

# HEAVY

NOKIAN HEAVY TYRES' CUSTOMER MAGAZINE

FOREST CHAMPION

– WITH OR

WITHOUT

TRACKS

>18

GRIP LEAVES  
NOTHING TO  
CHANCE

>2

CRUSHING A MILITARY  
AREA TO BUILD  
A STADIUM

>10

SYNCHRONISED  
SWIMMING  
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**nokian**  
**HEAVY TYRES**



## GRIPPING TYRES BRING POWER AND SAFETY

➤ The tractor weighs eight tons, and that does not include the accessories. Losing control of the machine can easily become destructive for the driver, other road users, and any material that may stand in its way.

Contractor **Heikki Mattila** from Humppila leaves nothing to chance. His sturdy Valtra 202 tractor is equipped with high-gripping Nokian TRI 2 tyres.

– Grip on gravel is essential for road maintenance and yard construction work. For this use, a block tyre is better than a rib-patterned tyre. The block-patterned tyre is approximately 40% more durable, Mattila describes.

– In the winter, I use studded TRI 2 tyres. In addition to road maintenance, I do a lot of snow ploughing on roads and courtyards. Studs ensure safety. Lateral grip is even more important in winter, since you need to have enough speed when ploughing in order to make the work more effective.

Mattila started a machine contracting company as a side business to farming. His company owns two road maintenance tractors. The equipment on the machines differs slightly, but the tyres are the same: block-patterned Nokian tyres that provide excellent driving comfort in addition to their other good characteristics. Even transfers of several dozen kilometres are not laborious.

– Good tyres return the investment quickly, as they make ploughing runs faster, for example. I can take on additional work for the hours that I save.

BEHIND THE WHEEL	Heikki Mattila
WHERE	Humppila, Finland
WHAT	Road maintenance and snow removal
MACHINE	Valtra 202
TYRES	Nokian TRI 2





## Understanding the client's work produces high-quality tyres

### Marketing Manager Jarkko Puikkonen for Nokian Heavy Tyres, what do you mean by mutual added value in testing?

In addition to knowledge of tyre technology, the development of special tyres requires understanding the application, work, and working environment that the tyres will be used in. The only way to determine this is to contact the people who use the tyres.

Nokian Heavy Tyres relies on the experience of experts for product development and testing. This ensures that our special expertise is connected to the customer's environment and machine in the best possible manner. We can be sure that our development efforts are focused correctly. At the same time, our customers receive better and higher-quality products as a result of our co-operation.

### How do you react to customer feedback?

We always study any received feedback closely, regardless of whether it comes from a self-employed machine contractor, a harbour container operator, or a mining dumper driver. Who could be a better expert in their field than the users themselves? Nokian Heavy Tyres collects this information actively by visiting its customers. We need to be aware of potential changes in the market, and needs for new products or features.

### What is the hottest new product right now?

It is without a doubt the new Forest King TRS2 that will be introduced to the market soon. This is a prime example of understanding the end user's operating environment. We take feedback seriously. You can read more about the end result on page 18.

**NOKIAN HEAVY TYRES LTD** is one of the leading manufacturers of special tyres in the world.

The company's most significant product category is forestry machine tyres. Other products include special tyres for agriculture and tyres for different machinery.

The uniqueness of Nokian Heavy Tyres is born from our know-how in extreme operating conditions, and a respect for nature. We maintain a close, continuous dialogue with our customers.

Our passion is developing more and more functional solutions and tools for forests, fields, roads, terminals, and mines. Our determination and creativity guarantee the efficiency and safety of your work.

We will serve you flexibly at every turn in order to make your goals a reality. Nokian Heavy Tyres are sold as original equipment and as aftermarket supplies. We maintain close co-operation with machine and equipment manufacturers. Nokian Heavy Tyres Ltd is part of the Nokian Tyres group.



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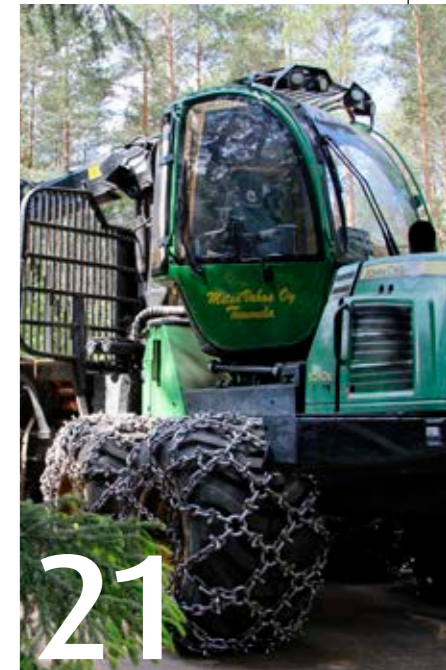
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Nokian CT BAS brings stable trailers



Nokian Tyres and the Nokian Hakkapeliitta 8 achieved **335.713 km/h\*** on ice!



\* 208.602 mph

The new world record for driving on ice was achieved by the world's leading winter tyre manufacturer, when test driver **Janne Laitinen** drove at a speed of 335.713 kilometres per hour (208.602 mph) on the ice of the Gulf of Bothnia in freezing winter weather.

Grip and speed like never before were ensured by the Nokian Hakkapeliitta 8 studded winter tyre (255/35R20 97 T XL). At high speeds, a tyre needs to have absolute grip, structural durability, and precise handling in order to match the exceptional performance of the high-powered Audi RS6 in the world record attempt.

The unique Nokian Eco Stud 8 technology of this winter tyre family ensures balanced lateral and longitudinal grip that can be felt as stable,

predictable handling, both at extreme speeds and under normal overtaking situations on winter roads.

