

MPH Grader threats sandy roads to a good condition again

**Small frost was gradually freezing the surfaces of the roads last autumn. Hopefully, the other gravel roads had already got the uniformity and the right shape after the autumn rains. The right shape keeps the road dry when running water drains as quickly as possible to its edge. The gravel roads in Heinävesi area have been maintained by MPH Grader 5.3 with its road equipment option.**

After the story made with videos and photos in the Autumn, this roadblock went into winter care. When the shape was in place, the water did not accumulate on the road and the road frame remained as dry as possible. After the winter, the roads managed by Petri Itkonen in Heinävesi are in moderate condition.



Picture 1. MPH Grader 5.3 with road options are maintaing sandy road in Heinävesi area.

Metal Service Hartikainen (MPH Products) from Juuka manufactures snow blowers, ditch ploughs, small wood collectors, screw levelers, mulchers and bale trailers. Graders have been delivered to agriculture, which is used to level fields. The same sturdy trunk frame structure has also been utilized in the road version of Grader, which is equipped by a stone collector on the backside.

- Demand for field version of Graders is higher than the demand for road versions. Graders have been supplied largely another hundred pcs, but only ten of them for road versions, says Vesa Kähkönen from MPH Products. We have been seeing the increase in the use of field versions for a few years now and sold through Lantmännen Agro stores.

Contractor Petri Itkonen at Heinävesi acquired MPH road Grader in the spring 2018. Petri has maintenance responsibilities of the Heinävesi gravel roads. Normally storage place of Grader is in the center city of Heinävesi, but if the road treatments are done further afield, there are also available partner depots. Petri's treatment areas are mainly state roads, where the main contractor is YIT and Petri acts like subcontractor. A company called Tornator also gives road maintenance jobs for its forest roads. In addition, levelling service is offered to private roads.



Picture 2. Petri Itkonen and Vesa Kähkönen from MPH Products.

Petri has also a winter maintenance for roads with a snowplow and sander. The sander is ATI Steel Single Axle Trailed Sander. In addition to this, he is trimming roadside bushes, which is a tough job if the trimming is not done often enough.

- I'm happy to do the road maintenance if there's enough material on the road. The small scarcity is usually taken place and the aggregate loads are mostly driven to the worst places. On the other hand, there have been many aggregate deliveries to roads but distributed too late, Petri says. The roads have already gone to an absolutely impossible condition. A continuous road maintenance is better choice than the road ending up in a bad condition, Petri recalls.

-If a normal car gets stuck in a thaw, treatment is usually neglected for a longer period of a time. Unfortunately, there are places where we are right on the border. In fact, I'm in the middle of the chain implementation process, so I can't affect the intensity, because the orders come from customers or the main contractor, Petri says.



Picture 3. There is enough material on the road, which makes leveling possible. Leveling eats the tires. Petri has two sets of tires. Better vane tires with spikes are for road maintenance in the winter time, also for the operation in conurbations. Worn out vane tires still usable for summer time jobs.

#### Road Maintenance with enough material

The road maintenance can only be successful if there is material to move to the right places, and possibility to fill the pits. On gravel-paved roads, stones are often a problem. Gravel gradually lifts the rocks from the bottom and when moving with Grader, those stones determine the level of the surface. When the snow is moved out of the road in winter, the land under the road freezes deep, so the rocks also gradually rising.



Picture 4. Stone collector has floating assembly and 10 cm movement allowance to machine body. Stone collector moves on its own wheels, but hydraulic adjustment in inner wheel could help height adjustment. The additional wing on the end of Stone collector on the ditch side moves hydraulically.

-The roads are maintained with pleasure, if allowed to treat, Petri repeats. Without bulk or removable material, of course, the road is difficult to handle. Any number of pin blades offered to crush a big stone, the stone is not easily changed to crushed rock.

In Petri's Grader, the front wings have pin blades as they remove the material from the road surface. The pin blades get worn, especially at the ends of the wings. When they are usually subjected to the toughest strain and the pin blades are easiest to hold on to the edge stones. But the wear of the tooth blades behind wings is obviously eye-catching. Often the driver does not have time to react to the stone, which has just been driven and there is no time to make the lightening. The pin blades are changed at least once a week during the leveling season, and sometimes the pin blades do not last for a day.



