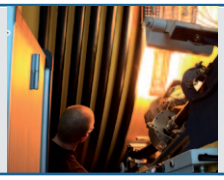
krah community - innovative pipe solutions

The magazin for large **Plastic Pipe Technology** (up to DN 4000 mm)
03/2011

IMPROFIL

Krah K12® pipes How to compare Krah and ADS pipes?



Earthquake in Japan 2011 Technical Reports of PE-pipes after widespread catastrophe by Tsunamis

IMProfil of PHILLIP FOLEY / Profile Pipe Technologies USA, LLC

See also: **Viljandi Folk Music Festival** - Krah Pipes providing atmosphere

Issue number 3 – a good number!

Dear friends, I am very delighted to have the foreword for the issue number three of our newsletter.

Since the last issue a lot of things have happened. Issue number 2 was sent to 267 addressees and this issue is sent to 528 addressees. The main percentage of readers are pipe consultants, constructors, pipe producers and other organizations related to our business. These readers are located in more than 60 countries. And the feedback we are receiving is very potisive, I am entirely satisfied and even a bit surprised about this great success.

Because of the high quantity of readers from Latin America and the former Soviet Union, we will try to publish the next issues also with translated articles in Spanish and Russian. Furthermore we will produce a printed “Best of 2011” issue.

I am very happy that we have received again some very useful articles regarding the application, calculation and experiences during the earthquake in Japan, which are only one part of this newsletter.

We already started to have our customers (pipe produces) linked on our homepage (Estonia and Argentina), because we got several approaches where to buy pipes. If you are interested to be linked as well, please let us know, we will be pleased to do so.

I hope you will enjoy this issue of improfil and we are looking forward to receiving your feedback and improvement suggestions.

Best regards from Germany,

Alexander Krah / CEO of Krah AG ■

Krah K12® pipes

How to compare Krah and ADS pipes?

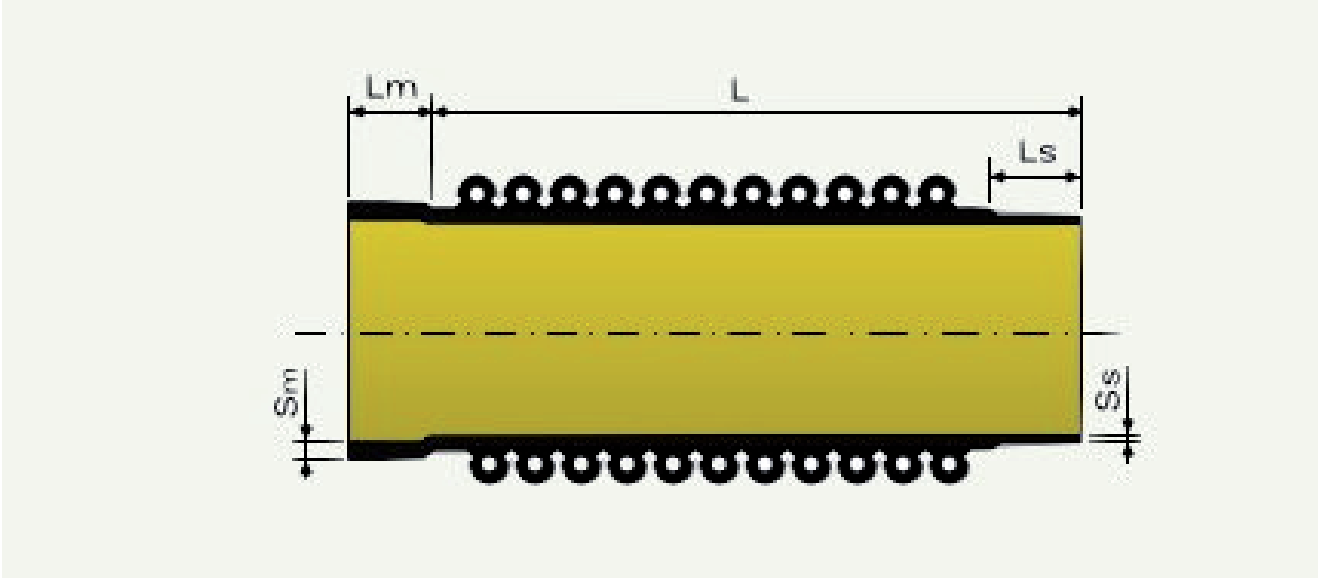
In the South and North American pipe market there's some confusion regarding the proper way to compare ADS pipes with other technologies. This is due, mainly, to the fact that ADS technology does not offer standardized pipe stiffness classes (for instance SN2, SN4, SN8, etc, as European standards demand), but they only offer one kind of pipe (with specific ring stiffness) for each diameter.