– Testing at the extreme limits always works to serve the interests of the consumer. The forces on the tyres are enormous, as the car travels over 93 metres per second and the studs hit the ice 43 times. As the air resistance increases, we need even more grip to accelerate the car. In addition to grip, handling and stability are also essential, says **Matti Morri**, Technical Customer Service Manager from Nokian Tyres. ■

» Read more: [www.nokiantyres.com/EN-Fastest-On-Ice-2013](http://www.nokiantyres.com/EN-Fastest-On-Ice-2013)

Test wins for Nokian winter tyres

The Nokian WR D3 winter tyre was ranked among the best tyres, and it achieved the highest recommendations “Good” and “Highly recommended” in the winter tyre tests for 2013. These grades were received in the winter tyre comparison tests of the German automotive association ADAC and the consumer organisation “Stiftung Warentest”.

ADAC estimated that the Nokian WR D3 (185/60 R15) had balanced properties and was “Good” in all the test categories: dry or wet asphalt, snow, ice, and fuel consumption.

Auto motor und sport, Germany’s most influential motoring magazine, says that the Nokian WR D3 is “highly recommended” since the tyre had top results in the braking tests, it was safe to drive in snow, and provided precise handling even on dry asphalt.

The new high-performance Nokian WR SUV3 winter tyre for demanding winter conditions complements the widely tested WR tyre range. The new Nokian WR SUV 3 high performance

winter tyre is the test winner in the big SUV winter tyre test 2013 by the German SUV magazine OFF ROAD. The tyre was graded “highly recommended” since it delivered excellent results on snow and ice and was stable and convincing on asphalt. According to the magazine, the tyre is right at home under varying European weather conditions.

– It has excellent grip and it grips the snow firmly. It effectively resists aquaplaning and also works well in slush, so the tyre is seen to handle all of the surprises that winter can bring along.

The magazine states that the tyre rolls lightly and maintains balance in snow, slush, and dry asphalt alike.

The Nokian Hakkapeliitta 8 studded tyre, designed for Northern conditions, already took its first test win in the winter tyre comparison test of the Finnish Tekniikan Maailma magazine (16/2013). It has continued to triumph in the comparison tests by the Finnish Tuulilasi (12/2013), Vi Bilägare from Sweden (13/2013),

The new Nokian WR SUV3 is the test winner in the big SUV winter tyre test 2013 by the German SUV magazine OFF ROAD and SUV MAGAZIN.

and the Norwegian Motor magazine (7/2013). The Hakkapeliitta 8 and Hakkapeliitta R2 both won their categories in the comparison test by Za Rulem (9/2013), Russia’s largest motoring magazine. ■

» Read more: [www.nokiantyres.com/test-success-autumn-2013](http://www.nokiantyres.com/test-success-autumn-2013)



Nokian Forest King TRS2  
Top innovation for forestry work, with or without tracks

The new Nokian Forest King TRS2 that will be introduced this autumn has been designed to serve its driver even under the toughest conditions, and to provide no surprises. It can be used either with or without tracks. The development of this innovative combination is based on solid co-operation with forestry machine operators. The tyre meets nearly all of the challenges of practical forestry, making work more fluent and economical.

– The starting points for the tyre’s development were the best grip and durability on the market – with or without tracks. We have added lateral grip to the tyre that was already sturdy by introducing sharper shoulders and a new rib structure.

The new Super Shovel ribs improve grip and provide added support for tracks, says **Jarkko Heinämäki**, Product Manager for forestry tyres.

The new tyre offers perfect track support at

every point, keeping the track links straight on the surface of the tyre. This allows the machine to serve its driver with minimum delays even in challenging positions, which makes the work safer and more fluent. When the terrain demands it, you can use tracks designed for Nokian Forest King TRS tyres, for example.

The wider tread surface also provides good lateral grip and significantly reduces the pressure towards the ground. At the same time, the tyre behaves more reliably, and new growth is not prevented since the ground is not compacted unnecessarily.

**Puncture protection**

A tyre puncture stops work at the site for at least some time and can be very costly. The development of puncture protection means that you can work on the field with fewer interruptions.

The areas between the ribs provide additional grip between the track and tyre, and the new tyre provides improved puncture protection for these areas. It has been improved by increasing the material thickness on the tyre shoulders and raising the bottom of the tyre groove. The sides of the tyre have also been straightened for added puncture and cut protection. This will prevent objects that rise up from the sides of the path from hitting the tyre itself.

The tyre is suited for forestry machines and harvesters up to 15 tons. The Nokian Forest King TRS2 will be introduced in the size 710/45-26.5; next spring, Nokian Heavy Tyres will introduce sizes 600/55-26.5 and 710/40-24.5. ■

» Read more on page 18

✍ Miika Kaukinen



The Nokian CT BAS is a new solution for the requirements of heavy earth-moving trailers. Construction sites use large trailers for earth-moving, and they are expected to have high load-bearing capacity and reliability. These conditions place harsh requirements on the tread surface and structure of the trailer tyre. The ground is usually rough, with many cutting and puncturing edges.



## Nokian CT BAS tyre for earth-moving Carries its heavy load, but no dirt

Construction sites can be full of puncturing objects. Steel pieces, nails, and sharp rocks can create unpleasant surprises. Nokian Heavy Tyres is now introducing its top-notch puncture protection, originally developed for forestry tyres, into construction sites.

The tyre also utilises Nokian Heavy Tyres' BAS technology that enables higher pressure levels.

Heavy loads require the trailer and tyres to have high degrees of control and balance. Although this new tyre is very sturdy, it will behave predictably under transport speeds and in uneven terrain.

### Large contact surface adds balance

The softness of the terrain at a construction site may be surprising, and the cleaning requirements for nearby streets may also be an issue – especially when it rains.

The softened soil may collapse under the heavy load and cause delays. The large contact surface of the Nokian CT BAS tyre means good stability when unloading, and very low immersion on soft surfaces, such as sand.

