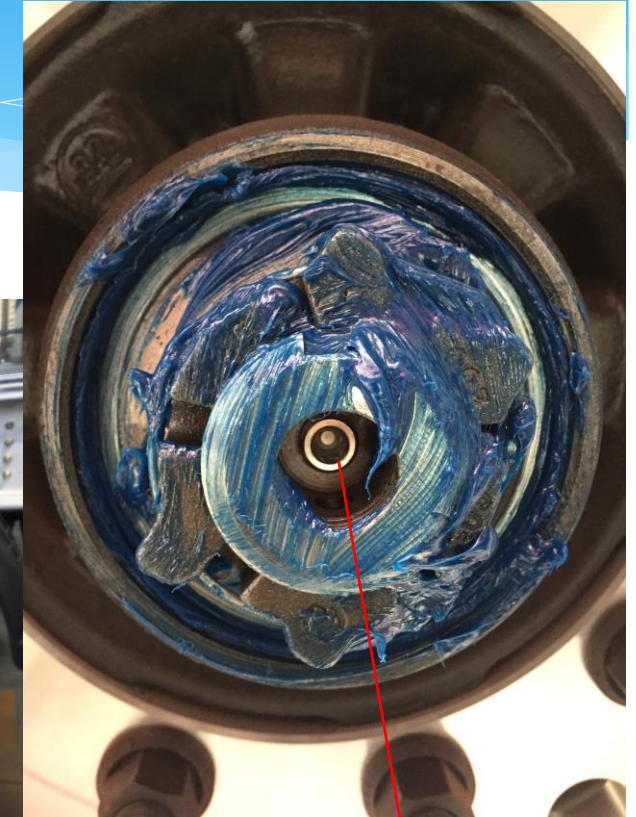


Nuts to plug



Water-proof Decal for prepped hubcap

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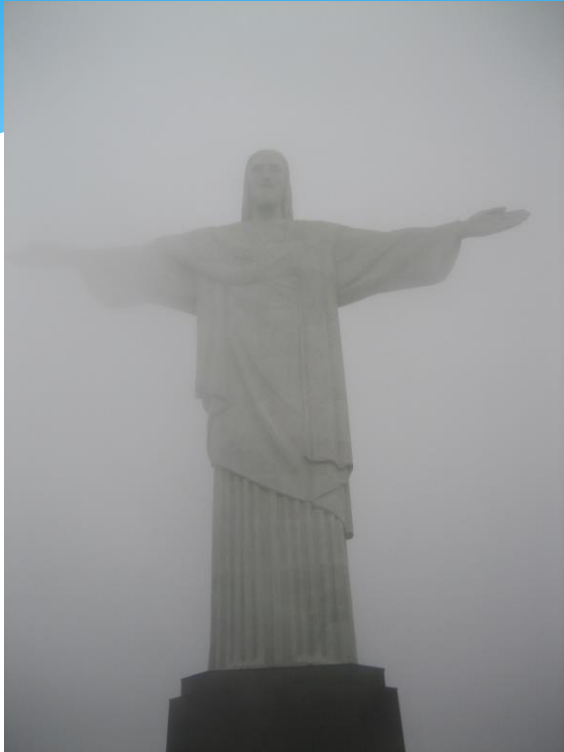


Nut to plug





Brazil, having ATIS too, external system although



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- So many tires, how long to fill in?
- With ATIS, evenly all the time.



Responsible driver to check pressure by hammer.  
Do you still do the same? How accurate could it be?