Usually ADS N12 pipes are used for standard drainage or sewage buried applications. Basically these pipes have a length of 6 or 12 m and they have an integrated jointing technology (depending on the application an integrated electro fusion joint or a rubber ring). The number 12 has no relation to the ISO 9969 stiffness of SN12, the main relation is to the American standard ASTM F894 with a RSC-value of 120.

Although the static verification of pipes for each project should be mandatory for selecting the proper pipe, sometimes is necessary to ensure the "same stiffness properties" between 2 alternative pipe technologies, and comparing Krah and ADS pipes is not always easy (specially because they measure their ring stiffness according to different standards, with different results). That's why, in order to give the client an easy and quick answer, Krah is now presenting it's "K12 line". This line was made by selecting profiles out of the big range of Krah pipe possibilities, with the idea that a K12 pipe stiffness should be equivalent to the stiffness of ADS N12 pipes.

Basically, as in ADS N12 pipes, the Pipe Stiffness of K12 pipes decreases by increasing the diameter, within the same "K-12" classification. But even in large diameters (DN 2000) the stiffness of K12 is applicable for most cases of installation with varying soil and traffic load conditions. Static calculations show that clearly.

The nominal K12 pipe diameter is an internal diameter [DN/ID] and the pipe length (installing length) is 6 m. Regarding the waterway wall thicknesses, European and international minimum values are considered, as in our opinion the waterway wall thickness has the same importance as stiffness, because, at the end, this is the surface which will be affected by abrasion, impact load, corrosion, etc. and this is the thickness which will be responsible for water tightness of a pipe beside the joint itself. This is a big difference with ADS pipes, where waterway wall thicknesses are minimal (1.8 mm for the biggest diameter), not fulfilling the minimum European standards' requirements. The following list (with more details) is also available in our new Mickey-Software, the weights are conservative numbers and they can vary in different production facilities, due to different materials.



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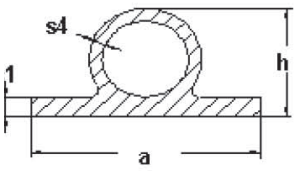
Diameter DN/ID	Diameter DN/ID	Profil No.	Weight	Waterway wall thickness s1	Weight including socket
500 mm		PR 34-001.14	13,9 kg/m	4 mm	86 kg/6m
	21"	PR 42-001.88	18 kg/m	4 mm	105 kg/6m
600 mm		PR 42-001.88	19,8 kg/m	4 mm	117 kg/6m
	24"	PR 42-001.88	20 kg/m	4 mm	119 kg/6m
	27"	PR 42-002.28	24 kg/m	5 mm	147 kg/6m
700 mm		PR 42-002.28	24,7 kg/m	5 mm	150 kg/6m
	30"	PR 54-004.39	33 kg/m	5 mm	198 kg/6m
800 mm		PR 54-004.39	34,5 kg/m	5 mm	208 kg/6m
	33"	PR 54-004.39	36 kg/m	5 mm	217 kg/6m
	36"	PR 54-004.39	39 kg/m	5 mm	236 kg/6m
	39"	PR 65-006.46	45 kg/m	5 mm	268 kg/6m
1000 mm		PR 65-006.46	44,7 kg/m	5 mm	270 kg/6m
	42"	PR 65-006.46	48 kg/m	5 mm	287 kg/6m
1100 mm		PR 65-006.46	49 kg/m	5 mm	296 kg/6m
	45"	PR 65-006.46	51 kg/m	5 mm	307 kg/6m
1200 mm		PR 65-007.22	59 kg/m	5 mm	355 kg/6m
	48"	PR 65-007.22	60 kg/m	5 mm	361 kg/6m
	51"	PR 65-008.25	68 kg/m	6 mm	406 kg/6m
1300 mm		PR 65-008.25	68 kg/m	6 mm	407 kg/6m
	54"	PR 75-011.95	80 kg/m	6 mm	479 kg/6m
1400 mm		PR 75-011.95	81 kg/m	6 mm	488 kg/6m
	57"	PR 75-077.95	84 kg/m	6 mm	504 kg/6m

...