### Clean tyres, no rocks on the streets

The tyre pattern has been designed so that it does not carry over mud, wet sand, or rocks onto

road areas or streets. The open tread pattern and its shape effectively clean the pattern as the tyre rotates.

Many construction sites are located in the middle of residential areas, which means that the tyres that are used also need to be quiet. In the new tyre, all parts of the pattern follow each other smoothly. All the pattern blocks hitting the

road one at a time would make the ride bumpy and noisy.

The wear indicator of the new tyre also makes it easy to see the amount of remaining tread on a three-step scale. ■

✍ Miika Kaukinen



## Corporate responsibility takes to the fields

Nokian Tyres' new Corporate Sustainability Report allows you to see how the optimal work performance of a Nokian Heavy Tyres user only affects the environment to the necessary extent. Or how the field can grow crops even after a heavy vehicle combination has passed through it, or how we can remove pressure from tree roots by ensuring that the driver can work smoothly. ■

» Read more: [www.nokiantyres.com/corporate-sustainability-reports](http://www.nokiantyres.com/corporate-sustainability-reports)

## Heavy Tyres will soon be rolling in the Commercial Tyres business unit

Nokian Tyres is combining its Heavy Tyres and Truck Tyres business units and forming a new Commercial Tyres business unit starting 1 January 2014.

– Combining the resources, functions, and management of two units will clearly provide us with better opportunities to develop our activities and to increase our sales. Synergy benefits from the fusion will also clearly improve our profitability, says Kim Gran, President and CEO of Nokian Tyres.

Pontus Stenberg, the current Vice President for Truck Tyres, will head the new unit. ■

## Grip for demanding forestry use

The power output and tractive power of forestry machines keep growing. At the same time, this increases the risk of the tyre spinning on the rim; this is especially true when tracks are used for additional grip. In order to face the challenge, the rim diameter of the new Nokian Forest King F2 has been increased to 28.5 inches.

The increased tyre diameter allows for a high load-bearing capacity at similar inflation pressures, and it improves the traction and off-road abilities of the machine. The new tyre size is a reliable solution for forestry machines weighing over 20 tons.

### Keeps you working

The tyre brings proven track grip even for the most demanding forestry use. The grip between the tyre and track has been improved by increasing the straight section of the ribs and the grooves on the centre part. Together with the shape of the shoulders, the new pattern improves support for the tracks and helps them stay in place.

The new tyre offers perfect track support at every point, keeping the track links straight on the surface of the tyre. The high-grip pattern means that the track does not need to be tensed, which reduces the stress on the tyres and journal boxes. Especially under difficult conditions, this reduces the risk of breaking for both the tyres and journal boxes.

The puncture protection of the tyre has been further improved by increasing the material strength on the tyre shoulders.



### New bigger size for skidder tyres

We are also introducing a new size into our selection of skidder tyres. The Nokian Forest King TRS LS-2 is now available in the large size of 35.5L-32. The size is fairly common for skidders in North and South America.

This new tyre has a diameter of over two metres; it is five inches wider than before and weighs over 600 kg. The load-bearing capability of the tyre corresponds to modern standards.

The new shape achieves even better grip than before. The grip area of the tyre is straighter and, therefore, the tyre carries, pulls, and grips with its entire width, says Project Manager

Teemu Vainionpää.

– We have also developed the shape of the tyre so that loose splinters cannot penetrate the area between the rim and the tyre. ■



## Mine King L-5S is even bigger

The Nokian Mine King L-5S is now available in the very large size of 29.5–29. The tyre diameter already crossed the two-metre boundary. The load-bearing capacity for this king of mining is now sufficient for even the heaviest machines on the market, and it also provides a safety margin in case of overload.

The tyre is designed for the largest underground loaders. The smooth surface together with the puncture and cut proof (CCR) compound guarantees a long operating life. The strong frame ensures steady and reliable handling, and improves resistance against accidental cuts.

Several body layers make the tyre safer under demanding conditions and uses. The new body and cable materials allow for increasing the maximum operating pressure to 8 bar (10 bar for the 12.00–20 tyre).

The groove depth indicator on the side of the tyre makes it easy to monitor tyre wear. The amount of remaining tread can be checked daily without any instruments. ■





The town of Regensburg in Bavaria, Southern Germany gave permission to construct a new football stadium that has a capacity for 15,000 spectators. Construction will begin in January, but the foundation is already being laid.

## Football foundations in Regensburg

At the same time, Nokian CT BAS tyres are being tested in the earth-moving trailers at the construction site. The earth-moving contract has been awarded to Ruth, a company that specialises in the field.

Driver **Roland Koboek** tests the tyres as he works. The CT BAS tests started when the runways at Munich Airport were renovated, and they are now continuing at the foundation site of the Regensburg football arena.

The tyres have been installed in a Kröger EM trailer that is pulled by a John Deere 8245 tractor. Koboek is trying to find the limits of the tyre set installed on his vehicle combination.

The area is large. In his work, he creates the foundation for the enormous stadium and the parking lot for thousands of vehicles that surrounds it. The nearby roads and traffic connections are being constructed at the same time.

– I fill my trailer with crushed concrete that we use in the foundation of the stadium. The trip to the nearby closed military area is not long, but it has quite a few bumps. The area is full of concrete pieces and granite with sharp edges, he says.

### The perfectly rough area for testing

According to Koboek, the area is the perfect environment for testing the durability of the tyres in the sloped, sharp, and demanding conditions.

– Although I have only had the CT tyres since July, I can already say that they are reliable and sturdy. Their wear is surprisingly low and driving is stable, even though the surface is very rough and the load is heavy. The trailer tyre is reliable and predictable, allowing me to manage the daily critical driving situations in a controlled manner.

The trip to the unloading area takes place along public roads. At least those roads are smooth, and they should remain so, even though tons of crushed concrete are being transported along them.

