

Case Study Patent Valuation

Case Study Schneider Background

Schneider GmbH & Co. KG headquartered in Münster is a small start-up company specializing in the development, manufacturing and distribution of machines used in trenchless pipe laying processes. By means of this technology pipelines for gas, electricity, telekommunication etc. are laid without digging a trench. Hence this technology excels when installing or maintaining pipes in densely populated areas. Roads are not impacted, particularly, traffic is not interrupted. Compared to traditional methods cost efficiencies can be obtained. Another field of application is pipe laying beneath environmentally sensitive areas as biotopes are only marginally impacted. In so far it is an environmentally friendly technology.

One of the great challenges of any pipe laying technique is the precise drilling of the line route. Schneider GmbH & Co. KG developed an innovative system of horizontal drilling devices and methods in addition to the required machines and components. In a first step the direction of the line route is planned and the line route is scanned for obstacles. At the starting and endpoints boreholes are drilled. A pilot drilling towards the end borehole is performed. The drilling head is flexible and can be steered. In general, the drilling is done at an angle, and led in a curved path to the endpoint. During the drilling a special suspension is pumped to the drilling head, and released from its top. The suspension removes the soil and small stones, rinses out dissolved materials, and stabilizes the line route. In case of drilling in geological difficult terrain, a special vibration apparatus can be installed.

In a second step the drilling head is removed, and the pipe is attached to the drilling rod, and pulled through the line route. In the event that the diameter of the pipes exceeds the diameter of the drilling hole, an expansion head is attached to enlarge the borehole and extend the diameter.

The technology developed by Schneider GmbH & Co. KG is unique in terms of quality and precision. To secure the technological advantage, Schneider Management decided on legally protecting, particularly, the main components of the horizontal drilling machine ("HDM"). During the past five years (00 to 04) company has filed the following patents:

Title	Reaming head
Document number	DE4134095
Internal name	P1
Application date	15.10.00
Applicant	Schneider GmbH & Co. KG, 48155 Münster, DE
Publication date	16.07.01
Priority date	15.10.00
IPC main class	F16L001-028
IPC subclass	E21B007-20
Main claim	(C1) 1. Expanding head with a carrier shaft (10), comprising a first fixing device (12) for a drill string as well as a second fixing device (14) for equipment to be pulled in; wherein bores are provided in the carrier shaft (10) for the supply of a drilling suspension; with an expanding body with highly wear-resistant abrasive bodies, arranged on the carrier shaft, characterised in that the expanding body consists of at least two individual disc-like expanding elements (16) of different diameter which are arranged at a mutual distance on the carrier shaft wherein the respective diameters of the expanding elements (16) decrease in the direction from the second fixing device (14) to the first fixing device (12).

Title	Fishing-tool for equipment in borehole
Document number	DE19607338
Internal name	P2
Application date	27.02.04
Applicant	Schneider GmbH & Co. KG, 48155 Münster, DE
Publication date	07.05.05
Priority date	27.02.04
IPC main class	E21B031-20
IPC subclass	E21B031-12
Main claim	(C1) 1. Fishing-tool with control face (20) on a rectangular body (12). The body can rotate on its long axis (14) and grip the equipment. The face can be at the forward end of the body and immediately after the gripping mechanism, with which it can overlap in the axial direction.

Title	Device and method for creating ramifications in a borehole
Document number	DE19729809
Internal name	P3
Application date	11.07.05
Applicant	Schneider GmbH & Co. KG, 48155 Münster, DE
Publication date	17.12.06
Priority date	11.07.05
IPC main class	E21B007-08
IPC subclass	E21B029-06
Main claim	(C1) 1. Drilling device for producing branches of boreholes in unconsolidated material comprising: a drill string (4) attached thereto, wherein the pilot boring head (14) has an opening (42) on its circumference, a diverting part (50) on the inside of the pilot boring head (14) and exit openings (34, 36) for a drill suspension with reinforcing action and an inner boring head (44), which is movable in the longitudinal direction of the pilot boring head (14) and can be diverted by the diverting part (50) and through the opening (42) out of the path (54) of the pilot boring head (14).

Title	Magazine for drilling rods
Document number	DE19813698
Internal name	P4
Application date	27.03.06
Applicant	Schneider GmbH & Co. KG, 48155 Münster, DE
Publication date	30.09.07
Priority date	27.03.06
IPC main class	E21B019-15
IPC subclass	E21B019-14
Main claim	(A1) 1. The drilling rod magazine (10) has a multiple of tool places (12) for the reception of the tools (8). The tool places are respectively formed by a follower (14), movable along a conveying track. The drilling rod magazine is a chain magazine with at least one chain (16) running around at least one magazine shaft (18, 20). The followers are coupled with at least one chain.

Title	Hammer drill head
Document number	DE19850183
Internal name	P5
Application date	30.10.06
Applicant	Schneider GmbH & Co. KG, 48155 Münster, DE
Publication date	11.05.08
IPC main class	E21B007-26
IPC subclass	E21B010-38
Main claim	(A1) 1. The hammer drill head, for horizontal drilling with a drilling fluid, has at least one outlet jet (18) for the drilling suspension. A moving piston (28) is within a working chamber (20) of the drill head to compress the fluid in the chamber (20). The drill head has a fixed limit stop (36). A spring (30) in the chamber (20) works with a piston (28). The assembly has at least one closable outlet opening (26) for the drilling fluid in the chamber (20). A bypass channel (22), in the drill head mantle, is a flow path link between the drilling fluid feed line and at least one outlet jet (18).

