

WORLD PIPELINES®

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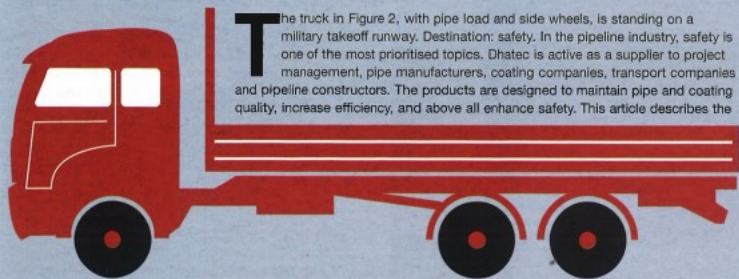


System88 tested
100% safe

Dhatec 
Line pipe Logistic Solutions

READY FOR TAKEOFF

CINDY VERHOEVEN, DHATEC, THE NETHERLANDS, DESCRIBES THE SAFETY PROCEDURES UNDERTAKEN BY THE COMPANY TO ENSURE THE SECURE TRANSPORTATION OF LARGE DIAMETER LINE PIPES.



The truck in Figure 2, with pipe load and side wheels, is standing on a military takeoff runway. Destination: safety. In the pipeline industry, safety is one of the most prioritised topics. Dhatec is active as a supplier to project management, pipe manufacturers, coating companies, transport companies and pipeline constructors. The products are designed to maintain pipe and coating quality, increase efficiency, and above all enhance safety. This article describes the

Figure 1. Two 56 in. pipes on transport.



Autobahnkapelle
St. Antonius
Ausfahrt 1500m



Figure 2. Testing cornering with the Pipe Raiser.



Figure 3. G-force measurement of the load.

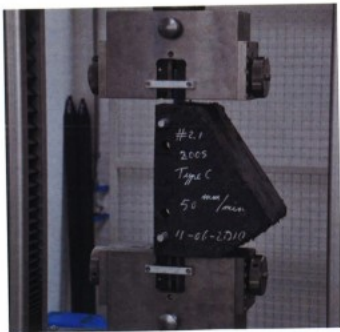


Figure 4. Tensile tests with System88 block.

efforts that are made to ensure the safety of System88 and the Pipe Raiser, which are part of Dhatec's transport systems for line pipes.

Pipe Raiser tested for TÜV approval

In most countries in the world, the maximum width of a load on trucks is between 2.45 – 2.65 m. This results in individual pipe transports for large diameter pipes. Feeling responsible to increase the safety and efficiency in the logistics of line pipes, Dhatec found a solution. By raising one pipe above the other, the width of the total load can be reduced to stay within the legal limitations for truck loads. By using the experience and parts that were obtained from System88, Dhatec's transport system for line pipes, the Pipe Raiser was designed. The Pipe Raiser allows transport of two pipes of 50 – 60 in. on one truck and thus reduces necessary transport by half.

Is the new Pipe Raiser system safe? According to the TÜV Nord it is. Thorough testing was arranged with the help of Wagenborg and Europipe who provided the truck and pipes. On a military takeoff runway in Dreierwalde, Germany, the system was tested over two days according to the VDI 2700 standards and conform DIN EN 12642 for dynamic tests. The police witnessed the tests that included front and back braking, S-curves and U-turns in both directions. The minimum G-forces for non-linear motion were reached in all directions (0.5 G to each side, 0.8 G to the front, 0.5 G to the back) (Figure 3). Spectacular were the U-turns in which the truck would have keeled over if it were not for the supporting side wheels that were mounted on the trailer. The Pipe Raiser and the pipes, however, remained in place at all times. The trustworthy system together with design calculations convinced the TÜV Nord that the Pipe Raiser is safe for road traffic. For this innovation, which improves worldwide pipe transport, Dhatec received a TÜV certificate of approval.

One of the tests in which the rear wheels of the trailer come loose can be viewed on the company's website.