– For street driving, I expect the tyre to be stable and durable, but it is equally important that the tyre does not carry the dirt onto the roads. The contractor is responsible for keeping the roads clean. The Nokian CT BAS cleans itself nicely, saving us hours in the cleanup of the public roads, Koboek estimates.

Koboek also says that the block-patterned Nokian CT BAS tyres are much quieter than rib-patterned ones. The nearby residents do not want to be disturbed by the noise from concrete transport any more than they have to. ■



Roland Koboek tests the Nokian CT Bas tyres under demanding conditions.





Nokian Loader Grip 3 and line work in a muddy bog

# Mud is our element

On top, you have a gravel load. Below, you have a 17-ton machine floating in the clay and mud. This is where you work.

**J**yrki Jönkkäri's Volvo A25C dumper pushes its nose deep into the mud of a line construction site in Parkano. 6.5 kilometres of sewage line and waterline are under construction, and one dumper and five excavators are being used for the work.

The heavy machine is sure to find the grip limits in these extreme conditions, regardless of the tyres. And it is almost as certain that the nearby road will be covered in dirt.

Managing Director Jönkkäri jumps from the cabin of the 6x6 dumper and lands in the 20 cm deep mud. We are standing next to a busy main road.

– This is quite a pond. The Nokian Loader Grip 3 tyres do make the job a bit less challenging, however. The block pattern cleans itself rather well. I have only had one phone call about mud on the road. The tyres have a nice amount of grip, but of course they also spin when the conditions are so soft.

– A rib pattern tyre would be best for mud removal, but it would take away from the durability. The sharpest rocks could penetrate the areas between the ribs, Jönkkäri estimates.

Several kilometres of sewer tubes and pressurised water pipes will be lowered into the



The dumper steers much like a farm tractor, but as a machine it requires a lot more attention.

Jyrki Jönkkäri's family company is already in its third generation. The company started by digging forest trenches with a wire-operated Vammass machine in 1954.



pit. They will usually be packed in gravel in order to prevent external damage. The dumper is used for transporting gravel near the excavators, and it is also needed to transport the largest rocks away from the worksite. At the same time, the harsh Finnish weather takes its toll on the workers, equipment, and tyres.

### Driving dumpers is an art form

Jönkkäri finds that the Nokian LG3 tyres are sturdy; this is indeed preferable when you are carrying over 20 tons of weight. Delays in steering response due to sluggish tyres may be fatal. The tyre pressures should always be correct.

The correct tyre choice can help when you know what you are doing. The sturdy Nokian LG3 tyres support the professional's steering choices; under real conditions, you need to make several of these every second.

– This is what you call “driving feel”, and losing it will definitely make your heart skip a beat, Jönkkäri says.

The dumper used to have other tyres, and

they were not even worn out.

– The tyres were bad and had no traction. You couldn't even drive them in wet grass, Jönkkäri exaggerates, but then gets serious again and provides tips for steering the dumper.

– Turning can be challenging under some conditions. When the path downhill is slippery, the machine tends to run fairly straight. It is also somewhat unstable and can easily tip over, especially when you operate the tipper while the machine is jack-knifed. Therefore, you need to keep it as straight as possible, even if this means tilting it a little.

In the winter, the dumper has a mind of its own. According to Jönkkäri, you are not getting back on the road before the next crossing if the machine happens to slide into a ditch.

– But for earth-moving, it just cannot be beat. It has more than enough ground clearance. And once you find grip, the machine will definitely push through the dirt. ■