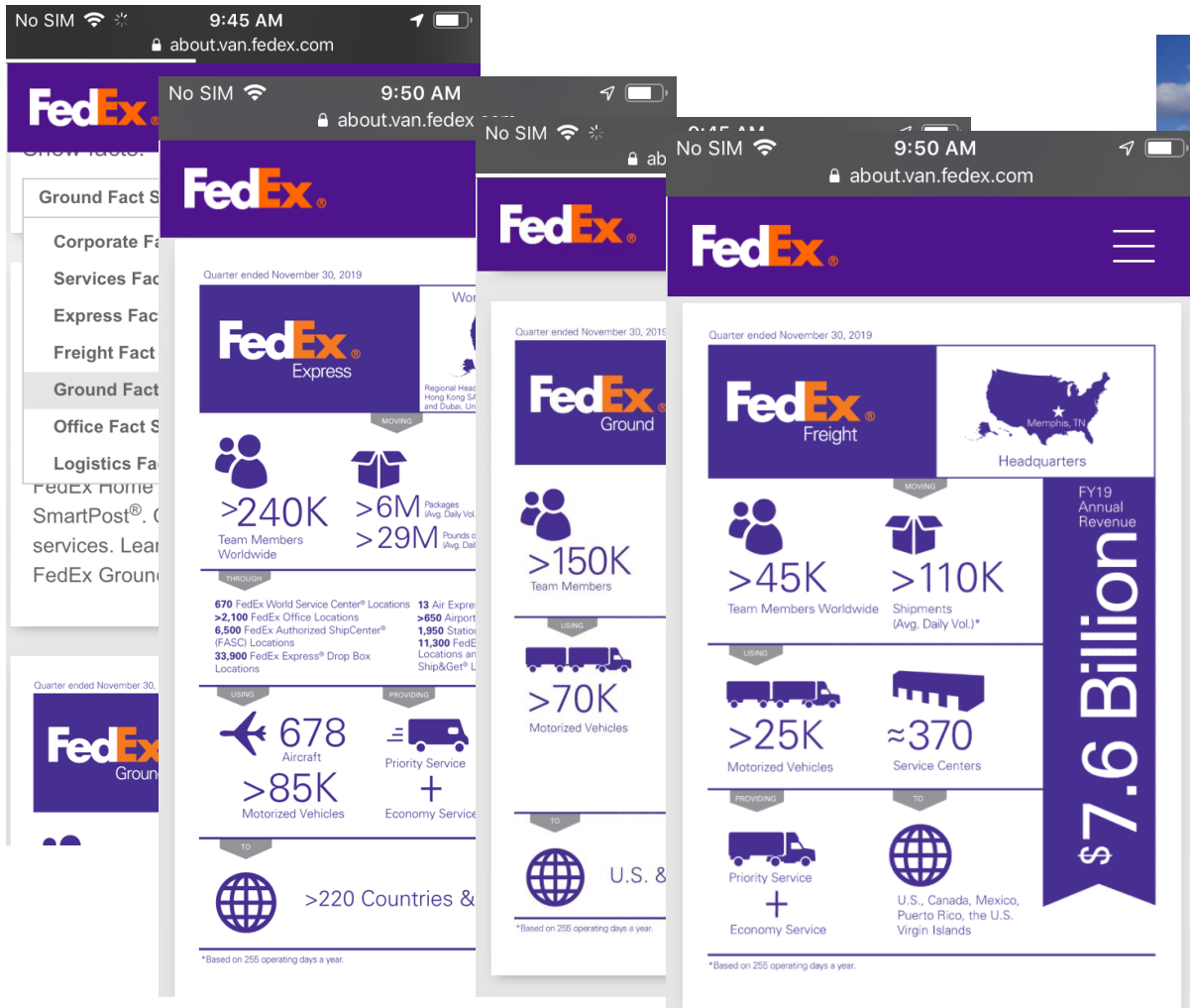


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# FEDEX Trailer Fleets (200K units+, w/ATIS) for Single and Dual Tires both.



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- Volume Production in China, in CIMC factory etc.
- 425/65R22.5, 445/45R19.5 Super Single



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- Autonomous Driving Tractor
- Intelligent Reefer Trailer, hauling flowers etc.
- DOTTO DTIS



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Customers of DOTTO DTIS, Incl. G7, ZF/WABCO  
JV partner in China, leading Telematics player



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# **DOTTO** Customer in Guangzhou



***DOTTO DTIS W/Mitchelin-445/45R19.5  
BPW AXLE/Scania Tractor***

***Warning light/Warning Decal***

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# Customers: Deppon, ForYou



*Deppon, ForYou, leading fleets of China*

*Dual Tires/BPW Axle, VALX Axle*

***VOLVO- FAWJ6P TRACTORS***

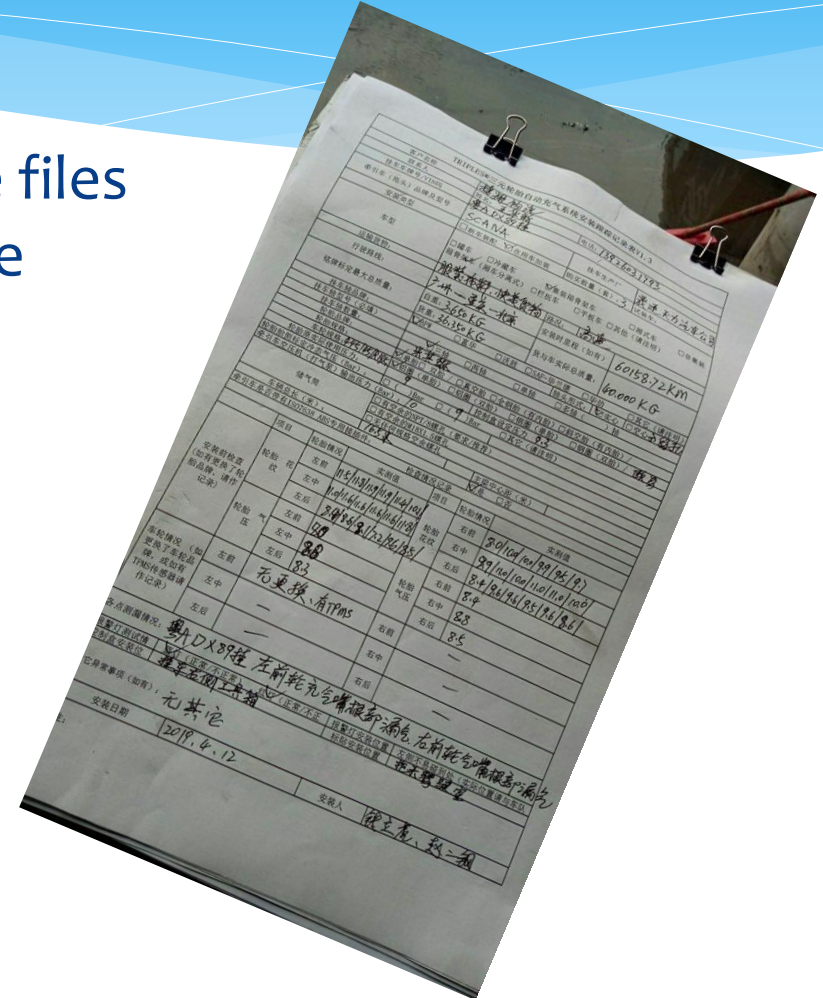
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# What customers Say :

- \* Great product
- \* Great service
- \* Complete files for service



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## Mobile Tire Repair Trucks along the road



How many times you need this?

How about repair them back to your own yard w/nails still in?

How much the mobile repair cost on the road?