Tests after five years of intensive use

The Pipe Raiser is an extension of Dhatec's product programme for pipe transport: 'System88'. System88 was developed as a safer and more efficient alternative for wooden supports that are commonly used to transport pipes by truck or train. After the development and extensive testing, System88 was approved by TÜV Nord in 2005. Because the quality of the material of the supporting blocks is crucial for the reliability of the total system, the blocks were submitted to extensive testing and material analysis in co-operation with pipe manufacturers and coating companies. Now, after five years of use, the low density polyethylene blocks of System88 were tested again for their material properties. These blocks have been in use daily for transport of pipes on train wagons. Researchers looked for degradation of the material caused by UV-exposure, climate influences and the heavy pipe loads.

The blocks were subjected to tensile tests (Figure 4) and the outcomes were compared to the same tests that



Figure 5. Positioning the anti-skid mats.



Figure 6. Positioning the diameter-specific drawbar.



Figure 7. Pipe Raiser assembly finished.



Figure 8. Loading the first pipe.

were conducted in 2005. No significant difference could be measured. The tests prove the excellent performance of the blocks as they were designed for long-term use. The blocks will continue to be monitored and the similar tests will be repeated in 2015.

Preparing for transport of large diameter pipes

Next time, you are about to transport pipes within the diameter range of 50 - 60 in., you may think of applying the Pipe Raiser. After a cost and benefit analysis you could save half of the trips. But, how does the Pipe Raiser work?

A thought experiment

If you go along with the following thought experiment it all becomes clear. Assume that you have 150 pieces of 56 in. pipe weighing 10 t each laying in a storage yard and need them on the job site, which is a two hour drive. You are allowed to transport 2.55 m in width and 25 t in weight according to the regulations in the country. This means you can only load one pipe per drive while the load limit allows for two pipes. However, with the Pipe Raiser you can load two of the 56 in. pipes.

Assembling the Pipe Raiser

The flatbed trailer arrives. The documentation says that you need three Pipe Raiser assemblies to carry a 20 t pipe load. The assemblies have to be located above the chassis beams, one above the truck axle and two above the rear axles. First, the anti-skid mats are positioned (Figure 5) in a T-shape. Then the steel profiles are located above the axles and the remaining parts of the Pipe Raiser assembly are loaded on the trailer (Figure 6).

The side legs are assembled by hand and secured with pins and locking clips (Figure 7). Although the Pipe Raiser can be configured for all diameters between 50 - 60 in., the driver is given one diagonal drawbar that is specifically made for the 56 in. configuration. This drawbar determines the setting that can be made with the assembly. In this way, configuration errors are prevented. The gentleman in Figure 6 is positioning this diameter-specific drawbar.

Loading two 56 in. diameter pipes

The Pipe Raisers are now assembled, the System88 blocks are positioned and anti-skid layer is positioned on top of the blocks (Figure 7). Once the configuration is complete, the driver checks the assembly one more time.

Then the first pipe is loaded on the blocks on the flat bed (Figure 8) and against the front plate of the trailer. To protect the pipes from each other and to increase the friction, anti-skid is positioned on top of the pipe.

Next, the second pipe will be loaded on the first pipe and on the Pipe Raiser blocks (Figure 9), against the front plate of the trailer. After loading, the pipes will be strapped together and strapped to the trailer following the load securing calculations.

Now, the pipes are secured and ready for transport to the destination in a safe and secure way (Figure 1).



Figure 9. Two 56 in. pipes on Pipe Raiser.

Disassembling the Pipe Raiser

After unloading the pipes, the driver can choose to drive back to the loading location or he could partly disassemble the Pipe Raiser so it takes up minimum floor space, and load other goods.

Maintaining pipe and coating quality

The aim to always improve efficiency and safety in line pipe processes, makes Dhatec an innovative partner. All of the products aim to ensure the quality of line pipes throughout the logistic process from manufacturing to coating, transport, storage, handling and construction. In addition, Dhatec assists project managers to organise the logistics of pipeline projects. Knowledge and experience provides project managers with advice for damage prevention, and above all, on-site safety. **WP**

Because coated pipes
cannot protect themselves

Dhatec
Line pipe Logistic Solutions

We deliver solutions to secure line pipe quality
during handling, coating, transport and storage