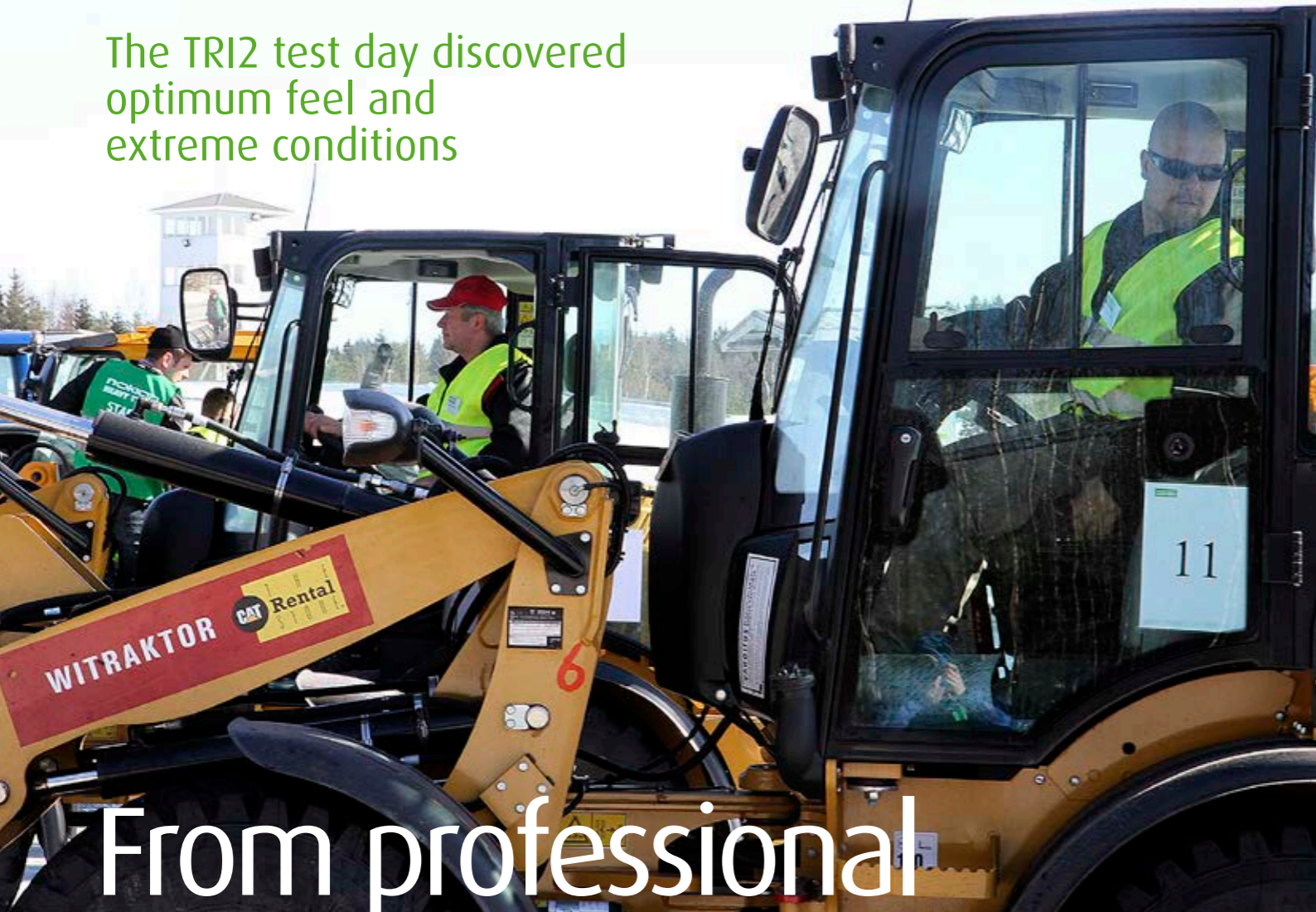
✍️ Miika Kaukinen



The Nokian Loader Grip 3 tyres clean well even under difficult conditions.



The TRI2 test day discovered optimum feel and extreme conditions



# From professional experience to test results

Rarely, if ever, have we seen a user test of heavy tyres that would have been as comprehensive as the event at the snowy Nokian Tyres track.

**N**early 30 heavy machine operators tested 11 different machines for an entire day under snowy and slushy conditions. The test day used Nokian TRI2 tyres and rib-patterned tyres from our competitors using machinery from Valtra, Fendt, John Deere, Wille, and Caterpillar and different types of accessories.

The test track offered a range of conditions from dry asphalt to thick snow – everything that you need to survive in the work.

The professionals know that you cannot standardise the winter or a field, so the product development is guided by experience and driving feel. Sales and Marketing Manager **Vesa Sampakoski** ensures us that the Nokian TRI2 special tyres have already been refined to be the best in the world, but faith in further development is strong.

– Receiving direct feedback from end users is essential. It is a humbling experience to be able

to gather 30 professionals on our track despite their busy schedules. The purpose of the day was to bring out the differences in the tyres by testing under different conditions, and we were successful in that.

All of the test drivers valued the grip of the Nokian TRI2 tyre, but in real conditions, additional grip comes from studs and not chains. The tyre was found to be sturdy, quiet, and free from vibration, also when cornering. ■



## Sometimes, the trailer pushes you

Farmer **Marko Pirttijoki** gets out of the driver's seat of a Valtra tractor after having completed a test lap with an empty slurry trailer. The tractor has Nokian TRI2 tyres on it and the trailer has had its brakes disconnected. The grip limit was hit.

– The grip was good, but even an empty trailer tended to push the tractor ahead on polished ice. I wonder what would have happened with a full trailer and with the brakes connected, he says with a grin.

## Icy uphill

**Jarno Hiljanen** from Puuppolan Konepalvelu tested the Nokian tyres and rib-patterned tyres with two different tractors. Nokian TRI2 was better on smooth surfaces, both naturally formed and smoothed with a plough.

– There is no way to compare a block-patterned tyre to a rib-patterned one. This was most obvious on the icy uphill.



## Tractive power even when slipping

**Olli Mäkinen** is a machine contractor, and he has studded Nokian TRI2s on two machines that are used for public utility work. The tractive power increases even while sliding, so control is maintained.

– Nokian tyres are unparalleled for my kind of work. Studs are an important safety factor when working on the courtyards of day nurseries and schools. I can focus on the work and not on the slipping.

## A recipe for rib-patterned tyres

**Markku Markkula**, an experienced operator of heavy machines, has a recipe for rib-patterned tyres.

– You need to use chains. On roads and under winter conditions there is no substitute for block-patterned Nokian tyres. Block patterns from other manufacturers are slightly more slippery.

## Roundness under control

**Juha Seppä** and **Antti Pitkääkoski**, both contractors for Destia, take some time to discuss the differences between block-patterned and agricultural tyres.

– When switching from a block-patterned tyre to an agricultural one, your first turn can be your last. It is easy to panic when the front end refuses to turn, they speculate laughingly.

I had rear-wheel drive on when climbing up the hill in the small N Valtra with a bucket loader. I had no run-up and could still almost reach the top with the Nokian tyres. They are extremely good.

The men feel that the problem that the first Nokian TRI2 tyres had with tread rounding at high inflation pressures has been corrected in the later versions.

## Steady grip is the best kind

**Olavi Ketola** works as a contractor in the winter and sells rock material. One of his tractors has Nokian TRI2s; the other has rib-patterned tyres.

– My T-Valtra still has rib-patterned factory tyres. When hitting the throttle too much, you will lose grip immediately – and there's no way of knowing where and when you will find it next. I had rear-wheel drive on when climbing up the hill in the small N Valtra with a bucket loader. I had no run-up and could still almost reach the top with the Nokian tyres. They are extremely good.

✍️ Miika Kaukinen



## Tests paved the way for the TRI3 generation

Nokian Heavy Tyres wants to retain its lead in terms of products and service. Testing will also greatly assist the development of our next-generation tyre, the Nokian TRI3, and the definition of the goals for development.

Project Manager **Tero Saari** wants to make the customers' job easier and lower the operating costs by changing the characteristics of the tyre.