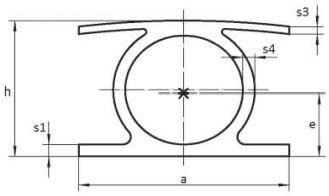
Diameter DN/ID	Diameter DN/ID	Profil No.	Weight	Waterway wall thickness s1	Weight including socket
1500 mm		PR 75-011.95	87 kg/m	6 mm	522 kg/6m
	60"	PR 75-011.95	88 kg/m	6 mm	530 kg/6m
1600 mm		PR 75-011.95	93 kg/m	6 mm	555 kg/6m
	63"	PR 75-011.95	93 kg/m	6 mm	555 kg/6m
	66"	CPR 65-13.71	97 kg/m	5 mm	585 kg/6m
1700 mm		CPR 65-13.71	99 kg/m	5 mm	593 kg/6m
	69"	CPR 65-15.10	108 kg/m	5 mm	646 kg/6m
1800 mm		CPR 65-15.10	110 kg/m	5 mm	662 kg/6m
	72"	CPR 65-15.98	120 kg/m	6 mm	718 kg/6m
1900 mm		CPR 65-17.88	129 kg/m	6 mm	772 kg/6m
	75"	CPR 65-17.88	129 kg/m	6 mm	773 kg/6m
	78"	CPR 65-17.88	134 kg/m	6 mm	803 kg/6m
2000 mm		CPR 65-18.35	146 kg/m	7 mm	874 kg/6m

The used profiles are:

PR-Profiles



CPR-Profiles



Subject to change.

IMPROFIL

PHILLIP FOLEY / Profile Pipe Technologies USA, LLC

1. Since when do you work for Profile Pipe Technologies, LLC?

I have been with PPT since April 2011

2. What is your position in the company?

President/CEO

3. What exactly is Profile Pipe Technologies, LLC doing?

Profile Pipe Technologies, LLC (PPT) is a manufacturer of large-diameter HDPE piping. PPT is headquartered in Shelbyville, KY near Louisville. PPT manufactures pipe up to 96 inches in diameter for various applications including the municipal, landfill, mining and industrial markets as well as for tanks, storm drains, retention and more.

4. What are the characteristics of the company compared to the competition?

We offer large diameter HDPE products with all of the benefits of traditional solid wall pipe with less weight, larger sizes and more options. Our products have:

- *Corrosion and chemical resistance*
- *Light weight*
- *Multiple joining options*
- *Hydraulic efficiency*
- *Long service life*
- *Impact resistance*
- *100:leak-ffree restrained joings*
- *Flexibility of design*
- *Environmental protection*
- *Cost effectiveness*
- *Abrasion resistance*
- *High strength*

5. Since when has Profile Pipe Technologies working with the Krah technology?

The KDR700 was installed and commissioned in July 2011.

6. How did you learn about this?

Introduced during recruitment

7. Which Krah machines does Profile Pipe Technologies, LLC own until now?

One KDR700

8. What do you call your „Krah pipes“?(brand)

CPR, SQ1, PR

9. How many projects you have been realized with these so far?

We have realized over a dozen projects in the very short time that we have been in the market and are gaining momentum swiftly and steadily.

...

10. What is your experience retrospectively?

Operationally, the KDR700 has provided us with consistent, high quality results for our large diameter projects. We continue to acquire the knowledge to master the delicate intricacies of the technological system and electro-fusion process.

Thank you very much – we wish you all the best and good luck for the future!

Phil personal

Family:
Wife (Kimberly) and a daughter and son (Tausha 24, Tanner 15)

In my spare time…
I enjoy hunting and fishing

I am just reading …
Outliers by Malcolm Gladwell.

I can laugh about..
Just about anything, humor is important.

My personal role model:
Warren Jelinek

My words to live by:
Work smarter, not harder.

Technical Reports of PE-pipes after widespread catastrophe by Tsunamis, Earthquake in Japan 2011

Foreword / Krah AG / Aug 2011.

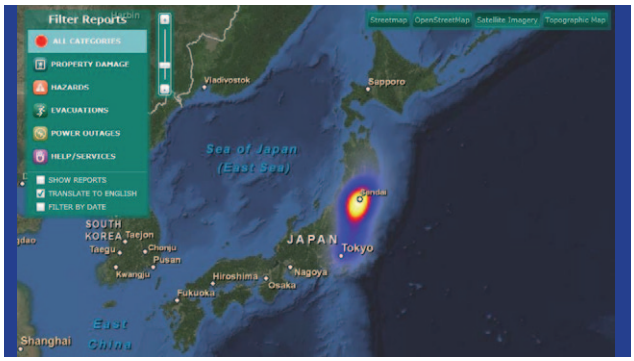
In March this year a massive earthquake in Japan - with all its terrible consequences - terrified many parts of the world. Still many people are struggling with the consequences of the disaster. The infrastructure in many parts of the country is affected, too.
Our customer and appreciated member of Krah Community „Dainippon Plastics Co. Ltd." is producing PE-Pipes with Krah Production Technology since the early 80s and has installed a further Pipe Production Plant at Ako plant quite recently. As many of their pipe projects were implemented in the disaster area, the company commissioned the testing of the pipelines.

