

An agile 8-wheeled straddle carrier is quick and strong Powerful performance



Straddle carriers twist and turn smoothly between the rows of containers, picking up containers weighing dozens of tonnes, and carrying them to the wharf where a massive harbour crane lifts them onboard. Work at the harbour is demanding and at times performed at high speed. Safety is the number-one priority, which is why the port operators set big demands on the tyres of the 8-wheeled machine, particularly when it comes to wear resistance and driving stability.

Work at container harbours is hectic and schedules very tight. Despite the rush, the overall ambience in the harbour is calm, and work is extremely carefully organised. With amazing ease, reach stackers and terminal tractors move containers to their precise locations. The tirelessly moving straddle carriers, 8-wheeled multi-purpose machines that look >



Steveco operates more than 200 rubber-wheel machines in Kotka



Steveco Oy is the leading port operator in Finland and the market leader in forest industry transportation. Steveco operates more than 200 wheel-mounted machines in the Mussalo and Hietanen harbours in Kotka. This explains why the Steveco repair centre in Mussalo, Finland's largest container harbour, spends a lot of time on tyre servicing.

"Fuel and tyre costs are a major cost item, which is why we keep a close eye on them," says **Antti Sipola**, the foreman in

charge of the repair centre.

"Safety is our first priority. That's why we don't use retreaded tyres in straddle carriers. If the tread suddenly came off, it could cause a dangerous situation."

Finnsteve is the largest operator in Vuosaari harbour in Helsinki



The Vuosaari harbour in Helsinki was opened in 2008, and its terminal area, built above the water, is the most modern in Finland. With its 185 rubber-wheeled machines, Finnsteve Oy – a part of the Finnlines Group – is the largest operator working in the harbour.

Tyre maintenance is high on the agenda in Vuosaari, too. Tyres to Finnsteve are supplied by Vianor, but Finnsteve's own mechanics remove and install the tyres on the machines.

"The tyre pressure is very low when tyres are replaced. We don't want to take any risks with the installations. The straddle carrier drivers always inspect their tyres before they take off. Both tyres and rims are examined more carefully in connection with servicing," **Ari Lehtinen** explains. Lehtinen is in charge of operations at the repair centre employing fifteen mechanics.



Here, 10 metres up, you really learn to appreciate tyre stability, stevedorer Timo Pyykkö sums up.

like the steel frame of a building, are the ones doing most of the work. The machines move freely on rubber wheels and make effective use of the entire area leased by the port operator.

Driving a straddle carrier requires special skills, and the brisk wind blowing from the sea adds a considerable challenge factor to the task. The straddle carrier's dead weight is about 60 tonnes. When moving a heavy container, the eight tyres have to carry a load of up to 100,000 kg. The driver sitting in the cabin 10 metres off the ground appreciates tyre stability, which allows the driver to fully concentrate on handling the containers.

Harbour tyres wear differently than many other tyre types. In stevedoring, machinery is required to make repeated sharp turns. Particularly in a straddle carrier, the tyre abrasion against the surface is very strong. The tyre tread must be durable but not so hard as to cause any additional vibration. In addition, there are specific demands on the tyre body structure and the rubber compounds used. Minimum heat build-up improves the tyres' wear resistance while stability makes working more efficient.

According to **Ari Lehtinen**, repair centre manager at Finnsteve Oy, a company operating in the Vuosaari harbour in Helsinki, the tyre surfaces in straddle carriers usually wear down to an angular, blade-like shape, which causes vibration. The inner and outer tyre surface, as well as a pair of tyres on the same axle, wear asymmetrically.

"We are prepared to pay a little extra for a high-quality tyre if the driving response and user experiences are good," says **Antti Sipola**, foreman responsible for repair work at Steveco Oy, a company operating at Kotka harbours. ■

📷 Tatu Haveri



A smooth ride on durable tyres

In an eight-wheeled straddle carrier, the tyres on the driving axles in the middle are exposed to the toughest wear. Meanwhile the driving tyres in the corners wear unevenly, causing vibration.

At the Vuosaari harbour in Helsinki, the Nokian HTS Straddle tyres have been in use for a year.

"Based on a one-year experience, Nokian HTS Straddle seems to be at least as durable as the competing tyre brands. We are pleased with the wear resistance," concludes Ari Lehtinen, Finnsteve's repair centre manager, as he studies a Nokian tyre mounted on the drive shaft.

The machines drive on asphalt and concrete surfaces, which in Vuosaari are salted in the winter to prevent ice formation. But when it snows, the tracks between the stacks of containers can get packed with snow, and in these conditions good grip is essential. Similarly, on wet surfaces good grip is required, both longitudinal and lateral.

In the Mussalo harbour in Kotka, one straddle carrier has been fitted with Straddle tyres fairly recently, which means experiences have only been gained over a short period. Antti Sipola, the foreman in charge at Steveco's repair centre, expects the tyres to offer durability, even wear and good stability.