– The third-generation TRI is a new design all the way from the molecular level. All of the factors that affect the tyre's characteristics have been taken into account and considered in light of the new opportunities. Nothing is left to chance, and the set goals must be met before we introduce a product into the market. Next winter, we will put our work to the test in extensive prototype testing. In fact, much of it will also rely on feedback from the contractors who test the product, Saari says.



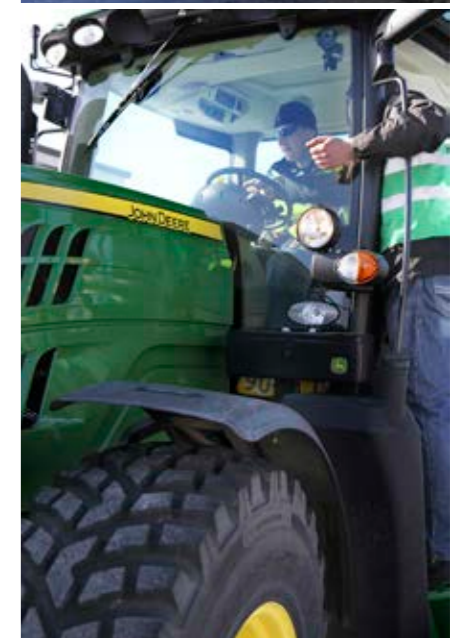
The testing centre in Nokia has its own important role as Nokian Heavy Tyres makes its products even better. Testing on track allows us to operate under safe conditions in a closed area, which makes it possible to find the functional extreme limits of the tyre. The end users are also becoming more and more involved with track testing.

#### Testing centre in Nokia:

- Between the arctic and mild climates, the perfect location for demanding tyre testing
- Allows for testing all of the driving conditions that can occur on Northern and Central European roads
- The world's most advanced watering system, an effective high-speed camera system, and the world's first slush-planing test track
- Garages for trucks and passenger cars, offices, and conference rooms
- Located near the company headquarters, so the innovations from the tests have a short distance to product development and production
- Nokian Tyres operates another testing center with an area of over 700 hectares in Ivalo. Over twenty test tracks in the extreme conditions of Finnish Lapland are used to test tyres at all hours of the day. See the video for more information: Ivalon Testing Center – "White Hell" [http://youtu.be/f4TSgk\\_1TQU](http://youtu.be/f4TSgk_1TQU)

# Test track

supports product development



**A**lthough the test centre in Nokia is mainly used for the product development of passenger car tyres, it is also important for Nokian Heavy Tyres. Product Development and Quality Manager **Kalle Kaivonen** feels that testing will increase further in the future.

– The power outputs of tractors and machinery keep increasing. Some of the machines can already do over 60, or even 70 kilometres per hour, which demands even more from the tyres, Kaivonen ponders.

– Stability and grip are very important objects of study on the track. The end user is also interested in the comfort of the tyre, as well as rolling resistance, which is also primarily measured on rollers in a testing laboratory. Rolling resistance

goes hand in hand with fuel economy and is, therefore, interesting to the contractor.

#### Testing with a customer focus

The test track is one of the main tools for product development. Heavy Tyres already tests its tyres at the factory by using the indoor testing method. After the track, there are still tests that are conducted with end users at worksites.

– The end users are also becoming more and more involved with track testing. Last winter, we had an entire TRI 2 testing day where we invited contractors and equipment manufacturers to our testing centre in Nokia to drive the tyre on dry, snowy, and icy tracks.

We received a lot of positive feedback and

tips for further development, Kaivonen says.

– At the moment, the TRI 2 is the model that we test the most on the track. We can gather essential experience by varying inflation pressure, speed, and loads. Our products have certain criteria and requirements that we measure.

By looking at the results, we can see how we have succeeded in developing the product, and how we stack up against the competition.

#### The tyre must have grip

Nokian Heavy Tyres wants to serve the needs of certain customer segments. One of the main ideas has been to focus on tyres that excel under winter conditions, as this is one of the core competence areas for Nokian Heavy Tyres.

– Many of the contractors who use the TRI 2 make their living by doing winter maintenance, removing snow and spreading sand. The tyres must have grip. Accessories, such as buckets, ploughs and trailers each affect how the tyre behaves with a certain tyre set. Therefore, we also included tractor accessories in our test day, Kaivonen mentions.

All in all, the tests allow us to fine-tune the characteristics of the tyres to be more useful; for example, we can develop the structure and materials of the tyre. ■

✍ Kari Saarinen  
📷 Alasimedia and Miika Kaukinen



# Nokian Forest King TRS2

## – with or without tracks

The traction-patterned new Nokian Forest King TRS2 has been designed for use in forestry machines, with or without tracks. This kind of combination requires innovations that can only be achieved by listening to the customers and performing relentless product development.

**P**roduct Manager **Jarkko Heinämäki** from Nokian

Heavy Tyres tells us how to utilise end-user feedback for building a tyre that is as good as possible.

### 1. Why did you decide to make the tyre wider than before?

– Traction grip is the most important feature in a tyre for a forestry professional. A wider tyre covers a larger area, thereby improving the grip. The Nokian Forest King TRS2 now also has square edges instead of the previous round-shaped ones. The tread pattern reaches the vertical edge of the tyre. This distributes the pressure over a larger area, allowing the tyre to carry the machine better. This allows us to use the tracks to their maximum effect, and it also provides protection against cuts. At the same time, the ground is not compressed as far as with the narrower tyre.



### 2. Why is the tyre shoulder sharp?

– For the sake of lateral grip. A sharp shoulder prevents the heavy machine from sliding sideways on sloped terrain, for example. Driving on slopes requires quite a lot of driver skill, so you need to be able to rely on the tyre's lateral grip. The newest large machines keep the cabin in a horizontal position even on slopes. It's quite an experience for the driver to mainly use the angle sensors to determine the position of the machine and its heavy load. Lateral grip may become extremely important for the progress of work and the safety of the driver.