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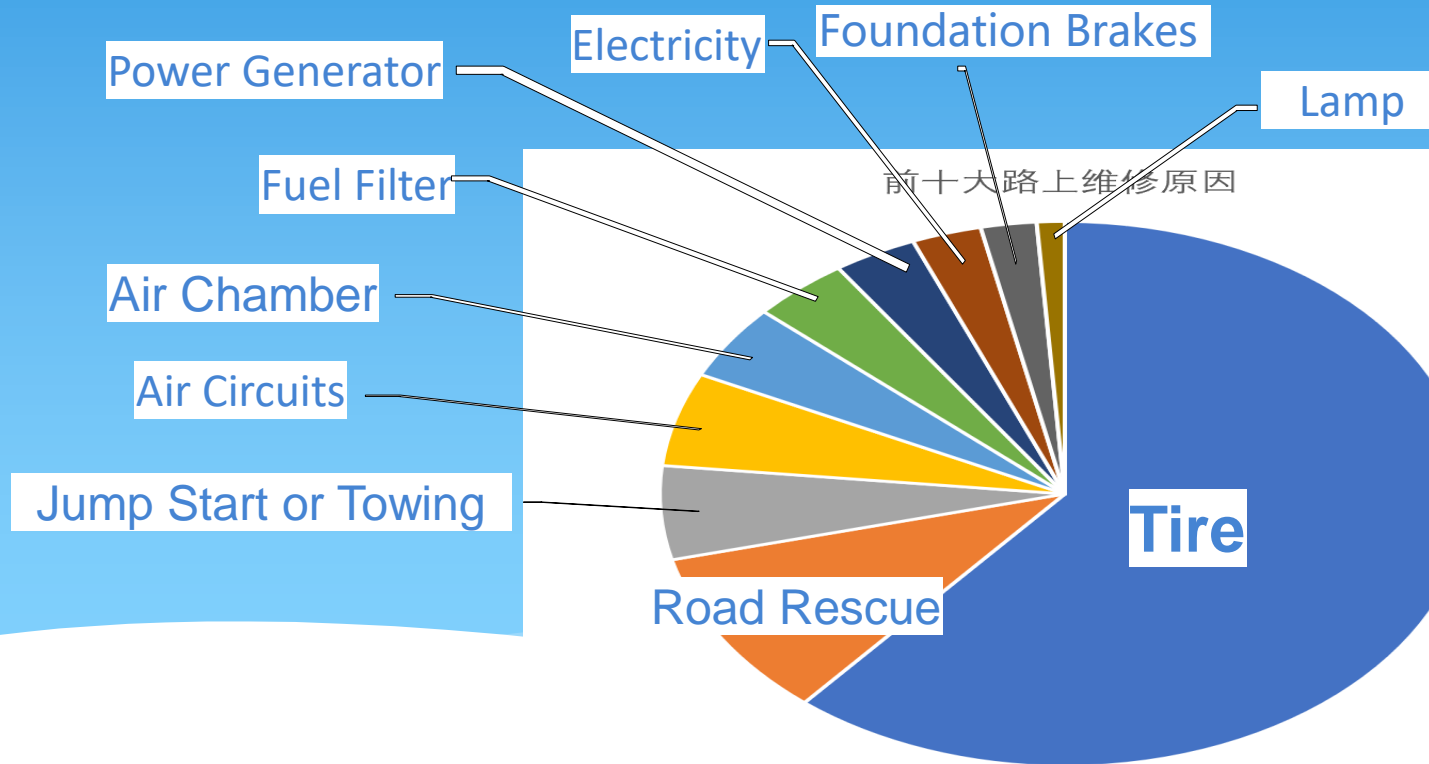
## Possible pre-life of ATIS: Military Airplane Tire



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## Top 10 reasons for vehicles unable to be back home to repair



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1 2 3 4 5 6 7 8 9 10





# Trailer Fires

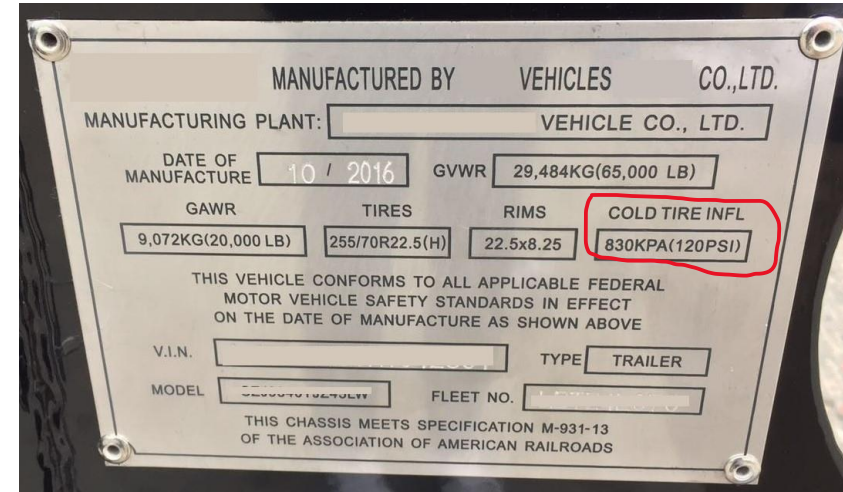
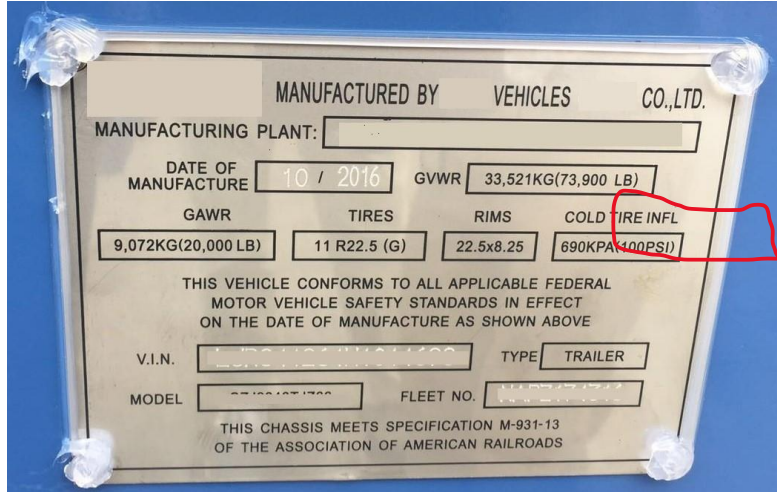
## Brakes, Bearing, Flat tire



