

WASTE TO ENERGY



Multriwell®

The sustainable route to more gas extraction

As a landfill site manager, your aim is to ensure the safe and sustainable operation of your landfill site. On the other hand, you also wish to generate the maximum possible income. To serve both those goals, we are pleased to introduce Multriwell®: a revolutionary method for gas extraction that is efficient, environmentally-friendly, safe and profitable.

The Multriwell system consists of a close-knit network or grid of vertical and horizontal flexible wells for maximum gas extraction, combined with a capping construction. This system ensures the optimum flow of all extracted gas, without loss or emissions into the atmosphere. This sustainable and low-maintenance system enables you to extract more gas from your landfill site in a

shorter time than using traditional systems.

The perforation of the waste by the Multriwell system accelerates and intensifies the biodegradation processes in the landfill site. As a consequence, the site can be transferred to new – e.g. recreational – use more safely and sooner. Multriwell: the sustainable route to more gas extraction.

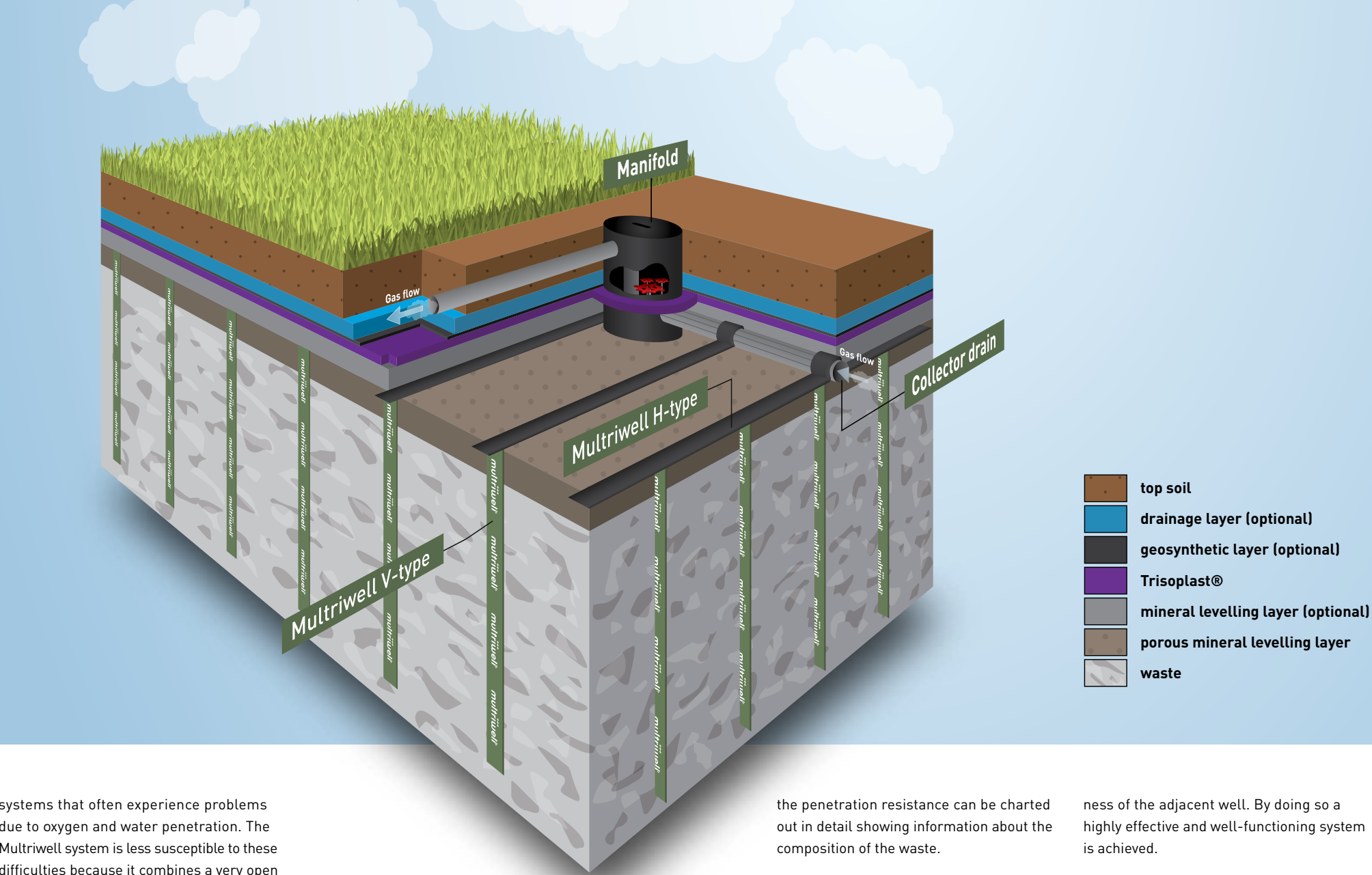
MULTRIWELL STANDS FOR:

- More and above all faster gas extraction, higher output(s)
- Flexible and safe installation
- Environmentally-friendly
- Low-maintenance
- Faster landfill inertia
- Faster and more balanced land settlement
- (Cost)efficiency



What is Multriwell?

Multriwell is a unique, patented method for gas extraction according to which a large number of vertical, flexible (type V) wells are driven into the waste material, in a tight-meshed grid pattern. The gas is then collected via the horizontal (type H) Multriwells and collector pipes and transported to the manifold(s). The system is installed on top of a porous leveling layer, followed by a separation layer that acts as a subgrade for the capping layer. By installing the Multriwell system, we create a safe situation for residential, work and recreational use.



The advantages of Multriwell

Optimum gas extraction

Shortly after putting the Multriwell system into use up to four times more gas can be extracted compared to the traditional system. On the one hand this is achieved thanks to the close-knit grid of flexible wells that creates a larger entry surface area and as a consequence a faster gas discharge. On the other hand, placing the type V Multriwells in a close-knit grid, the leachate present in the landfill site is distributed more evenly and poorly accessible areas within the waste are penetrated and thus more successfully reached. The result is a bioreaction that in turn leads to higher and faster production of landfill gas. In addition, the Multriwell system enables you to adjust the manifolds to extract the optimum percentage of methane. Using



the highly cost-efficient Multriwell system your investment generally should pay for itself within just two years.



Sustainable energy

When using Multriwell you have the unique additional option of adding water to the landfill waste or recycling leachate through the system increasing the amount of gas produced by the waste. By connecting the system to a generator you can even generate sustainable energy from your waste!

Safe, stable and effective

The Multriwell system is very reliable and practically maintenance-free. It is more resistant to differential settlement and has a longer life expectancy than the traditional

systems that often experience problems due to oxygen and water penetration. The Multriwell system is less susceptible to these difficulties because it combines a very open vertical and horizontal grid of gas wells with an effective capping layer. Installation of a close-knit grid enables the waste to settle more evenly. The end result is a safer, more stable landfill site, less susceptible to subsidence, ready for further use by site developers.

Multriwell and the environment

Multriwell is a very attractive system not only for you but also for the environment. Multriwell for example does not require the installation of unattractive and easily-damaged gas wells that blot the landscape. In addition, the manifolds are embedded so that the only point visible in the landscape is a manhole cover. Furthermore, using the Multriwell system, the leachate is distributed more evenly through the waste, generating higher gas production and rendering the landfill site inert in a shorter period of time. The Multriwell technique, originally designed in the Netherlands, is harmonized with the most stringent international legislation in terms of safety and the creation of a livable environment.

How is Multriwell installed?

Multriwell can be installed rapidly, flexibly, safely and cost-efficiently. The process starts with a design according to which the optimum grid separation between the vertical wells is determined. Working on the leveling layer on top of the waste each vertical Multriwell is forced into the landfill site at a precise GPS monitored position. During penetration the depth and resistance from the waste are accurately registered and recorded. As a result, following installation of the vertical Multriwells,



the penetration resistance can be charted out in detail showing information about the composition of the waste.

Following installation of the vertical Multriwells, the horizontal Multriwells are fitted. These are connected together and also collect the gas from the waste environment before transporting it via grooved collector tubes to the manifold(s). The Multriwells are then covered with the leveling layer, topped off by a capping layer (e.g. Trisoplast). Depending on the environment and the applicable regulations the sealing layer is covered by other commonly used layers such as a separating geotextile, a drainage layer or composite and finally the topsoil.

