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43

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74

Gemachtigde:
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A pile guide for guiding a pile during submerged pile driving and a method of installing a pile in the sea bottom.

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A pile guide for guiding a pile during submerged pile driving comprises a frame including a passage for receiving a pile and at least two guide members for guiding a pile. The guide members are moveable with respect to the frame between respective guiding positions and respective releasing positions. In the guiding positions the guide members project into the passage and face each other. In the releasing positions the guide members are located at a larger distance from each other than in the respective guiding positions. At least one of the guide members is a passive guide member having a fixed guiding position.

A pile guide for guiding a pile during submerged pile driving and a method of installing a pile in the sea bottom

5 The present invention relates to a pile guide for guiding a pile during submerged pile driving, comprising a frame including a passage for receiving a pile, at least two guide members for guiding a pile, which guide members are moveable with respect to the frame between respective guiding positions and respective releasing positions, wherein in the guiding
10 positions the guide members project into the passage and face each other, and wherein in the releasing positions the guide members are located at a larger distance from each other than in the respective guiding positions.

15 Such a pile guide is known from US 4,102,147. The known pile guide has a frame which carries radially movable inwardly extending guide members for guiding a pile. The guide members comprise hydraulic cylinders having shoes which bear on a part of the circumference of the pile. The pile guide keeps a pile to
20 be driven into the ground in an upright position under water.

 An object of the invention is to provide a pile guide for fast operation.

 This object is achieved by the pile guide according to the invention, which is characterized in that at least one of
25 the guide members is a passive guide member having a fixed guiding position.

 Since the passive guide member is moveable to a fixed guiding position, independent from the presence of a pile in the passage, the movement of the passive guide member to its guiding
30 position can be controlled in a simple and rapid manner.

 Before installing a pile in the sea bottom the pile guide can be placed onto the sea bottom and the guide members can be located in their releasing positions in order to receive a pile in the passage. After the pile is placed into the passage
35 on the sea bottom or just above the sea bottom, the guide members can be moved towards the pile to their guiding positions. In the guiding positions the guide members may contact the pile such that the pile is guided by the guide members during its displacement into the sea bottom. The

advantage of the presence of the passive guide member is that it can be moved to its guiding position very quickly, independent from the other guide member. At the final stage of a pile driving action the guide members may be moved to their releasing
5 positions in order to form a passage for a hammering device and/or to remove the pile guide from the pile which has been driven into the ground.

It is noted that the guide members face each other in their guiding positions in order to be able to keep a pile
10 between the guide members. It is also possible that a pile is clamped between the guide members. The guide members may also project into the passage in their releasing positions, but less deeply than in case of the guiding positions.

In a practical embodiment the other guide member is an
15 active guide member having a flexible guiding position. This is advantageous in case of using piles having varying manufacturing tolerances. For example, the pile diameter may vary from pile to pile, but it is also possible that the diameter of the pile varies in longitudinal direction thereof. Since the passive
20 guide member has a fixed guiding position it is only the active guide member which has to be controlled towards a desired guiding position.

At least one of the passive guide member and the active guide member may be moveable between its guiding position and
25 releasing position by a hydraulic cylinder.

If the passive guide member is movable by a hydraulic cylinder it can be pushed to a fixed end position in its guiding position. For example, the piston of the hydraulic cylinder may achieve a stop or the piston may reach its maximum extension in
30 the guiding position of the passive guide member. This makes control of the hydraulic cylinder for moving the passive guide member simple.

If the active guide member is movable by a hydraulic cylinder its guiding position may be controlled by control of
35 actual hydraulic pressure in the corresponding hydraulic cylinder. This provides the opportunity to select a continuously variable guiding position of the active guide member. Besides, the pile may be clamped tighter between the passive guide member

and the active guide member by increasing hydraulic pressure in the cylinder that moves the active guide member.

If both the passive guide member and the active guide member are movable by hydraulic cylinders, the hydraulic cylinder for moving the passive guide member may operate at a higher pressure than the hydraulic cylinder for moving the active guide member.

In an alternative embodiment the other guide member is also a passive guide member having a fixed guiding position. This embodiment is typically suitable for piles having stable dimensions from pile to pile and in longitudinal direction of each pile. After receiving a pile in the passage both passive guide members can be quickly moved to their fixed guiding positions and a pile driving action can be started.