"It's possible that tyres providing better stability allow us to drive more safely into a corner. Good driving response enables the driver to trust the tyres and to safely pick up speed," says Sipola, examining the tread on the new tyres.

A moment later, **Timo Pyykkö**, a stevedorer, climbs into the cabin of a straddle carrier and drives a few corners to get a feel of the new Nokian HTS Straddle tyres.

"It may well be the case that these are the most stable tyres I've ever driven on," Pyykkö says, with 18 years of stevedoring experience. ■



Nokian HTS Straddle – Beyond All-Steel

- Excellent hourly output in varying and demanding conditions
- Superior stability makes working safe and efficient
- Low rolling resistance reduces fuel costs
- High load-bearing capacity, reliable grip
- Size: 16.00R25
- Load-bearing capacity: 14 000kg/1 000 kPa/25 km/h

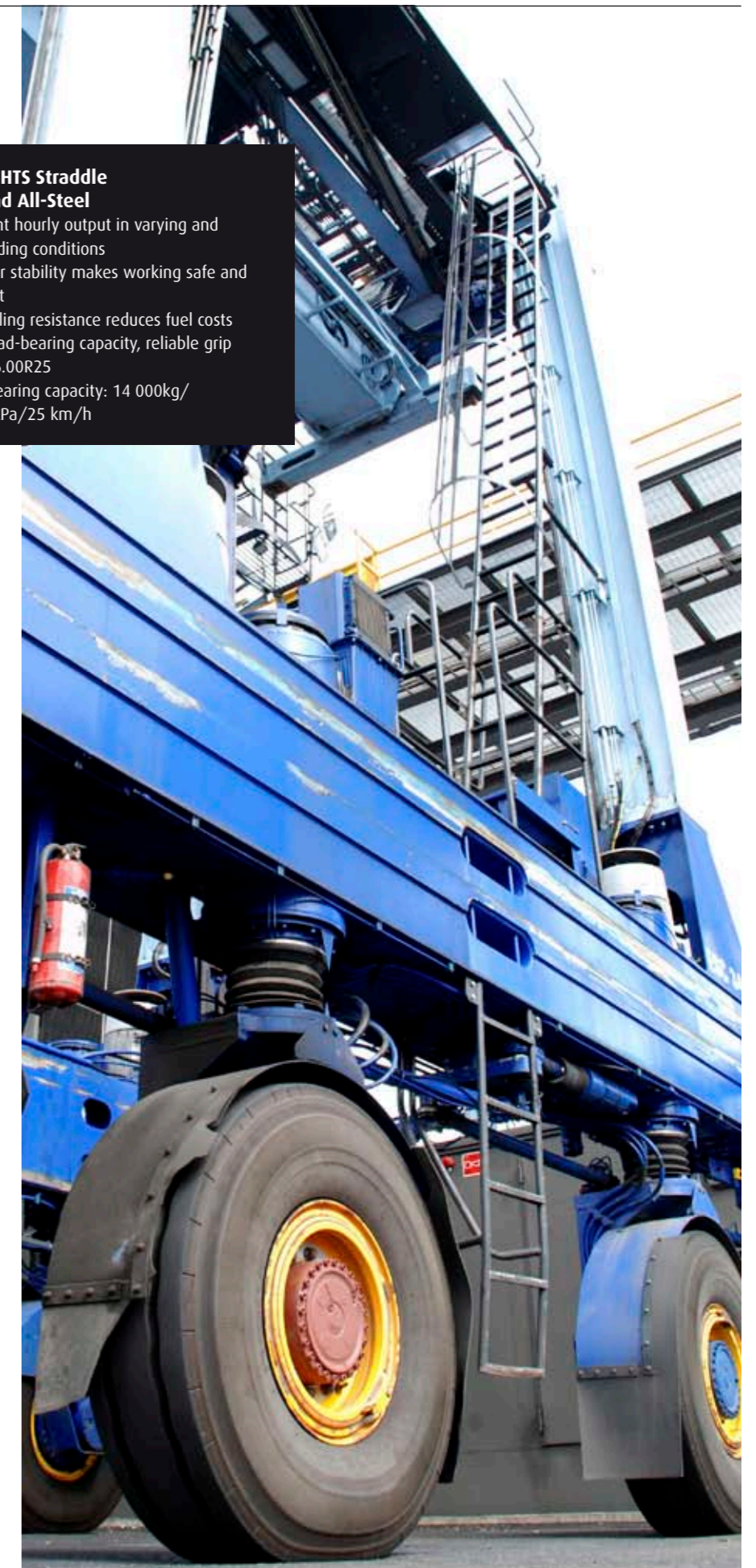
Nokian HTS Straddle – stability and durability

The Nokian HTS Straddle combines excellent stability and high load-bearing capacity with extreme wear resistance. The unique Beyond All-Steel structure guarantees better motion absorption and driving comfort than traditional harbour tyres, as well as low rolling resistance.