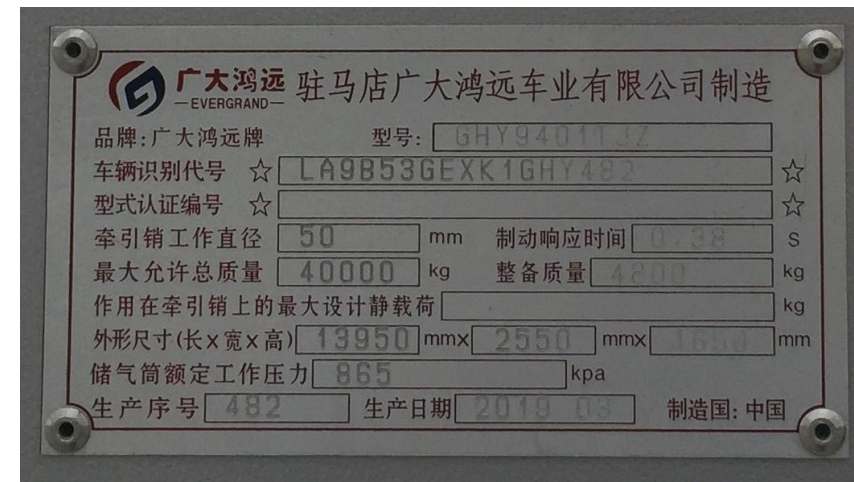
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- Plate with tire pressure indicator in USA
- In China, only air tank pressure shown



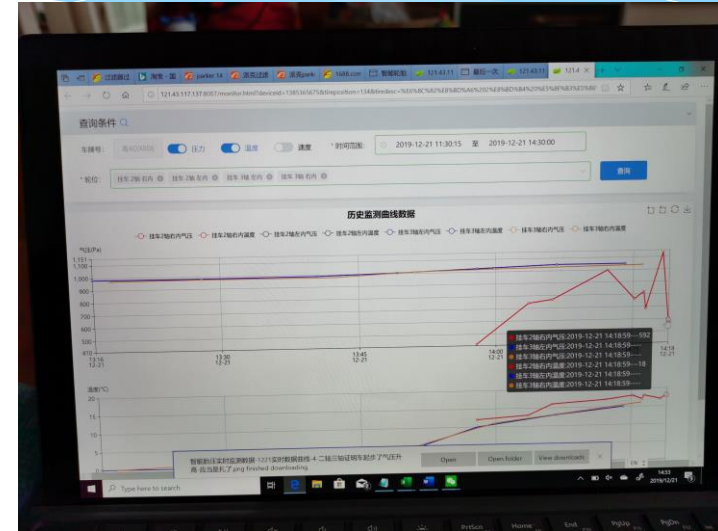
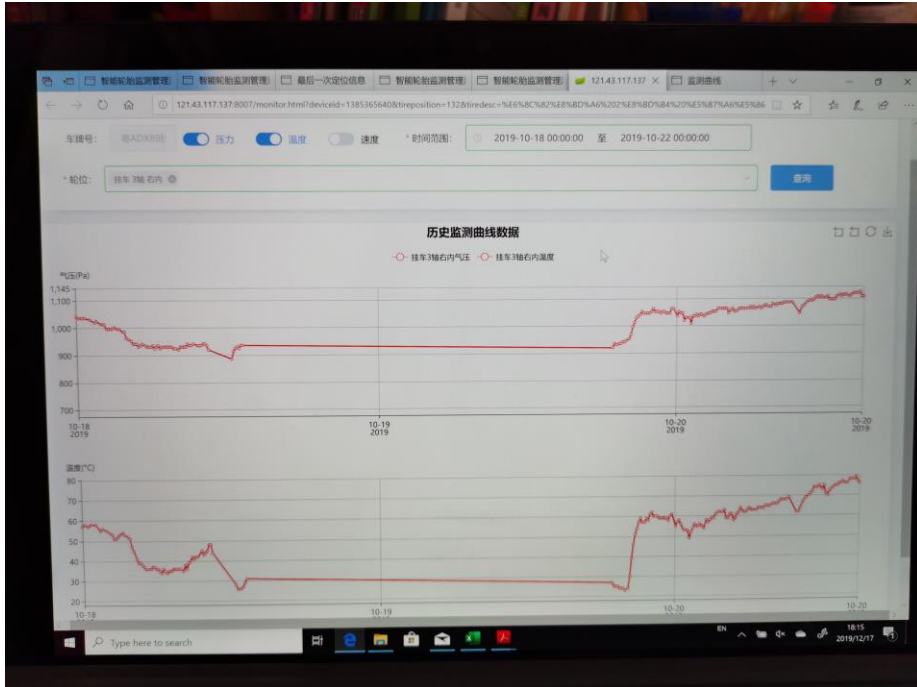
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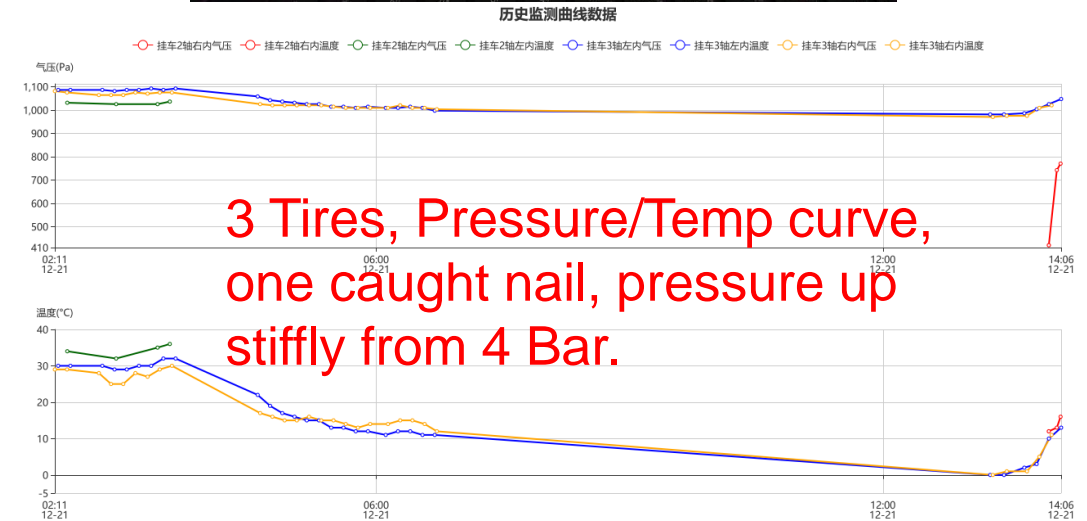