In a practical embodiment the passive guide members are moveable between their respective guiding positions and their respective releasing positions by respective hydraulic cylinders, wherein the passive guide members are pushed to their fixed end positions in their respective guiding positions.

Both guide members may be located opposite to each other in their guiding positions, forming a cooperating pair of guide members. The guiding positions may be matched to the dimensions of the pile to be driven into the sea bottom such that a clamping force on the pile exists after the passive guide members have reached their guiding positions.

It is noted that the guide members may also be located opposite to each other in their releasing positions. This may be the case if the guide members are moved by means of hydraulic cylinders which are substantially aligned such that in extended condition as well as in retracted condition the guide members face each other.

The pair of guide members may form a first pair of guide members, wherein a second, similar pair of guide members may be located in a plane perpendicular to a plane extending in longitudinal direction of the passage and in which said first pair of cooperating guide members are located.

Furthermore or alternatively, the pair of guide members may form a first pair of guide members, wherein a third, similar pair of guide members may be located at a distance from the

first pair of guide members in longitudinal direction of said passage. This provides the opportunity to support a pile in a desired upright position in the guiding positions of the guide members. It is noted that the guiding positions of the guide members may be selected such that the pile has an inclined orientation rather than an exact vertical orientation.

Preferably, at least one of the guide members comprises a roller for guiding a pile since this minimizes friction between the pile and the guide member during pile driving. Due to low friction of rollers a higher clamping force on the pile is allowable.

The frame may comprise a cylindrical guide sleeve which envelopes the passage. In practice the guide sleeve as well as the piles may have a circular cross-section.

When at least one of the guide members is movable by a hydraulic cylinder, the hydraulic cylinder may be connected to an accumulator for relieving the guide member above a predetermined hydraulic pressure. For example, if the pile diameter increases along its length, a too high force might be exerted onto the guide member and the pile during pile-driving. Due to the presence of the accumulator, any over pressure in the hydraulic system can be absorbed in order to safeguard the pile and the pile guide.

The invention is also related to a method of installing a pile in the sea bottom by means of the pile guide as described hereinbefore, wherein the pile guide is placed onto the sea bottom and the guide members are located in their releasing positions before a pile is placed into the passage on the sea bottom or just above the sea bottom, wherein the guide members are moved towards the pile to their guiding positions in which they contact and guide the pile during driving the pile into the sea bottom, wherein the passive guide member is moved to its guiding position, independent from the other guide member.

The invention will hereafter be elucidated with reference to schematic drawings showing embodiments of the invention by way of example.

Fig. 1 is a cross-sectional view of an embodiment of a pile guide according to the invention.

Fig. 2 is a simplified cross-sectional view of the embodiment of Fig. 1 along line II-II in Fig. 1.

Fig. 1 shows an embodiment of a pile guide 1 according to the invention. The pile guide 1 is suitable for guiding a pile P during submerged pile-driving. Under offshore operating conditions the pile guide 1 is placed on the sea bottom and a pile P which has to be inserted into the sea bottom by means of hammering is guided by the pile guide 1 during pile-driving. The embodiment of the pile guide 1 as shown in Fig. 1 is a simplified representation. In reality the pile guide 1 may be part of a construction which has feet for stable positioning and levelling the pile guide 1 on the sea bottom. The pile guide 1 may also be provided with a lifting element for lifting the pile guide 1. A surface vessel (not shown) having a hoist crane can position and lower the pile guide 1 onto the sea bottom before driving a pile and lift it after pile-driving.

The embodiment of the pile guide 1 as shown in Fig. 1 comprises a frame in the form of a cylindrical guide sleeve 2 which envelopes a passage 3 for receiving the pile P. The guide sleeve 2 has a circular cross-section. The pile guide 1 is provided with eight guide members 4, each having a roller 5 which can roll along the pile P during inserting the pile P into the sea bottom. The guide members 4 are located at two parallel horizontal planes extending perpendicularly to a centreline 6 of the guide sleeve 2. In each of the planes four guide members 4 are disposed at equiangular distance from each other about the centreline 6, which is shown in cross-section of the pile guide 1 in Fig. 2.

