



EPO SME CASE STUDIES | PICOTE

# Pipe repairs that break the rules but not the walls

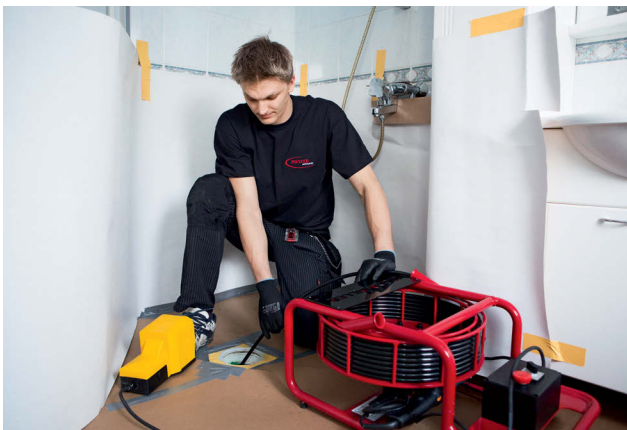
A traditional construction and renovation contractor, the Finnish company Picote discovered and filled a niche when it developed a proprietary method of repairing smaller interior pipes without drilling or digging. With 15 years of business expertise, it designed and developed materials, tools and methods to adapt an existing lining technique originally used for large infrastructure pipes to fit smaller diameter pipes used in buildings. Patents have played a major role in supporting the adoption of this new, innovation-based business model. Picote recognised that IP rights were the most effective means of protection for its easy-to-copy mechanical solutions. Because it is expanding throughout Europe, it is considering using the Unitary Patent and the Unified Patent Court to avoid parallel litigation.



Picote's Smart Cutter is an award-winning lateral cutter for drains that can navigate 90° bends and diameter transitions, shaping openings without damaging the original pipe.

Picote – or Innotia as it was originally known – was set up in 1993 in Finland. As a contractor for the construction, renovation and restoration of buildings in all property categories, the company was a traditional service provider that did similar work to the competition and encountered comparable problems, especially in pipe renovation projects, where it was necessary to demolish walls and remove and exchange pipes in order to repair damaged sections.

In 2008, the company changed its name to Picote and widened its services to include pipe rehabilitation. The expansion was facilitated by the introduction of a proprietary process for lining deteriorating pipes that would previously have been either restored or replaced. The new process was the brainchild of Mika Lokkinen, the company's co-founder and chief inventor. "He thought that there must be a better way, so he started to search for ideas. There were difficulties with the methods available at the time, so to speed up the process and make it easier to use, he created his own tools," says Jami Wilenius, Picote's IP expert. Lokkinen's inspiration came from a technology known since the 1970s that was used to rehabilitate larger-diameter infrastructure pipes underground. This gave him the idea to develop the technology for small pipes inside buildings. In the beginning, the tools were only intended for use within the company, and selling them was not considered. But when some employees left for other companies and asked for the tools, their value became evident. This change in business model opened up new horizons for the company and led to the creation of a new business branch focussing on the design and manufacture of tools for pipe rehabilitation.



The Smart Miller is suitable for drain cleaning, root clearing, lateral re-instatements, collapsed liner removal and more.

In 2009, Picote filed its first patent application for the technology relating to these new tools, which enabled the old method to be used in a new way on smaller pipes inside buildings. The first product on the market, the Smart Cutter, a tool that cuts pipes from the inside out, won the ISTT No-Dig Award for a new product in 2012 and was highly commended in the UKSTT Innovation Award in 2013.

#### TAKEAWAY

#### BUSINESS MODEL EXTENSION

Innovation is an opportunity for extending existing business models from services to high-value products. The old and new business models can be mutually supportive, securing growth in traditional, competitive or even stagnating markets.