Unique flexibility

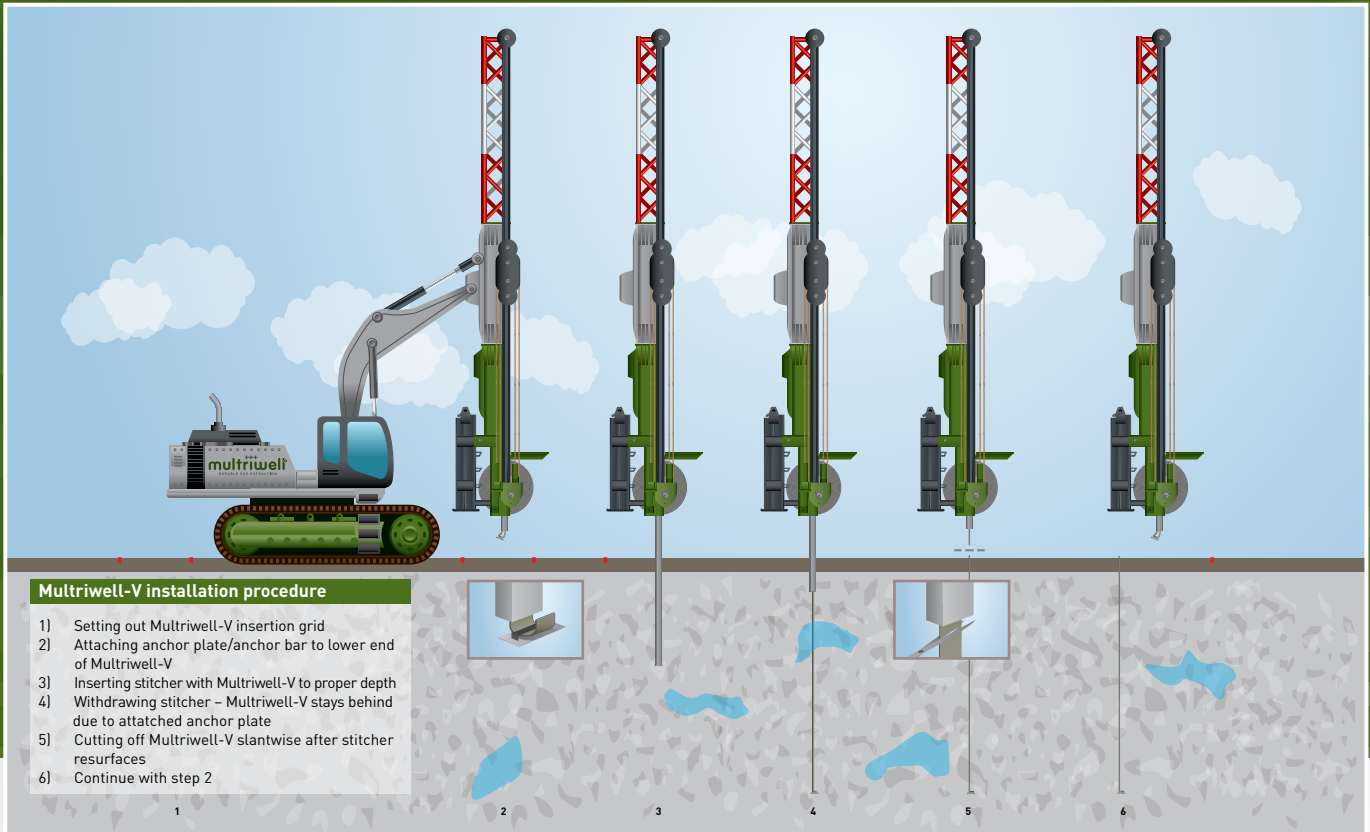
The Multriwell method is remarkably flexible. Each individual vertical Multriwell can for example be forced into the landfill site to a predetermined depth, depending on the resistance measured. If it proves impossible to install the Multriwell at the required depth due to unexpectedly high resistance, a new vertical Multriwell is pushed into the waste as close as possible to the original well. This additional well multiplies the effective-

ness of the adjacent well. By doing so a highly effective and well-functioning system is achieved.

Safety first

Because there is no contact with the waste during installation, the fitting of the Multriwell system is cleaner and safer than the traditional method of excavating wells. Throughout the process safety is our first priority. The released gases are constantly monitored and safety regulations are strictly adhered to.





About Multiwell BV

The Multiwell system is a patented method based on tried and tested proven technology. The method was developed by a joint venture of two organizations with extensive expertise and years of experience in the field of capping

constructions and gas extraction. This combination of capabilities provides a solid basis for the operation of Multiwell. Multiwell is internationally active and has access to more than 100 installation units worldwide.

As a result our systems never have to be transported over excessively long distances and we can offer our service cost-efficiently anywhere in the world.

NEED ANY FURTHER INFORMATION? PLEASE GIVE US A CALL. WE WILL BE DELIGHTED TO ASSIST YOU.

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