DTIS working, as shown in TPMS system, tire temperature and pressure changing during restart



Pressure/Temp curve for OK tire, Pressure up slowly, Temp up stiffly



3 Tires, Pressure/Temp curve, one caught nail, pressure up stiffly from 4 Bar.

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# W/O DTIS, you will see from TPMS warning during winter morning restart tractors, all below set pressure alarm, 8 Bar



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## Tires Price are sky high often, like now

- Upcharge due to raw materials up, like currently.
- Faster ROI for DTIS due to high tire price
- Super Single is expensive, so is dual tire.
- Some fleets realize that the tire budget would be down significantly if their tire pressure could be maintained to proper level.



# ROI Chart, you calculate your own

## 投资回报分析

### ROI投资回报简析

成本项目	节省	计算方法	每年节省/车(¥)
油耗节省	2%+	$200000/100*30*5*2\%$	6000
轮胎延寿	10%+	$12*1500*10\%$	1800
减少路上紧急维修及因此造成的罚款	1次	车队统计平均	2000
减少胎压检测时间	气压降低约0.25Bar/月	每两个月补气一次/20分钟	218
每年回报			10018
备注	以20万KM/年, 百公里油耗30升, 5元/升计		

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物流公司/Customer		以10台挂车, 年均20万公里, 50%安装ATIS的车队为例	
		Price of ATIS system per Trailer 系统成本	¥ 9,500.00
Enter Fleet Operating Costs: 输入车辆在各方面的开销		Saving and Payback: 费用节省与投资回报	
Tire Cost 轮胎费用	¥ 1,500.00	Savings/Trailer/Month 节省成本/每车/每月	¥ 1,294
Tire Life Savings by Using ATIS System 用ATIS系统后轮胎寿命增加	15%	Savings/Trailer/Year 节省成本/每车/每年	¥ 15,525
Service Call Cost 救援维修费用	¥ 1,000.00	Savings on Tire Wear per Year 轮胎上的节省/年	¥ 2,700
Cost of Service Call Tire 维修救援轮胎费用	¥ 1,500.00	Blow Out Savings per Year 爆胎损失的节省/年	¥ 2,625
Number of Tires Replaced per Trailer/Year 每车更换轮胎数量/年	12	Service Call Savings 维修救援费用的节省	¥ 1,000
Tires per Trailer 轮胎数/车	12	Fuel Savings per Year 节省燃油/年	¥ 7,800
Trailer Kilometers per Year 行驶里程(公里)/年	200000	Maintenance Labor Savings per Year 节省维修工时费/年	¥ 1,400
Average Tire Life in Kilometers 轮胎平均寿命(公里)	200000	Price of ATIS Product per Trailer 挂车装ATIS系统的成本	¥ 9,500
Driver Wage per Hour 驾驶员时薪	¥ 50.00	Cost of Installation 装配成本	¥ 2,560
Tire Man per Hour 装胎工人时薪	¥ 20.00	Cost of ATIS Hub Caps 专用端盖成本	¥ 300
Mechanic Wage per Hour 机修工时薪	¥ 20.00	Installation Cost per Trailer 安装费用/车	¥ 12,360
Hours Lost per Service Call 救援维修所耗时间(小时)	4	Net Savings per Trailer Year 1 第一年净费用节省/车	¥ 3,165
Number of Service Calls per Trailer/Year 救援维修次数/车/年	1	Net Savings - Fleet Year 1 第一年整个车队的净节省	¥ 1,582,500
Minutes to Check and Fill Tires per Month 每月轮胎检查及充气耗时(分钟)	300	Annual Savings /Trailer/Year Year 2 第二年净费用节省/车	¥ 15,525
Fuel Cost per Litre(not Gallon) 燃油费/升	¥ 6.50	Annual Savings - Fleet Year 2 第二年整个车队的净节省	¥ 7,762,500
百公里油耗 Liters/100Kilometers (升/百公里)	40	Total Fleet Savings Years 1 and 2 前两年整个车队的成本节省	¥ 9,345,000
Fuel Savings with ATIS System 装ATIS后油耗节省	1.5%		
Fleet Size - Trailers 车队规模(挂车数量)	10		
Cost for ATIS Hub Caps 专用端盖费用	¥ 300.00		
Number of Mech per Install 每次装配所需机修工数量	4	PAYBACK IN MONTHS 收回成本所需时间(月)	9.55
Number of Hours per Install 每次装配所需工时(小时)	32		
% of Fleet Fitted with ATIS Systems in 1st Year 第一年车队装自充气系统的比例%(作例子)	50	RETURN ON INVESTMENT AFTER 2 YEARS 两年后的投资回报率	251%

注：在B1-B23填写数据，D列为自动计算出来的数据。





## **Tire pressure problem is the severest one, which trailer fleets are facing besides the braking issues**

- \* The severest problem today is still the proper tire pressure, for the fleets.
- \* Tire is designed to use the pressure fitting for the actual load. If you know the exact load, you can find the proper tire pressure in the manual. Remember, tire can run longest mileage, retread more, less uneven wear out, eliminate downtime due to nail puncture, only if the proper pressure is maintained.
- \* Tire pressure cannot be kept easily. Truck and trailer have more than 20 tires normally, which needs more than 10 minutes to examine the pressure of all. Most of the drivers don't bother to spend time to check tire pressure as they are hired to drive the truck only. Once a year is common. Who is responsible for this scenario?
- \* Really not many choice. Many fleets think that the maintenance team would be the one to check and fill the tire. But even so, the pressure cannot be kept.
- \* The profit would be great if you can check tire pressure periodically, no need too long.