Ever since, Picote has continued to develop and manufacture tools for the rehabilitation of pipes. The pace has been fast, with Picote now supplying a wide range of products such as lateral cutters for reinstating lateral pipes, cleaning and lining tools, and machines for rotating the tools via a flexible shaft. Picote has something like 30 different types of tool. Bearing in mind the number of different pipe diameters, this works out at a few hundred tools in total. Around 40% of sales are in the US and 40% in the European market. In the company's dual business model, the tools and the contracting currently bring in approximately equal revenue, although the tool division is growing every year, enabling the company to expand as a whole, in spite of relative stasis in the contracting division. The demand for new innovative tools for the stable construction market has increased the demand for relining tools, for which the market is still growing steadily.

### Lining instead of rebuilding

Before Picote's products were introduced, if you had a small pipe inside a building that needed to be repaired or maintained, you had to remove it and replace it with a new one. Replacement was traditionally considered the best option, since early methods for lining pipes were only suitable for patch repairs, and not for full rehabilitation. These early methods were slow and required multiple access points to a single pipe. Reinstating a lateral connection was in many cases impossible, so that only a partial repair could be carried out. All these challenges meant that removal and replacement was the most effective technique, at least until Picote introduced its tools and methods for lining pipes.

Heikki Jyrämä, production director, explains the advantages: “The minimal equipment requirement, the simplicity of the resin handling system and the ease of application mean that a crew can line several pipes in one day, increasing productivity for many companies, particularly smaller contractors. Once the basic equipment has been purchased, the day-to-day running costs of this technology are also minimised, because the majority of the system is reused time and again.”

The technology behind the tools makes it easier to clean, cut and line pipes, reinstate connections, and monitor line pressure, power supply and water levels. It can be used on pipe diameters ranging from 32 mm up to 225 mm.

“I’m pretty sure that our business would not exist today without the patents we’ve obtained in the last ten years. It was a good decision to start patenting in 2008, since competitors’ activity has grown in the meantime and our strong patent portfolio protects us. Without IP, it would be risky for us today.”

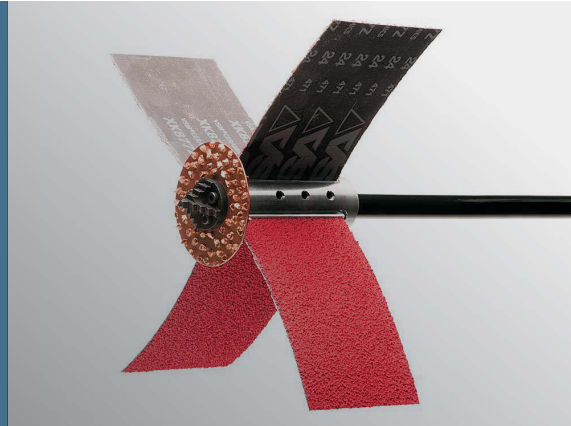


**Mika Lokkinen**  
Co-founder and chief inventor,  
Picote

The lining process begins with the cleaning and descaling of the pipes. To aid technicians, CCTV cameras are widely used to inspect the work, with footage from each pipe being recorded before and after each operation. The second part of the process requires a liner sleeve and a two-component epoxy, which is mixed inside the sleeve to distribute it evenly before air pressure is used to invert the sleeve into the pipe. Inversion turns the liner inside out and the epoxy adheres to the existing pipe. Air pressure keeps the liner in tube form against the existing pipe until the epoxy cures.

As an alternative to this method, Picote has also developed a coating process, which has the advantage that connections are not blocked, so there is no need to reinstate them.

TECHNOLOGY PROFILE



The Smart Cutter system is flexible and can navigate T and Y connections without damaging iron, concrete or newly applied lined pipes. Depending on how the cutter is equipped, it can be used to reinstate, i.e. cut open, connections in pipes of various diameters and broaden the reinstated connection. Picote has also developed an extensive family of Twister products for cutting and cleaning.



A Picote coating pump and Miller Machine pump and coat material into a pipe and brush it onto the inner wall of the pipe. The Picote coating system consists of a two-part formulation resin that fills in deteriorations in pipes. Coating is repeated two to four times for each pipe to ensure that the treatment is thick and non-porous. The rehabilitated pipes can withstand temperatures from -40 to +200 degrees Celsius.