Each of the guide members 4 is moveable with respect to the guide sleeve 2 between a guiding position and a releasing position. Each guide member 4 can be moved by means of a hydraulic cylinder. In the embodiment as shown in Fig. 1 the guide member 4 is moveable in radially direction to and from the centreline 6. The corresponding hydraulic cylinders extend in radial direction with respect to the centreline 6. Fig. 1 shows the guide members 4 in their guiding positions, in which the rollers 5 project into the passage 3 and contact the pile P. When the guide members 4 are in their releasing positions they are moved radially away from the centreline 6 by the hydraulic

cylinders such that the pile P is loose from the guide members 4 and the pile guide 1 can be removed from the pile P after installing the pile P. The guide members 4 are also in their releasing positions before receiving the pile P in the passage 3 in order to facilitate inserting the pile P into the passage 3 before pile-driving.

The guide members 4 of the embodiment as shown in Fig. 1 form four pairs of opposite guide members 4a, 4b, as illustrated in Fig. 2. The guide members 4a, 4b face each other at least in their guiding positions. In their releasing positions the guide members 4 are located at a larger distance from each other than in their guiding positions. The pair of opposite guide members 4 comprise a passive guide member 4a and an active guide member 4b. The passive guide member 4a has a fixed guiding position with respect to the guide sleeve 2, which means that upon activating the corresponding hydraulic cylinder the passive guide member 4a moves to a fixed location with respect to the guide sleeve 2. The fixed guiding position corresponds with the maximum extension of a piston of the hydraulic cylinder, for example.

The active guide member 4b has a flexible guiding position. This means that its position is adjustable by controlling the hydraulic cylinder. For example, if a pile P has a slightly different diameter the passive guide member 4a will still be at its fixed guiding position whereas the guiding position of the active guide member 4b will be adapted to the actual different diameter such that the pile P is not deformed by a too high local pressure or such that no gap will arise between the rollers 5 of the opposite guide members 4 and the pile P. The presence of the passive guide member 4a provides a fast preparation for pile-driving since it can be moved to its fixed guiding position without a complicated hydraulic control. The guiding position of the active guide member 4b is controlled by actual hydraulic pressure in the corresponding hydraulic cylinder. In practice, the hydraulic cylinder for moving the passive guide member 4a can be operated at a higher pressure than the hydraulic cylinder for moving the active guide member 4b.

Both hydraulic cylinders are connected to respective accumulators (not shown) for relieving the guide members 4 above a predetermined pressure. The accumulators prevent over pressure or overload of the pile guide 1 and the pile P in case of

5 guiding a pile P which has a deviating diameter due to fabrication inaccuracy. For example, if the pile shape and diameter varies along its length, during pile-driving these variations must pass the rollers 5. When a larger diameter section of pile P, for example a weld bead, ovality or the like,

10 passes, the rollers 5 must be moved outwardly with respect to each other. This is allowed by the accumulators. Basically, the majority of such a movement will be done by the accumulator cooperating with the active guide member 4b, but in case of an increase in pile diameter at the passive guide member 4a the

15 accumulator cooperating with the passive guide member may operate. It is noted that the accumulators can safeguard the guide members 4 including the rollers 5 as well as the pile P. Since the contact stresses between the pile P and the rollers 5 are high, in practice the number of the rollers 5 and their

20 diameter will be selected such that the risk of damage is minimized.

In the embodiment as shown in Fig. 1 each of the horizontal planes in which four guide members 4 are present has two pairs of passive and active guide members 4a, 4b.

25 Under operating conditions, before pile-driving, the eight guide members 4 are retracted towards the wall of the guide sleeve 2 and a pile P is lowered by means of a crane and inserted into the passage 3 of the guide sleeve 2 just above the sea bottom. The passive guide members 4a are moved to their

30 fixed guiding positions and the pile P is clamped between the passive guide members 4a and the active guide members 4b by operating and controlling the cylinders for moving the active guide members 4b. The pile P is then lowered into the sea bottom after which pile-driving is started. After installing the pile P

35 the guide members 4 are retracted and the pile guide 1 is lifted from the pile P.

From the foregoing, it will be clear that the invention provides a pile guide which can be operated in a rapid way because of the presence of the passive guide members.