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## Typical Tire/Wheel failures



Wide Base Tire normally fails with aluminum wheel together for flat tire



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## Why tire leaks?

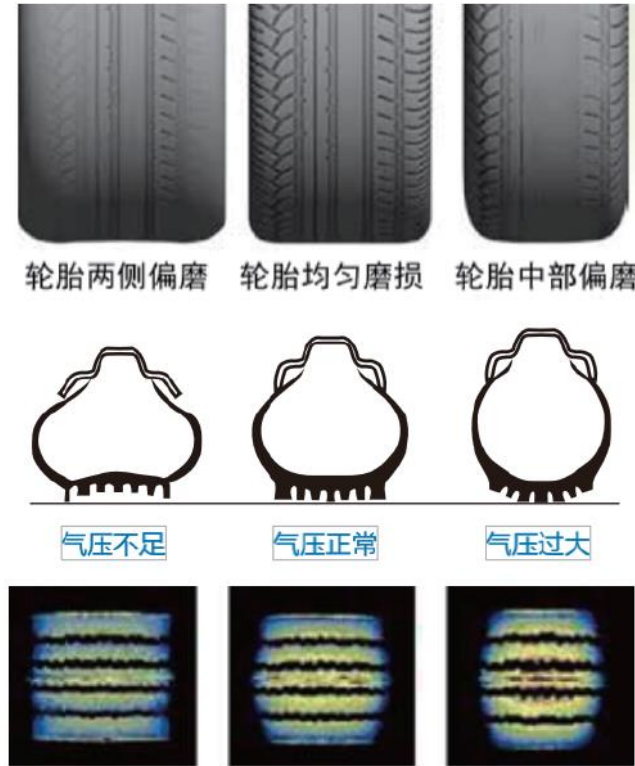
- \* Leaking thru tire body
  - 1~2psi/month for USA, 0.25-0.5Bar/month for China, How about Europe?
  - Up to the tire rubber compound and workmanship
- \* Tire puncture
- \* Tire wall damage
- \* Leaking stem

***Tire puncture is the most common reason for the slow leaking on the road.***

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- Under inflation
- Right inflation
- Over inflation



What if the dual tires are both underinflated, which is often seen?

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- Career with high risk:
- Tire maintenance worker (Many been hit by exploded tire, some even died)

## Tire Construction



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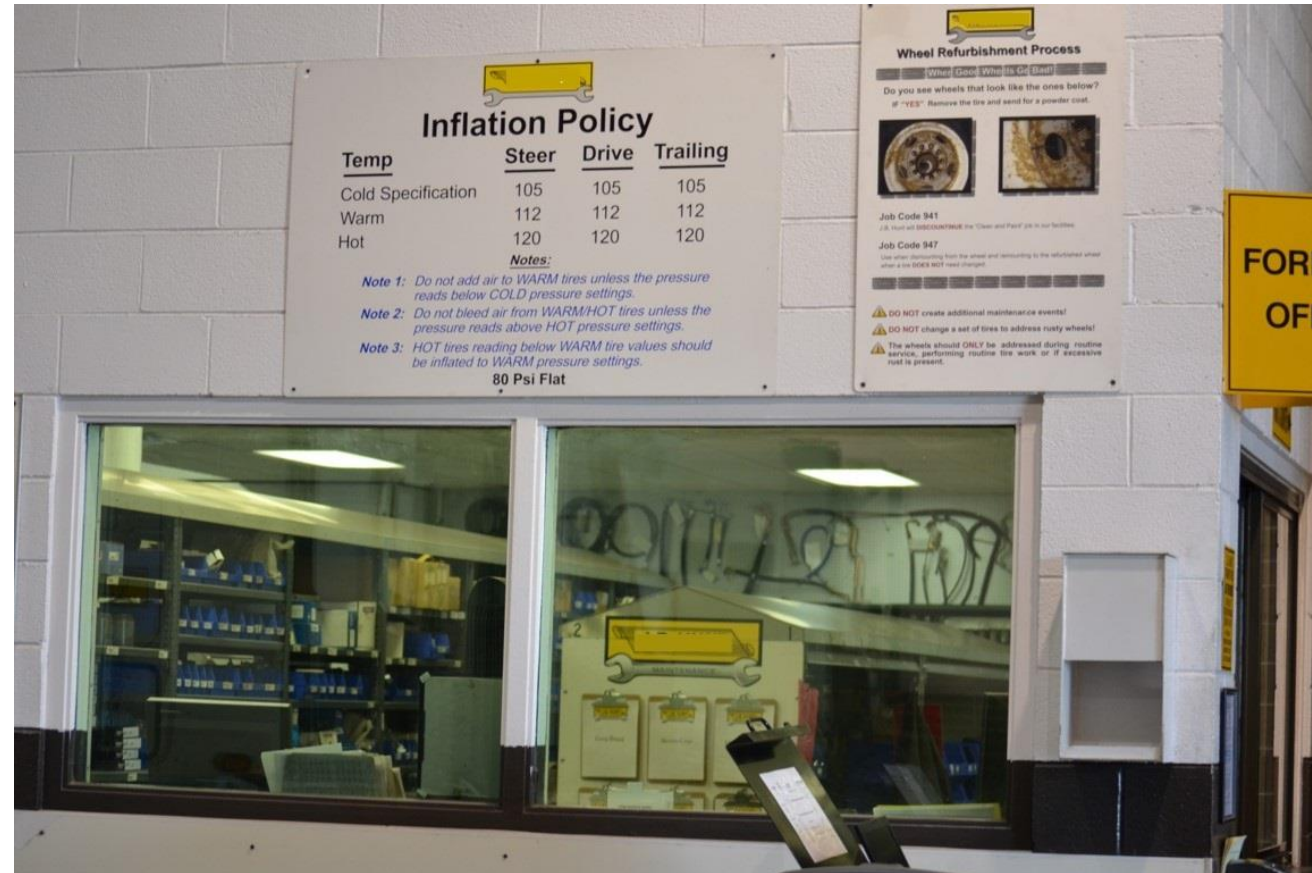
- Why tires blow out?
  - Tire wall damaged
  - Tread puncture
  - Too low pressure (reason of most of the blow-out, like fatigue test for the steel cord and tire plies, with unnoticed inner broken cord or separate plies already)
  - Too high pressure (Summer/Over inflated)

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- *Inflation Policy---big thing for big fleets !*
- *Fleets with 10,000+ tractors*
- *Tires got cold/warm/hot specification temperature*



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# Over inflation

In some countries still the case, but relieved pretty much due to the government's regulation.