## IP protection in an expanding market

Picote is primarily active in Europe, but it also sells its innovative new tools through distributors around the world. Since it was the first mover on the market with these kinds of products, the advantage of having the core patents in the early years was that the company could sell its tools at a premium price and attribute their technical superiority to the Picote brand. When it was first introduced, the Picote system was much less expensive than competing products and was better and faster than the robotic alternatives. Since then, many competing solutions for pipe rehabilitation and the construction of pipes inside old pipes have come onto the market.

At the moment, Picote has around 30 patent families. The number of patents is explained as a necessity: “We can’t have any trade secrets, as our products are quite simple mechanical solutions. If someone buys one, they could copy it if they wanted to. And it seems that there is quite relentless copying in this field. Despite our patent protection, some competitors are actively copying our solutions,” says Jami Wilenius. Picote has also expanded its protection to include other forms of IP rights and has tested the different options. “We have some activity in trade marks, and should elaborate more on that. We also recently submitted some design applications in the US, essentially to test how it would benefit us. But mainly we are protected by patents,” says Wilenius. Although it offers a number of different branded products, the company currently only holds trade marks for its “Picote” and “Smart Cutter” brands. A strategy for protecting other forms of intellectual assets is still to be formalised.

### TAKEAWAY

#### PROTECTING INVESTMENTS

Patents can be used to support business model extension. If imitating is easy, protecting inventions with IP rights is paramount if you want to safeguard your investments.

## Staying on the case

Lately, the use of patents as a negative right to prevent others from using the technology has become more important. The construction business is a traditional business involving a large number of small and medium-sized national companies with little knowledge of or respect for IP rights. Since 2012, other construction companies have created tools similar to Picote’s, and have copied the proprietary solutions protected by its patents. “Some people may still be sceptical, but management remains highly

supportive and has faith in IP for long-term growth. We expect that we will soon have our first success from patent enforcement or out-licensing, which will put an end to the scepticism,” Wilenius says, describing the difference in opinion on IP rights within both Picote and this conservative industry.

Picote is facing competition, since other actors have been drawn to the market for lining-related tools as the technique has become more established and more widely used by contractors. Currently there are multiple litigations going on in the Finnish courts, prosecuting infringements of Picote patents. Due to its large patent portfolio in what is a relatively narrow field, Picote is quite confident regarding the outcome of the cases. “Usually the companies that are producing the imitations know exactly what they are doing and don’t care if someone has a patent or not. They know that they shouldn’t be doing it, but do it anyway,” Wilenius says. “Competitors constantly need to be made aware of what patent rights mean.”

Without a designated person or strategy for detecting infringement, Picote relies to a large extent on its network of resellers and customers for information about products that challenge its patents. “We have loyal customers, and our resellers are active and provide us with information if they are approached with a competing product that might be an imitation,” says Wilenius. The niche market of pipe-rehabilitation tools makes infringements easier to detect. Outside this sphere, however, the situation is much more challenging. This is why enforcement actions have only been initiated in Finland so far.

### TAKEAWAY

#### DETECTING INFRINGEMENT

Customers and resellers can provide important information about infringement which can be used to enforce patent rights.

## Developing the IP strategy

The early, service-oriented stages of Picote, from 1993 to 2008, did not involve any IP strategy; the company did not apply for any patents nor did it put any effort into IP issues. But since then, its patent strategy has evolved together with its business model to become quite robust.

In the second phase, from 2008 to 2012, Picote realised the value of its IP and applied for patents on the technology in the new tools it developed. Although the approach to IP occurred in an ad hoc manner, and no planning or structure was applied to its organisation, the CEO strongly supported the patenting process.



Quality control of Twister Cleaner in Picote production facility.

In the third phase, which started in 2012, the aim is to take a more organised and strategic approach to IP management. This approach was initiated when suspected copies of Picote's patented tools began to appear in the marketplace. With the continuous expansion of its products via new resellers into most European countries, the company expects to find new local competitors and imitators infringing its intellectual property, which will demand IP enforcement in several European countries in addition to Finland. To make the implementation of an advanced IP strategy possible and to increase its IP know-how, Picote hired a patent attorney previously in private practice.