Title	Horizontal wet drilling tool uses vibration device for periodic impact of drill rod or drill head in longitudinal direction during horizontal displacement
Document number	DE19917538
Internal name	P6
Application date	19.04.07
Applicant	Schneider GmbH & Co. KG, 48155 Münster, DE
Publication date	26.10.08
IPC main class	E21B007-20
Abstract	The wet drilling tool has a rotary drill rod (34) provided with a drill head having exit openings for a drilling suspension, with controlled displacement of the drill head. A spring-mounted vibration device (28) acts on the drill rod and/or the drill head, for periodic impact of the drill rod and/or the drill head in the longitudinal direction of the drill rod during the horizontal displacement. An independent claim for a horizontal drilling method is also included.

The following table summarizes and amends the information on the patent portfolio:

Internal name	Title	Priority document	Priority date	Legal status				
				DE	FR (EP)	IT (EP)	GB (EP)	US
P1	Reaming head	DE4134095	15.10.00	E	E	E	E	E
P2	Fishing tool	DE19607338	27.02.04	E	E	E	E	-
P3	Device and method for creating ramifications	DE19729809	11.07.05	E	E	E	E	A
P4	Magazine for drilling rods	DE19813698	27.03.06	E	A	A	A	A
P5	Hammer drill head	DE19850183	30.10.06	A	-	-	-	-
P6	Horizontal drilling device including vibration device	DE19917538	19.04.07	A	-	-	-	-

Table 1: Summary of the patent portfolio of Schneider GmbH & Co. KG, A = patent application; E = granted patent

Schneider Management also decided to file patents in foreign jurisdictions, particularly, in those European countries where the company's main competitors operate. Presumably, not only substantial components of the machines are protected by patents included in the company's patent portfolio but also the processes involved in the services provided primarily by means of these machines. Schneider Management believes that due to the existence of these patents no competitor has been able to develop devices of the same quality and precision despite the high demand of horizontal drilling machines.

Schneider GmbH & Co. KG is funded by venture capital. While groundbreaking pilot projects were successfully started using the HDMs the company has not been capable of building a strong distribution network. As a result revenues were below expectations in the past, and to limit its risk exposure of his investment the investor plans an exit in 08. As the managing shareholder does not expect to obtain financing from another source, he agreed to the disposal of the shares in the company. Manufacturers of construction equipment were readily identified as potential buyers given Schneider GmbH & Co. KG's superior drilling technology. During the course of first round talks, representatives of Bauma AG have shown a particular interest in Schneider GmbH & Co. KG. Bauma AG is large manufacturer of construction machines and devices. The company has grown during past years by acquiring smaller technology-based construction companies. Given the recent developments in the infrastructure sector as reflected by the extension of the glass fiber cables network in telecommunication or the increased use of natural gas for the heating of buildings, Bauma Management expects an accelerated increase in the demand of subsurface pipe laying.

Bauma AG starts its due diligence. Given the importance the Schneider patent portfolio the main focus of the due diligence is on that asset. Bauma Management believes that the patent portfolio contributes significantly to the overall value of Schneider GmbH & Co. KG. Hence, the monetary value of the patent portfolio shall be determined prior to entering negotiations, serving as a

measure to determining the upper bound of the purchase price. Given the importance of the patent portfolio the patent valuation shall be performed according to established valuation principles and guidelines. The Management of Bauma AG requests that the Head of IP Management, Mr. Queue, gains full access to the relevant information and people at Schneider GmbH & Co. KG.

Mr. Queue is also advised by Bauma Management

- the relevant cost of capital is 12.0%,
- the product life cycle is at the beginning, and given the non-action of competitors to develop substitutes legal protection is six years,
- the company tax rate is 28.8%,
- the closing will not be prior to the end of 08,
- first production of HDM will be early 09,
- the valuation date is 1 January 09.

In addition to the patent valuation the full market potential of the HDM shall be estimated that can be achieved by using Bauma AG's distribution network. Based on the strong demand of trenchless pipe laying processes, the company's market access and strong reputation the strategic controlling concludes on the following:

Revenues in Euros

Year	09	10	11	12	13	14
Price per unit	870	870	870	850	850	820
Y-o-Y Change in price	-	0%	0%	-2%	0%	-4%
Number of units	30	45	65	60	55	50
Y-o-Y Change in units	-	50%	44%	-8%	-8%	-9%
Revenues HDM	26,100	39,150	56,550	51,000	46,750	41,000
Revenues spare parts	-	-	500	650	800	950
Total revenues HDM	26,100	39,150	57,050	51,650	47,550	41,950

Table 2: Expected revenues horizontal drilling machines

First, the product is to be introduced to the home market of Bauma AG, i.e. Germany. After two years the expansion into other European markets, particularly France and the UK, is expected as the company has strong distribution channels in these two countries.