If you tire pressure to high

- \* Less footprint, less adhesive force
- \* More bumping on the road, easier fatigue for the drivers and the earlier failure for the parts
- \* Early tire replacement due to centerline earlier worn-out
- \* Better fuel mileage in some degree, which is not appropriate

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## Under inflation

- \* Only to lead to problems and maintenance cost
- \* Lower fuel economy significantly
- \* Irregular worn-out, leading to early tire removal
- \* More nails to carry as bigger footprint
- \* Tire rubber becomes softer due to heat, thus easier to be punctured.
- \* Tire body heated up, lowers the percentage to retread

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- Real world check up
- All different tire pressure with big difference



9.3bar(135psi)



6.75bar



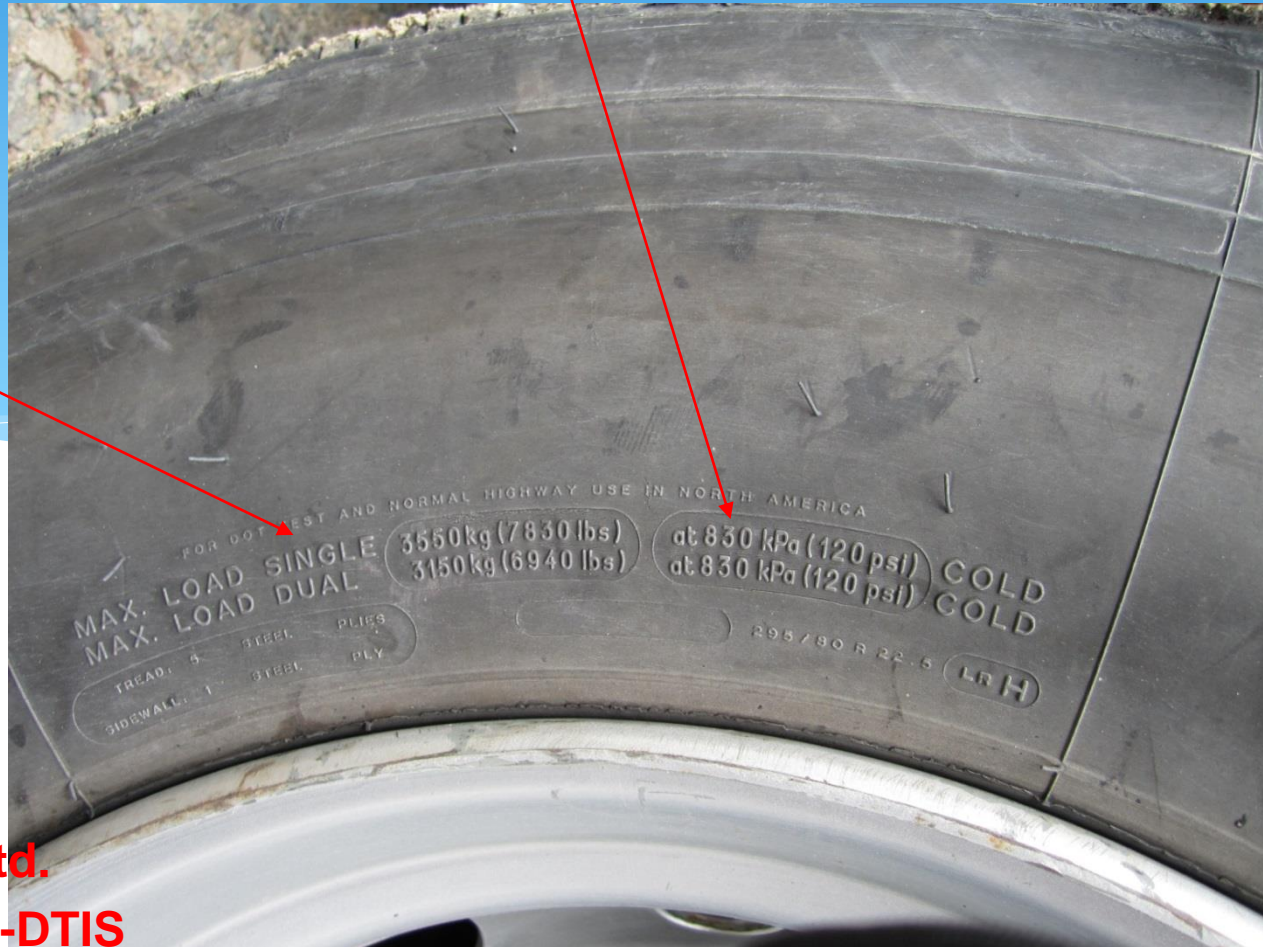
10.10bar

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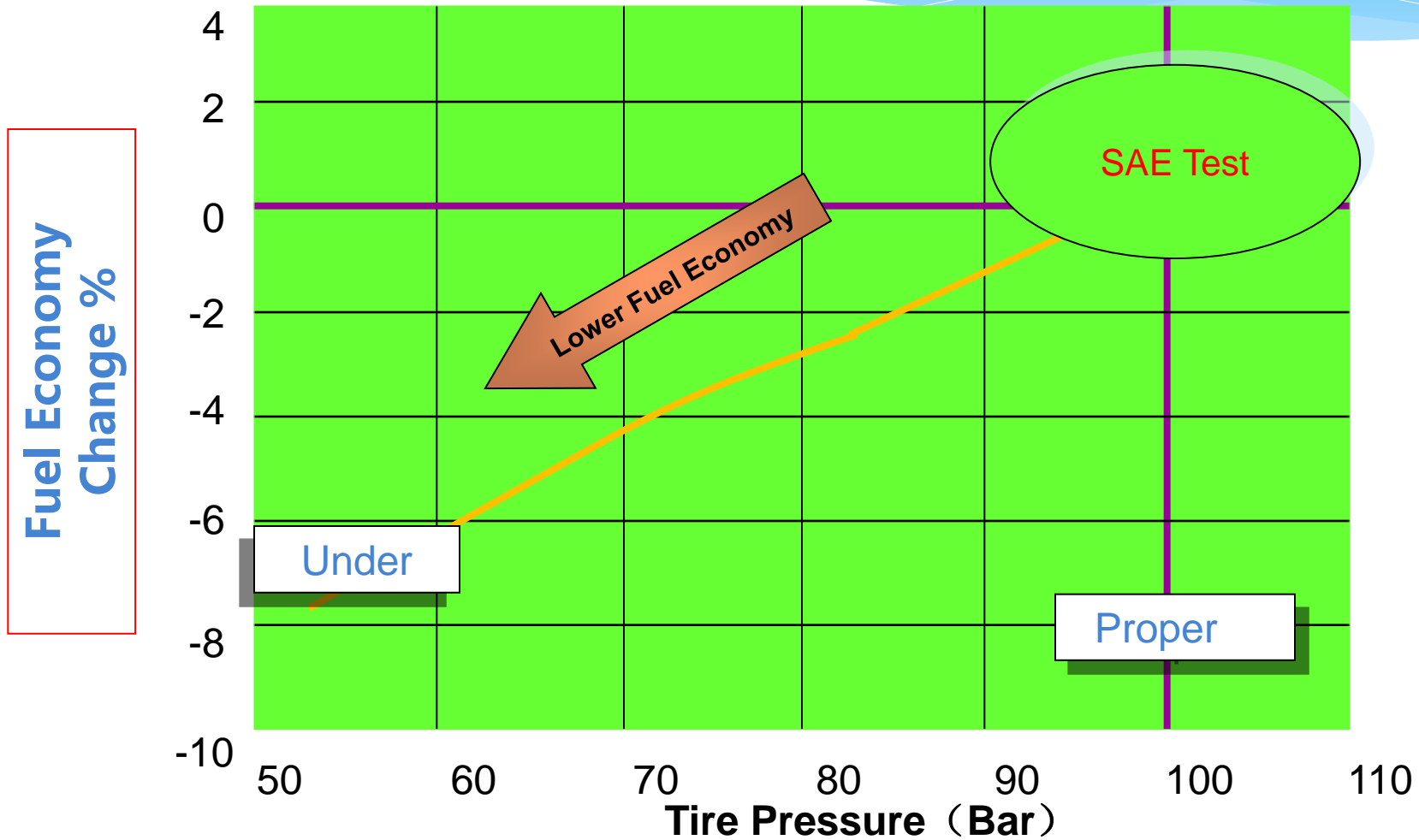


- Do you really follow, maintain, care about
- the Tire Pressure?

All in  
English



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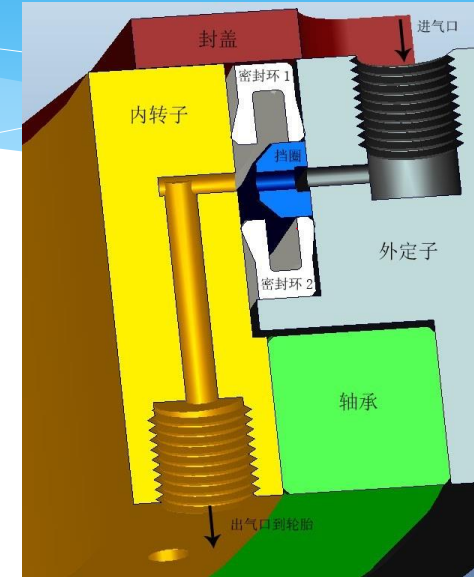
Source: Goodyear!

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- 10 psi down (1Bar) = Fuel Economy down 1.5% (2% down) around





# Improvements of Rotary Union



Truck axle version  
developing