### 3. What is the significance of the bottom of the tyre groove?

– That is the weak point of the tyre. It will always have the least amount of rubber, whereas the top of the rib will have plenty of it. We have added rubber to the bottom of the Forest King TRS2's groove to protect it against punctures, but also to give the track a firm foundation. The track will always grind the tyre, and the tyre will now tolerate it better. The bottom of the track has been lifted further away from the rim in order to improve the puncture protection and to set the track links more firmly into place. The edges of the groove bottoms are the most prone to punctures. The middle of the tyre will have crossed ribs, anyway, so there's plenty of rubber there.

### 4. How do you make a rib that cleans the tread?

– The tyre has what is known as the Super Shovel structure. The rear edge of the rib is straighter, while the front edge is curved, like a shovel. As the front edge is curved, it supports the track better, but it also opens outward. This means that the tyre also cleans itself better, since the curved surface will push the dirt away and will not leave it in the tyre. Cleaning is very important. Heavy machines will spin their wheels when going uphill if the tread pattern is full of dirt.

### 5. Why is it important to develop the rim area?

– The machine has substantial power and it turns the rim. The tyre is large and the rim is small. The rim will naturally try to spin along the bead area. If the tyre comes off the rim, it will break the tyre and valve. This can especially happen when crossing an obstacle with reduced inflation pressure. The bead area of the Nokian Forest King TRS2 has a very advanced design. In addition to pressure, the tyre is held in place by a special cable that supports the entire structure of the tyre against the rim, sealing the tyre and rim together.

### 6. How do the wider rib shoulders work with tracks?

The width of the rib has been increased at the outer edge. The rib has wider shoulders, so to speak. The division between the ribs has been changed and it now fits most tracks. Of course, we recommend tracks designed for the Nokian Forest King TRS.

### 7. How does a straight tyre edge prevent punctures?

The edges have the least amount of rubber. The straight edges eliminate punctures that originate from below. The terrain often has sharp stones and sticks that rub the side of the tyre, especially when driving on a slope. If the tyre had an outward bulge, it would be more prone to punctures and cuts. The track is located outward from the edge of the tyre, so the combination is now better protected even when it is inclined. ■

✍ Miika Kaukinen





Steyr tractors from Austria will be equipped with Finnish tyres.

## New generation of Steyr tractors uses Nokian Heavy Tyres

The seamless co-operation between Forestree, a Nokian Heavy Tyres reseller, and Steyr's Austrian factory gave public utility and forestry tractors their new tyres.

Nokian tyres will be installed on new tractors in Steyr's Multi range, in the 100-130 HP power classes. This size has been designed to meet all the requirements that are placed on this strong combination by gardening work, the forest conditions on the Alps, and the municipal sector. These conditions put the real performance of the tractors to the test, so the tyres also need to perform well, both on the streets and in the forest. Steyr wants to serve professionals with the best possible configuration, and has therefore selected the Nokian TRI2 tyres for normal use and the Nokian TR Multiplus tyres for forestry work.

Trust has been earned during the long co-operation between Finns and Austrians. Raoul Narodoslavsky from Forestree is living Nokian Heavy Tyres' promise of being close to the customer.

– We are always trying to find the best possible solution for each client. Steyr tractors need be able to operate under demanding conditions, so Finnish tyres were the best choice.

### Large and European

CNH is a worldwide company that sells machines for agriculture and the construction industry in 170 countries. It is owned by Fiat from Italy. Steyr has been a part of CNH since 1996. Steyr's special expertise in mountain areas and forestry has helped it to succeed in the large group.

The high level of engineering and production expertise at the St. Valentin factory has brought the group's European tractor development and manufacturing to this small Austrian village.

### Important performance factor

Tyres are an important performance factor for tractors. Even the best machine will underperform without optimal tyres, as the power is not transferred to the platform in the best possible way. A tyre's operating life is also an important part of the customer's choice, and Nokian is a top performer in this respect. Nokian Heavy Tyres for the public sector and forestry are built to the highest standards in order to allow for the best possible power transfer between the machine and varying terrain. This makes them optimal for demanding everyday use.

This convinced Steyr, which is now offering Nokian tyres as original equipment. The

achievement has brought about a very close co-operation between Steyr's engineers and Nokian Heavy Tyres, starting from the very first design stages for the Steyr Multi tractors. Forestree frequently brings Finnish engineers to Steyr's factory to discuss the quality requirements for the tyres. Their goal is common: achieving the best machinery tyre for the customer's everyday use.

### Supporting new innovations

Steyr expects its Multi range of tractors to become a four-wheel drive European sales magnet. The 32x32 gearbox is a sum of new innovations, and it has been developed in co-operation with the German ZF. It brings major improvements to the powertrain as well as deceleration. This places heavy requirements on the tyre, especially in terms of grip. The block pattern of the tyres offers a firm grip, both on asphalt and off-road.

As a demonstration of the trust, Forestree delivers the tyres and rims directly to Steyr's production line. Like every professional, Nokian has earned this trust with their hard work. As a result, even more European tractors roll on Finnish tyres. ■



Hannu Hakala from Vianor (on right) knows his clients and the needs of their worksites.

### Progress of tyre work:

- Cleaning
- Removal from rim
- Damage inspection
- Repair or selection of new tyre
- Mounting on rim
- Inflation pressure adjustment

## Fixing tyres quickly

Even the best forestry machine tyres are not indestructible. Contractors will be delighted to know that Vianor can fit a new tyre on the rim in only an hour. And we can usually also patch tyres quickly in order to minimise downtime.

Sharp rocks, tricky tree stumps, and almost unbelievably strong and pointy sticks. The forest is full of the tyre's natural enemies. This means that even forestry machine tyres will break, no matter how good they are.