Picture 5. Petri's MPH Grader 5.3 has four pcs of extra weights, about 1600 kg. Basic MPH Grader 5.3 weights about 2000 kg. MPG Grader 5.3 field version has 2x400 kg extra weights, when the total weight is 2800 kg.

- The winter maintenance of the roads in this region is done usually more than a summer maintenance. Of course, the leveling kilometers have also increased every year since I first started doing maintaining work with Grader of another contractor. In the spring of 2018, MPH Grader came into use, and in the spring some 150 road kilometers were leveled. From August onwards, the leveling tour was started again. In the autumn, there have been about 300 kilometers of leveling jobs, as well as forest roads have been set up.

-The road maintenance has also been praised this year when the material has been able to remove. The result of this has been that the roads have got the desired shape and the pits are covered. Previously, the roads mostly resembled as a pancake. Part of it is because of aggregates, but the new MPH Grader has also worked as expected. The weight of MPH Grader 5.3 is also enough to remove the packed snow, and when

the structures of MPH Grader are working, leveling is not a complicated job, Petri says. Now, when you take care of the shape of a road, aggregate is lifted from the edge of the road centerline, so that the water flows to the edge and from it to the ditch.

The long front wing enables to move removed road material to the center of road, allowing the road to get into its proper shape. The back wing as called stone collector returns the material from the middle to the edge with big stones. The distance between the front and back wings is long enough to allow the material to pass sufficiently between them. The stone collector is not normally used on a forest road.

The working width of the machine is one difficulty when the roads do have difference on the widths. MPH Grader has mechanically attached and boltable wing extensions for front wings. There is a joint in the center of the front wheel, so that both halves can be individually adjusted to the right angle and working width. The wing rests on the top to the frame and the slide plate. Petri has MPH Grader 5.3 without wing extensions, but his Grader has a plate on the end side of the wing, taking material a little wider. The stone collector at the back has hydraulic blade on the side of the road, which makes it possible to tidy the center of the road.

Petri has made a small narrowing to the front of the wing, shortening the wing. On narrow roads, the Grader was a little bit too wide.

Petri's Valtra T model has SmartTouch drives. In this case, all functions of the Grader and other work equipment can be stored in memory and activated when the machine is connected. All control functions of Grader are in the joystick. All other work equipment used is stored in the system, respectively.

-In normal operation, the need for moving the Grader is low and all adjustments are handled directly from the controller. Instead, you need to proceed systematically to get off the seam when you start and stop. When placing and removing the Grader in the transport position, a replacement valve must be used to obtain the wings in the suppository.

Stone collector has a 10 cm floating spare, which allows Stone collector to flex according to the road surface after the fall of Grader. Stone collector is on its own wheels, but Petri has already designed a cylinder for height adjustment of at least one wheel, whereby the height of Stone collector could be adjusted a little more and possibility to pass extra material.

Customers are giving feedback

- The feedback has been given very well, but there is always something to be developed, Vesa says. The customer's versatility is important, and it gives more Grader usage time. At first, Stone collector was developed purely for road use. Stone collector can be installed later, so the range of options can be expanded, says Vesa.

In bad conditions, all Graders have challenges to work properly. It can be very bad times in the spring time when the roads are soft, so the wheels sink even though there are many wheels on the swing bogie. In this case, the control of Grader is often difficult. The wing can dive and it can stuck if a ground stone occurs and the wing does not pass over the stone. The front wing is made of 650 structural steel and it will give up at some point unless another place or safety valve gives way, says Vesa.



Picture 6. When road maintenance works are done for public roads, other traffic must be observed. The facing traffic gives a road so that the operation runs smoothly. Wing extension of Stone collector has been lifted up to give more space for facing traffic.

-MPH Grader 5.3 is equipped with options like this road equipment - Stone collector. The mechanical, boltable wing extensions at the ends of the wing makes together 80 cents more length, 40 cents in half, and it is used mainly in the field leveling. For field use, however, there is available a handy level laser, where double tilting allows you to profile fields with an 800 m range. There is also available Trimble GPS altitude control, which also provides fully automated tilt adjustment.



Picture 7. Start-up and end-up phases are need to enter systematically, so that moved material do not give height difference. When Grader is put to a transport position or dismantle machine, replacement valve should be used to get wings to a narrow position.

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