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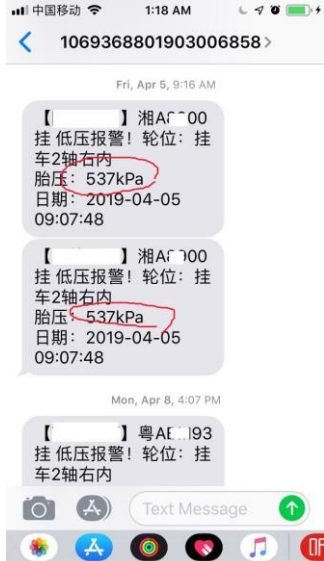
## Control Unit (Self-generator)

- \* No worry about the EBS or other electronic interference/conflict
- \* No ABS electricity outlet needed



# About TPMS

5.37kPa on the express way



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When sensor  
Failed

Mid-night  
Road call



When sensor  
works





## *Customer says :*

*All tires are under constant even pressure!*

*Improved safety!*

*More Uptime!*

*Better fuel efficiency!*

*Much less road calls!*

*Maintenance cost down per kilometer!*

*Almost no more early-failed tires!*

*More tires can be retreaded!*

*Gov.: Less tire footprint, less carbon footprint!*

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## *Customer says :*

*Real world report from one of the top Chinese fleets !*

*Statistics and Analysis in next pages, data for half a year !*

*13300+ RMB/year gain =*

*Euro 1695/year, under 7.846RMB/Euro as of 2021/4/29.*

*Calculated the obvious cost items:*

*Fuel saving, tire saving, checkup labor saving, etc., but  
Not incl. the nail carrying/downtime cost/late arrival  
fines by customers, the so-called hidden cost.*

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# Together to improve the Fleets operation level!

\* Thanks for your listening!

\* Douyin (TikTok China) got cases of DOTTO DTIS up to date.

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