The following report was delivered by Mr. Tokiyoshi, Dainippon Plastics Co. Ltd. and shows the capability of resistance of PE Pipes…

Summary. The afternoon 11th March 2011 in local time after Japan was struck by the most powerful earthquake to hit the island nation in recorded history and the tsunami it unleashed - and even as the earth continued to twitch with aftershocks - the catastrophe's massive impact was only beginning to be revealed.

Rescue efforts began with the first light as military helicopters plucked survivors from roofs and carried them to safety.

The 8.9-magnitude temblor, which was centered near the east coast of Japan, killed over thousands of people, caused the formation of 30-foot walls of water that swept across rice fields, engulfed entire towns, dragged houses onto highways, and tossed cars and boats like toys. Some waves reached six miles (10 kilometers) inland in Miyagi Prefecture on Japan's east coast.



Rikuzen-takata City, Iwate Pref

Kamaishi City, Iwate Pref.

Investigation. We, as Dainippon plastics Co Ltd (Headquarters: Osaka JAPAN) are making HD-PE pipe from 300mm ID to 3000mm ID since 1980. And after struck, we should investigate our pipe's situation where pipes are buried in the east area of Japan, because of HD-PE pipe has big advantage compared with other pipes with flexible characteristics against the earthquake. Therefore, we have to reconfirm it doesn't have any damage after struck.

Our technical engineers of the Tokyo brunch office had been to the struck areas to investigate from 23rd May to 3rd June 2011 with Japanese Government's permission.

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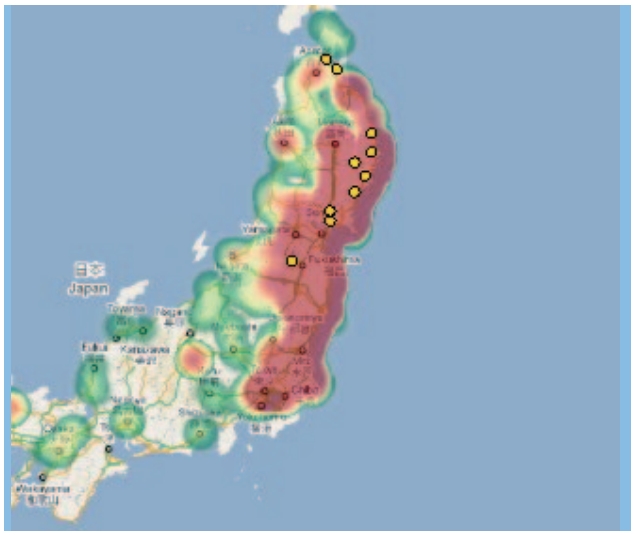
Here are our Investigation's points (Yellow dots)



Investigation Places: 21 places, 4 Prefectures

Investigation Items: Ratio of Deflection with the inside diameter measuring instrument / Appearance with the naked eyes

Results: HD-PE pipes / Helical Extrusion Technology.

Hiranai town, Aomori Pref. 1200mmID, total length are 68m. We didn't have any damage of appearance with naked eyes. Maximum deflections are 4.1% in upstream area

...

Osaki city Miyagi Pref. 1200mmID , Total length are 60m. We didn't have any damage of appearance with naked eyes.
Maximum deflections are 3.3% in upstream area

Rikuzen-takata city ,Iwate Pref. 1000mmID ,Total length are 80m.
We didn't have any damage of appearance with naked eyes.
Maximum deflections are 4.2% in upstream area

...

We could see some cracks several areas of those concrete materials as follows.

Kamaishi city ,Iwate Pref. 1800mmID ,Total length are 80m.
Maximum deflections are 3.9%

...

Osaki city Miyagi Pref. 1200mmID , Total length are 60m. We didn't have any damage of appearance with naked eyes.
Maximum deflections are 3.3% in upstream area

...

Here are the results of our investigations where we had been to.