The invention is not limited to the embodiments shown in the drawings and described hereinbefore, which may be varied in different manners within the scope of the claims and their technical equivalents. For example, it is conceivable that the
5 guide members are moveable by alternative drive means.
Furthermore, the passive guide member and the active guide member may be out of line in their guiding positions but still facing each other.

Conclusies

1 Een heipaalgeleider (1) voor het geleiden van een heipaal (P) tijdens het onderwater heien, omvattende een frame (2) met een doorgang (3) voor het opnemen van een heipaal (P), ten minste
5 twee geleidingsorganen (4) voor het geleiden van een heipaal (P), welke geleidingsorganen (4) ten opzichte van het frame (2) beweegbaar zijn tussen respectievelijke geleidingsposities en respectievelijke vrijgaveposities, waarbij in de geleidingsposities de geleidingsorganen (4) in de doorgang (3)
10 uitsteken en naar elkaar zijn gericht, en waarbij in de vrijgaveposities de geleidingsorganen (4) zich op grotere afstand van elkaar bevinden dan in de respectievelijke geleidingsposities, met het kenmerk dat ten minste één van de geleidingsorganen (4) een passief geleidingsorgaan (4a) is met
15 een vaste geleidingspositie.

2 Een heipaalgeleider (1) volgens conclusie 1, waarbij het andere geleidingsorgaan (4) een actief geleidingsorgaan (4b) is met een flexibele geleidingspositie.

3 Een heipaalgeleider (1) volgens conclusie 1 of 2, waarbij ten
20 minste één van het passieve geleidingsorgaan (4a) en het actieve geleidingsorgaan (4b) door een hydraulische cilinder beweegbaar is tussen de geleidingspositie en de vrijgavepositie daarvan.

4 Een heipaalgeleider (1) volgens conclusie 3, waarbij het passieve geleidingsorgaan (4a) door een hydraulische cilinder
25 beweegbaar is en naar een vaste eindpositie in de geleidingspositie daarvan wordt geduwd.

5 Een heipaalgeleider (1) volgens conclusie 3 of 4, waarbij het actieve geleidingsorgaan (4b) door een hydraulische cilinder beweegbaar is en de geleidingspositie daarvan wordt geregeld
30 door het regelen van een actuele hydraulische druk in de corresponderende hydraulisch cilinder.

6 Een heipaalgeleider (1) volgens conclusie 4 en 5, waarbij de hydraulische cilinder voor het bewegen van het passieve

geleidingsorgaan (4a) op een hogere druk werkt dan de hydraulische cilinder voor het bewegen van het actieve geleidingsorgaan (4b).

7 Een heipaalgeleider (1) volgens conclusie 1, waarbij het
5 andere geleidingsorgaan (4) ook een passief geleidingsorgaan met een vaste geleidingspositie is.

8 Een heipaalgeleider (1) volgens conclusie 7, waarbij de passieve geleidingsorganen beweegbaar zijn tussen de respectievelijke geleidingsposities daarvan en de
10 respectievelijke vrijgaveposities daarvan door respectievelijke hydraulische cilinders, waarbij de passieve geleidingsorganen naar de vaste eindposities daarvan in de respectievelijke geleidingsposities daarvan worden geduwd.

9 Een heipaalgeleider (1) volgens één van de voorgaande
15 conclusies, waarbij beide geleidingsorganen (4) zich tegenover elkaar bevinden in de geleidingsposities daarvan, zodat een samenwerkend paar geleidingsorganen (4a, 4b) wordt gevormd.

10 Een heipaalgeleider (1) volgens conclusie 9, waarbij het paar geleidingsorganen (4a, 4b) een eerste paar geleidingsorganen
20 (4a, 4b) vormt en waarbij een tweede, overeenkomstig paar geleidingsorganen zich in een vlak bevindt dat loodrecht op een vlak staat dat zich in langsrichting van de doorgang (3) uitstrekt en waarin het eerste paar samenwerkende geleidingsorganen zijn geplaatst.

25 11 Een heipaalgeleider (1) volgens conclusie 9, waarbij het paar geleidingsorganen (4a, 4b) een eerste paar geleidingsorganen (4a, 4b) vormt en waarbij een derde, overeenkomstig paar geleidingsorganen op een afstand van het eerste paar geleidingsorganen in langsrichting van de doorgang (3) is
30 geplaatst.