## IP management for the long run

The majority of Picote's 30 patent families, 30% of which were filed at the EPO, provide protection in a number of European countries, although some patent applications were only filed in Finland. Due to the cost of patenting in multiple countries, and the possible benefits of having centralised enforcement instead of parallel litigation with multiple infringers in different jurisdictions on the same patent, Picote will consider the Unitary Patent instead of conventional European patent protection.

“We had one European patent application granted and validated in ten countries. It would have been much more cost-effective if the Unitary Patent had already been available. We aim to protect our products widely in Europe, and we are active in almost all European countries.”

**Mika Lokkinen**

*Co-founder and chief inventor, Picote*

With its plan to grow and expand sales in Europe, it is likely that Picote will face new and distinct infringers in countries where it intends to increase its presence. The company envisages filing for Unitary Patent protection for disruptive innovations without much prior art, as it sees advantages in the Unitary Patent, especially if the patent is strong.

However, for incremental inventions with a lot of prior art and less clear-cut novelty and inventive step, it might consider choosing a traditional European patent and opting out of the Unified Patent Court (UPC) at first, until experience has shown how the new court will operate. “If the patent is important for us, but we are not sure if it will stand up to an invalidity challenge in the UPC, then we would choose the traditional European patent (opt-out from the UPC) or the national filing route,” Wilenius argues. “Since there have been zero cases so far at the UPC, we don't have any experience as to how inventive step or novelty will be evaluated.”

The IP management function is now performed jointly by chief inventor Mika Lokkinen and Picote's patent attorney, in association with other company directors. The continuing need for patenting and a desire to control associated costs supported the decision to appoint an in-house expert, who is responsible for much of the legal work, while purely administrative tasks such as paying the annual patent fees are done by a patent bureau, and US applications are managed by a US attorney.

**TAKEAWAY****INTERNAL IP EXPERTISE**

Integrating IP experts into the core team can be an opportunity to streamline IP management processes and make them more efficient.

There are strong synergies between Picote's two business models. Ideas for new tools frequently come from identified customer needs, for which Lokkinen can devise solutions. Once a prototype has been crafted and tested, the process of deciding about whether and how to protect it is not complicated, due to the close working relationship between Wilenius and Lokkinen. "When the CEO has a new idea, we do some testing. If he sees value in it and I see a possibility to protect it, I draft a patent application right away," Wilenius explains.

**TAKEAWAY****OPEN INNOVATION**

Customer input can be used as a basis for new innovations and to promote synergies between old and new business models.

IP landscaping is also used to provide input into the company's R&D strategy for the development of new tools and also for freedom to operate and patentability purposes. While there are some tool providers in central Europe and the US that patent extensively, they concentrate on different areas and larger pipe diameters. For small-diameter tools, there is usually no prior art. "When improving tools that already exist on the market, doing prior art searches is useful, as is following the competitors on patent databases," says Wilenius. "Other Finnish companies have started to protect innovations through IP rights. When they look at us they realise that they need to stop neglecting IP protection."

**COMPANY PROFILE****PICOTE/PICOTE SOLUTIONS**

- > Headquarters: Porvoo, Finland
- > Year of establishment: 1993
- > Staff: 75 worldwide
- > Turnover: EUR 15 million
- > www.picote.fi, www.picotesolutions.com

**PRODUCTS/SERVICES**

Lining services. Full-service trenchless drain renovation and manufacturing of trenchless tools, such as tools for high-speed drain cleaning, lateral cutters and smart small-drain rehabilitation solutions

**MARKET AND TECHNICAL AREA**

Construction and pipe renovation

**CUSTOMERS**

Contractors in the renovation and rehabilitation business

**SELECTED AWARDS**

- 2012 ISTT No-Dig Award
- 2013 UKSTT Innovation Award – "Highly Commended"

**PATENT PORTFOLIO**

30 patent families, including EP2539087, EP2567139, EP2780623, EP3017231, EP3030821

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