You know, we have no damage of pipes any more, and quality is remained as referenced Japanese Industrial Standard K-6780:2003 by ratio of deflections. (Allowable deflection: 5%)

Place	DATE of Investigation	Diameter (mm)	Length (m)	Soil embankment (m)	Ratio of deflection (%)	Appearance
Hiranai town Aomori Pref.	3rd June 2011	1200	68.0	11.0	4.1%	no damage
Rokkasho villege Aomori Pref.	2nd June 2011	1800	140.0	27.5	4.4%	no damage
Mivako citv Iwate Pref.	26th May 2011	2400	5.0	1.0	0.2%	no damage
Kamaishi citv Iwate Pref.	25th May 2011	1800	80.0	9.8	3.9%	no damage
Kamimasuzawa Iwate Pref.	25th May 2011	1000	75.0	12.0	3.0%	no damage
Sumida town Iwate Pref.	23rd May 2011	2000	85.0	17.3	1.8%	no damage
Sumida town Iwate Pref.	23rd May 2011	1100	105.0	10.8	3.0%	no damage
Rikuzen Takata citv Iwate Pref.	24th May 2011	1200	64.6	10.8	3.9%	no damage
Rikuzen Takata citv Iwate Pref.	24th May 2011	1500	65.0	8.0	1.7%	no damage
Rikuzen Takata citv Iwate Pref.	24th May 2011	1000	80.0	15.8	4.2%	no damage
Rikuzen Takata citv Iwate Pref.	28th May 2011	1000	84.8	16.3	3.9%	no damage
Rikuzen Takata citv Iwate Pref.	28th May 2011	1000	74.6	13.5	3.9%	no damage
Rikuzen Takata citv Iwate Pref.	28th May 2011	1000	35.3	6.2	2.5%	no damage
Rikuzen Takata citv Iwate Pref.	30th May 2011	1000	70.0	13.0	4.3%	no damage
Rikuzen Takata citv Iwate Pref.	30th May 2011	1000	66.0	11.4	3.0%	no damage
Rikuzen Takata citv Iwate Pref.	30th May 2011	1000	78.0	13.0	3.9%	no damage
Rikuzen Takata citv Iwate Pref.	31st May 2011	1000	67.8	10.3	1.0%	no damage
Rikuzen Takata citv Iwate Pref.	31st May 2011	1000	58.1	9.3	3.0%	no damage
Tome citv Miyagi Pref.	1st June 2011	900	82.0	16.0	3.6%	no damage
Osaki citv Miyagi Pref.	1st June 2011	1200	60.0	10.0	3.3%	no damage
Fukushima citv Fukushima Pref.	27th May 2011	1800	159.0	27.0	0.6%	no damage

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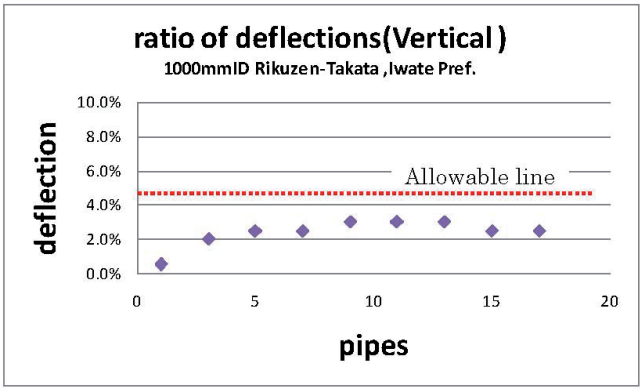
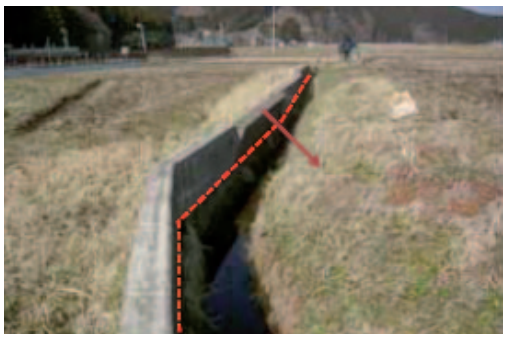
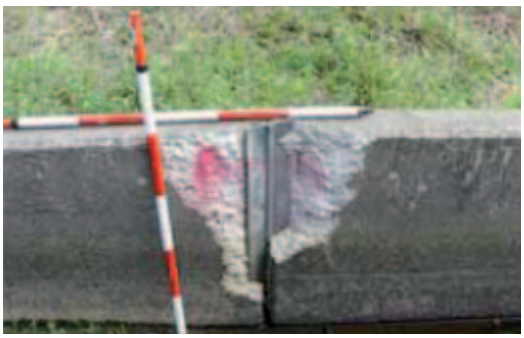


Results: Concrete pipes

Shirakawa city ,Fukushima Pref.
Trench made of concrete was split cause of bending stress / Kamaishi city, Iwate Pref.