– Simply call our nearest location that has repair services, and we will help you right away, says Hannu Hakala, Regional Sales Manager for Vianor.

Vianor does not waste time, since they are well aware that contractors do not want to have their expensive equipment waiting around. While many contractors do have spare tyres, this is not always the case. And anyway, Vianor takes pride in being quick.

In the store, the pattern is nearly always the same: The tyre is cleaned of mud and other debris and taken off the rim. The inner tube and outer tyre are examined and repaired, or a new tyre is chosen, mounted on the rim, and inflated to the correct pressure. The contractor has already been contacted during the final stages of the work and informed that the tyre can be picked up.

– A professional will immediately check to see if the tyre can be repaired. If not, we will replace it. This takes about an hour if the shop has a suitable tyre in stock. We store the most common sizes at certain locations where we collect this

work from a larger area. In addition to Forssa, such places in Finland include Seinäjoki, Joensuu and Lappeenranta, among others, Hakala says.

If we need to patch and vulcanise, it takes about two or three times as long. The owner can usually reinstall the tyre on the same day.

If the machine has an uncommon tyre size, it needs to be ordered from the main storage. The shipment usually arrives the next day.

– Nowadays, regional contractors for different companies are quite large businesses. We know them well, and we also know their fleet. This helps us maintain a suitable selection at our shops, Hakala mentions. ■

Kari Saarinen  
Miika Kaukinen





## Ice man Janne Laitinen is among the royalty of test drivers

Nokian Tyres talks a lot about the gut feelings of test drivers. They can provide information that not even the most advanced technical instruments or computers can discover. Janne Laitinen, the high-speed champion, knows the secret behind the world's best winter tyres.

## Tyres respect the nature of the vineyard

France is an old and large producer of wine. France produces over 4,600 million litres of wine per year. This makes it the world's largest wine producer; Italy is second by a slight margin.

The names and types of wines are usually derived from the regions; Champagne and Bordeaux are probably the most famous of these. Bordeaux has been famous for its red wines for a long time. The region is home to the world's most famous types of red wine, the Cabernet Sauvignon and the Merlot. And the province of Champagne in Northern France is known for champagne, of course.

Vine enjoys a barren soil. If the soil is too rich with nutrients, it will produce too many grapes, which will hurt the taste. The best possible soil for winegrowing is rich with minerals and water permeable.

The seedbed requires special attention especially when aiming for first-class results. A solid but sensitive grip of the ground is essential for the machines that are used for vintage and other maintenance work.

The Nokian TRI 2 has been shown to be excellent in protecting the key assets of a winegrower – the land and the quality of the wine. A purpose-built three- or four-wheeled small tractor is used for vineyard maintenance.

**Mr Marley**, who grows wine in the Marne department in Champagne, values TRI 2's grip on the slippery slopes.

– The tyre respects the land, does not slip, and behaves in a balanced and predictable manner on the slopes. Even in winter, it maintains a firm grip with the ground, he says.

Many other wine workers in the Champagne region who have bought the tyres on the basis of expert advice from STARCO Nordic Pneu have come to the same conclusion. The vineyards commend the TRI 2's stability, grip, and durability. Even tyres that have been driven for over 2,500 hours maintain their characteristics and respect the soil. ■



**H**e is known as a man of few words, but when he speaks, everyone listens.

And why wouldn't they? Janne has achieved the official Guinness World Record for the fastest car on ice (335.713 km/h) and the world record for electric cars on ice (252.09 km/h).

His daily work is far from these high-speed pursuits, however. The demanding work requires thousands of repetitions under demanding conditions, constant tyre changes, and exact analysis.

– During the tyre tests, we as test drivers provide written evaluations for the tyres, but we also have many discussions, says Laitinen.

The evaluations from the test drivers largely affect how the new tyre takes shape. In the difficult Northern conditions, for example, a winter tyre needs to work on other surfaces apart from ice and snow.

– The product development of tyres never stops. While the winter grip of tyres keeps improving, wet grip and handling are also constantly worked on.

### Forwards forever

Laitinen has been testing tyres on nearly every continent. His life strongly revolves around cars and tyres – and he would be ready for more, if he had the time. The man has dedicated his life to going fast.

– I just need to keep going forward, says Janne in a philosophical manner when he is asked about his motoring hobbies outside of working hours.

– I have been involved in endurance racing with a group of friends. There's always something going on in motorsport, but my time is very limited.

His latest something was a record attempt on the Bothnian Bay, near the city of Oulu, Finland. Nature almost beat technology, but the skilled and determined Laitinen came through with the results.

Janne Laitinen is an experienced professional who keeps his cool even after breaking records. After driving in excess of 300 km/h, he looks as if he just drove here from the corner shop.

– Well, breaking records is never completely routine. Of course, it feels great to bag another record. ■

✍️ 📷 Nokian Tyres



**nokian**<sup>®</sup>  
HEAVY TYRES

# Nokian TRI 2

– Triumph on all grounds

Multiple test winner \*



Only purified,  
low-aromatic oils are used  
in our tyres' rubber compounds.



Today, the heavy machinery used for agricultural and contracting work faces tough demands. All day long, hour after hour, from field to gravel, from asphalt to ice. Practical tests grow tougher and increasingly versatile.

That suits us. Nokian TRI was the first block-patterned contracting tyre on the market, and its successor, Nokian TRI 2, is an even more durable and versatile tyre. Nokian TRI 2 is designed for hard use and tested in numerous test drives and tyre comparisons. And time after time, test after test, Nokian TRI 2 comes out as the winner from challenges measuring economies, efficiency and durability.

- > Up to three times the service life of competing products.\*
- > Up to 5 litres/h lower fuel consumption in comparison with competing products.\*

\*Independent tyre test by MTT Agrifood Research Finland and Kiel University, Germany.

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