The new tyre was developed from the outset with the special requirements of harbour work in mind, and development work was carried out in co-operation with the world's leading equipment manufacturers. The tyre properties are closely monitored to ensure smooth performance at work. When the machine tilts, a low-quality tyre with a soft body may give in an inch or two more, increasing the swaying motion up in the cabin.

Instead of the traditional block pattern, the Nokian HTS Straddle features winding grooves in an otherwise even surface. The grooves make the tyre more stable and offer excellent driving response. They also slow down tyre wear and prevent cracks, and help the tyre maintain its original shape. ■

» For more information on Nokian harbour tyres and their users, go to: www.nokianheavytyres.com www.finnsteve.fi (also available in English) www.steveco.fi/en/





In the field with forestry machine entrepreneurs and operators

Personal service and guidance are in store for up to 140 forest machine contractors, when Nokian Heavy Tyres travels around Finland on an extensive field tour with operators of the machinery. The purpose of the tour is to study the efficiency of the products on six-wheeled forest machines.

– Owners and machine operators will be asked about the efficiency of the tyres and how satisfied they are with them in general. In addition, possible tyre damage will be discussed,



and the durability of the tyres in relation to the hours driven will be investigated, says **Juha Sjöblom**, Technical Customer Service Manager.

A particularly important topic on the tour will be the tyre pressures and their impact on the durability of both the tyre and the tube. Too great a pressure increases the risk of puncture

damage, and too low a pressure causes the tube to rub against the inner surface of the tyre. The tube will then wear more quickly than when driving at the correct pressure.

– Increasing the pressures without field is also a safety risk. Therefore, during the tour, customers will also be told about our new, even stronger forest machinery tyres, which allow higher pressure levels, says Sjöblom.

Nokian Heavy Tyres' regional sales and technical customer service will implement the field tour during the autumn. This will require substantial effort because the machines are located over a very wide area. Once the tour is over, the material collected will be carefully studied and will also be reported to machine manufacturers. In that way, manufacturers too can obtain essential information about the experiences of operators with their machines. ■



Winter is coming, Nokian TRI 2 will hold its grip

More operating hours, reliable grip on winter roads, driving comfort and high load-bearing capacity at demanding sites. All this comes with the block-patterned Nokian TRI 2 tyre, now available in a new size particularly suitable for small tractors.

The numerous edges of the block pattern and the special tread compound based on natural rubber provide precise grip especially in varying winter conditions.

The tread pattern and strong structure ensure that the Nokian TRI2 wears evenly and offers users many efficient working hours. Thanks to its pleasant driving response, the Nokian TRI 2 is at its best when the machine is simultaneously used for driving and working. A comfortable passenger car-like driving response makes highway travel easier and increases traffic safety.

Nokian TRI 2

- Versatile and environmentally friendly special tyre designed for the needs of modern farming and machine contracting
- Excellent grip, high load-bearing capacity and a pleasant driving response.
- Sturdy and fast also on the road.

The newest size in the environmentally friendly Nokian TRI 2 product family is 250/80 R16 STEEL, which is particularly suitable for small tractors used in facility maintenance and grass field maintenance. Thanks to the low surface pressure, it is easy on the ground and cleans effortlessly, ensuring that machines do not carry soil onto roads. ■

The pressure indicator makes pressure maintenance easier

Monitoring tyre pressure can be very simple: with the Tyre Pressure LED pressure indicator, you cannot miss noticing any drops in pressure. This reduces the need to check tyre pressure with a gauge. The pressure indicator is available for all Nokian special tyres tailored for heavy machinery.

The pressure indicator is a led light fitted in the tyre valve. The light starts to flash when, for example, a forestry machine's tyre pressure goes down 0.6 bar. In order to ensure that the flashing light can be noticed at a glimpse, the black valve cap is replaced with a white cap. This simple solution saves time and money.

The right tyre pressure is important for forestry and farming machines in order to avoid punctures and other damage to the tyre. In cold weather, the air inside the tyre shrinks, which lowers the tyre pressure. You can inflate the tyres to a slightly higher pressure for the winter season. ■



The All-Steel steel belt tyre

Steel belt tyres have been on the market for several decades, and they have nearly become the standard also for heavy-duty machine tyres.

- The tyre has a one-layer body
- The body reinforcement material is the familiar steel chord
- Earthmoving machinery and truck tyres are typically all steel tyres
- Good retreading properties.



Nokian Hakkapeliitta Truck E

Beyond All-Steel – stronger than superman

Nokian Heavy Tyres has developed a new radial tyre featuring novel material solutions and a revolutionary structure.

- The tyre body is multi-layered
- The Beyond All-Steel construction is a hybrid that has an ultra-durable multi-layer textile structure
- Safer driving behaviour
- Better stability and driving comfort
- Better swing dampening, tyre and shock absorber in one product
- Lighter weight, which means lower rolling resistance
- Better reliability in demanding conditions and applications
- Slower wearing
- First featured in: the Nokian HTS Straddle harbour tyre



Nokian HTS Straddle