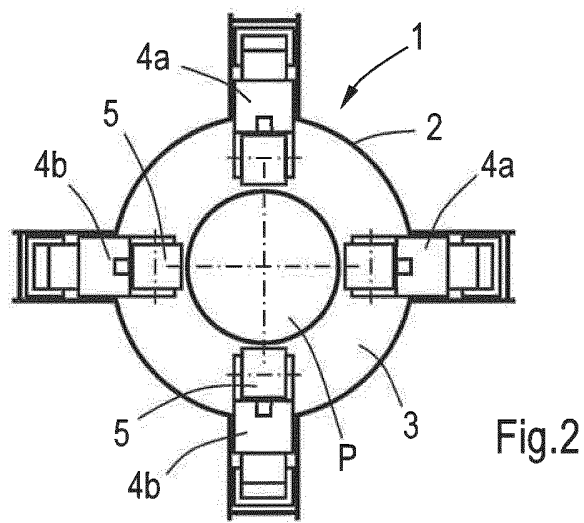
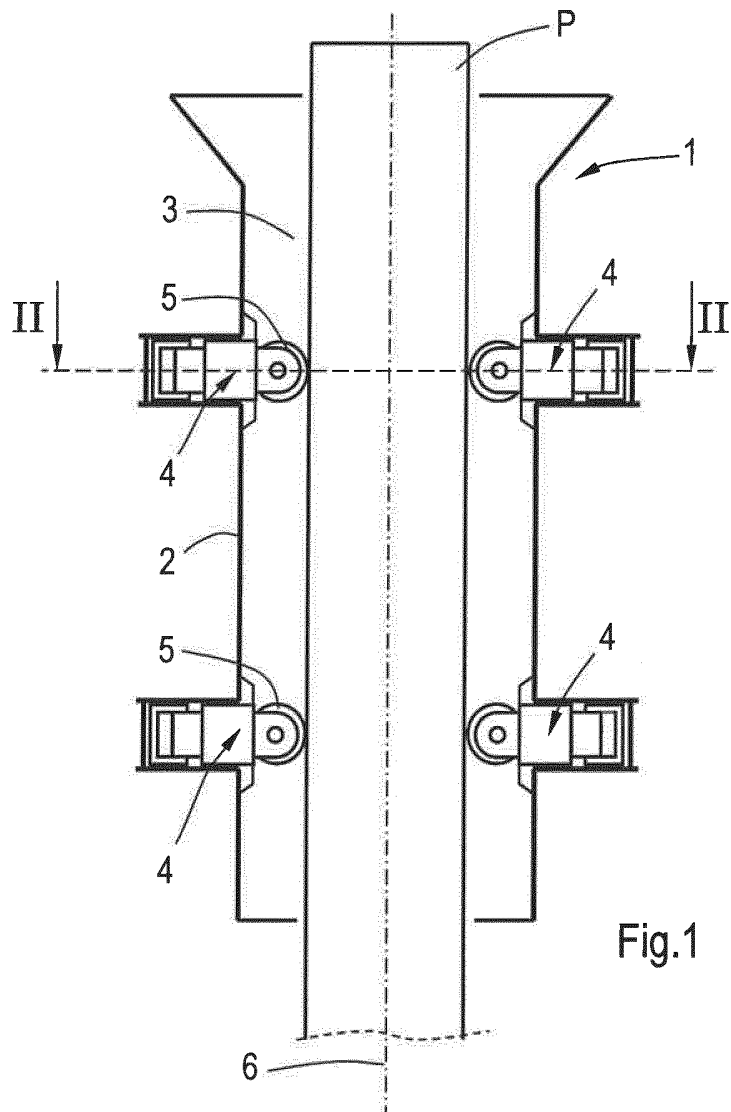
12 Een heipaalgeleider (1) volgens één van de voorgaande conclusies, waarbij ten minste één van de geleidingsorganen (4) een rol (5) voor het geleiden van een heipaal (P) omvat.

13 Een heipaalgeleider (1) volgens één van de voorgaande conclusies, waarbij het frame een cilindrische geleidingsbus (2) omvat, welke de doorgang (3) omhult.

13 Een heipaalgeleider (1) volgens één van de voorgaande
5 conclusies, waarbij ten minste één van de geleidingsorganen (4) door een hydraulische cilinder beweegbaar is, welke verbonden is met een accumulator voor het ontlasten van het geleidingsorgaan (4) boven een voorafbepaalde hydraulische druk.