Urayasu city, Chiba Pref.
Man holes lifted up from the ground cause of liquefaction,

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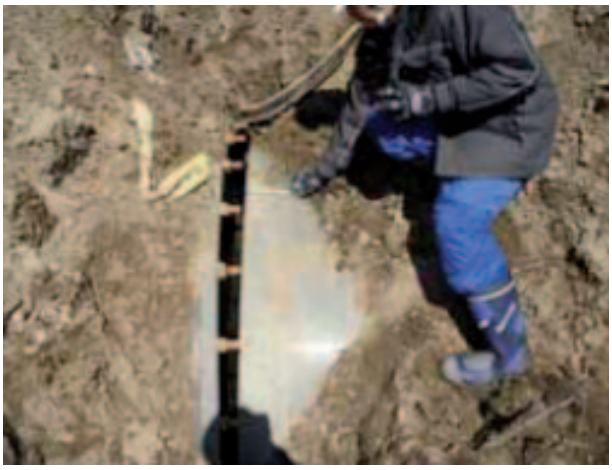
Results - Fiber reinforced Plastics Mortal pipes

This pipe was disconnected after earthquake. Pipes are immediately filled by ground water.



Move out the joint

The length of cracks is 1.4km in succession. Depth of crack is 1.6m between top of pipe to ground level. Joints are deformed so much.

...

Conclusion. Our pipeline still working on Tohoku-Kanto District where attacked big disaster area.

HD-PE pipes have more potential than other pipes against Tsunami, BIG earthquake.
We as Dainippon Plastics Co Ltd proofed this story with our investigations which were going 21places with more than 1,000km drives through 4 prefectures. Therefore we should recommend and have to spread to use Polyethylene pipes compare with concrete or GRP pipe all over the world.

Finally, through this disaster, over 15,000 people were died and 8,000 people are missing now in Japan. Besides more quarter million people still stayed temporary house around those area. However thank to help our friends over 50 countries support after struck, we could be stand up again near future.

We'll expect and help to re-build plan in JAPAN with new HD-PE pipeline.

If you have further questions or comments please contact: Krah AG / www.krah.net / info@krah.net

VILJANDI FOLK MUSIC FESTIVAL

Krah Pipes providing atmosphere

Application: Viljandi Folk Music Festival

It's known that Krah pipes create a „good atmosphere" under the ground. But quite recently the drummer guys from Viljandi DrumLab proved something new:
Krah pipes also provide a "good atmosphere" above the ground! With 5 different sized drums (DN/ID 400 – 1200 mm) made of PE pipes, the band warmed up mightily the audience of:

Viljandi Folk Music Festival.

The PE pipes, produced by Krah Pipes OÜ/Estonia that are generally meant for the transport of sewage, played out this year's motto „Rhythm and Pulse" on their own special kind.

The origin of the project-idea has been described by the band leader Reigo Ahven as follows: „Nobody knows exactly. Usually hold your hats when geniuses meet". Geniuses – these are in this case Reigo Ahven (band leader of Viljandi Drum Lab), Aivar Kuusk (event producer, www.kuusk.ee) and Peeter Kirtsi (General Manager, Krah Pipes OÜ). – realization was me and Ahven (btw Ahven means bass the fish)

Since the beginning of 2011 the band performs on the drums, which have some great advantages over conventional ones: They are weatherproof. Usual drums hate the wet and cold. „And they are big and cool," says Reigo Ahven.

The band has big plans for the future, so the Folk Music Festival won´t be an exception: The next step is to break the world record by building & playing the biggest drum ever. The happening chosen is Tõrva Loits in the middle of August. This project will also be realized in cooperation with Krah Pipes OÜ. 10 new drums (DN/ID 400 – 3000 mm) are already in order ....

...

We are definitely looking forward what´s going to happen and we will let you know...

About the event:
The Viljandi Folk Music Festival is an annual event and it is one of the largest of its kind in the Baltic and Northern countries. On the last weekend of July all the best musicians meet and present their contemporary renditions of traditional music.

Read more here: http://www.folk.ee/festival/en/viljandi-folk-music-festival/About-the-festival