15 Een werkwijze voor het installeren van een heipaal in de
10 zeebodem door middel van de heipaalgeleider (1) volgens één van de voorgaande conclusies, waarbij de heipaalgeleider (1) op de zeebodem wordt geplaatst en de geleidingsorganen (4) in de vrijgaveposities daarvan worden gepositioneerd voordat een heipaal (P) in de doorgang (3) op de zeebodem of net boven de
15 zeebodem wordt geplaatst, waarbij de geleidingsorganen (4) worden bewogen naar de heipaal (P) naar de geleidingsposities daarvan waarin deze contact maken met de heipaal (P) en de heipaal (P) geleiden tijdens het in de zeebodem heien van de heipaal (P), waarbij het passieve geleidingsorgaan (4a) naar de
20 geleidingspositie daarvan wordt bewogen, onafhankelijk van het andere geleidingsorgaan (4b).

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ABSTRACT

A pile guide for guiding a pile during submerged pile driving comprises a frame including a passage for receiving a pile and at least two guide members for guiding a pile. The guide members are moveable with respect to the frame between respective guiding positions and respective releasing positions. In the guiding positions the guide members project into the passage and face each other. In the releasing positions the guide members are located at a larger distance from each other than in the respective guiding positions. At least one of the guide members is a passive guide member having a fixed guiding position.

SAMENWERKINGSVERDRAG (PCT)

RAPPORT BETREFFENDE NIEUWHEIDSONDERZOEK VAN INTERNATIONAAL TYPE

IDENTIFICATIE VAN DE NATIONALE AANVRAGE 	KENMERK VAN DE AANVRAGER OF VAN DE GEMACHTIGDE NL22413-VH/mr
Nederlands aanvraag nr. 2014689	Indieningsdatum 22-04-2015
	Ingeroepen voormangsdatum
Aanvrager (Naam) IHC Sea Steel Ltd.	
Datum van het verzoek voor een onderzoek van internationaal type 11-07-2015	Door de instantie voor Internationaal Onderzoek aan het verzoek voor een onderzoek van internationaal type toegekend nr. SN64504
I. CLASSIFICATIE VAN HET ONDERWERP (bij toepassing van verschillende classificaties, alle classificatiesymbolen opgeven) Volgens de internationale classificatie (IPC) E02D13/04;E02D27/52	
II. ONDERZOChte GEBIEDEN VAN DE TECHNIEK Onderzochte minimumdocumentatie	
Classificatiesysteem	Classificatiesymbolen
IPC	E02D
Onderzochte andere documentatie dan de minimum documentatie, voor zover dergelijke documenten in de onderzochte gebieden zijn opgenomen 	
III. ☐	GEEN ONDERZOEK MOGELIJK VOOR BEPAALDE CONCLUSIES (opmerkingen op aanvulgebied)
IV. ☐	GEBREK AAN EENHEID VAN UITVINDING (opmerkingen op aanvulgebied)

**ONDERZOEKSRAPPORT BETREFFENDE HET
RESULTAAT VAN HET ONDERZOEK NAAR DE STAND
VAN DE TECHNIEK VAN HET INTERNATIONALE TYPE**

Nummer van het verzoek om een onderzoek naar
de stand van de techniek

NL 2014689

A. CLASSIFICATIE VAN HET ONDERWERP

INV. E02013/04 E02D27/52
ADD.

Volgens de Internationale Classificatie van octrooien (IPC) of zowel volgens de nationale classificatie als volgens de IPC.

B. ONDERZOCHE GEBIEDEN VAN DE TECHNIEK

Onderzochte minimum documentatie (klassificatie gevolgd door classificatiesymbolen)

E02D

Onderzochte andere documentatie dan de minimum documentatie, voor dergelijke documenten, voor zover dergelijke documenten in de onderzochte gebieden zijn opgenomen

Tijdens het onderzoek geraadpleegde elektronische gegevensbestanden (naam van de gegevensbestanden en, waar uitvoerbaar, gebruikte trefwoorden)

EPO-Internal, WPI Data

C. VAN BELANG GEACHTE DOCUMENTEN

Categorie *	Gecekteerde documenten, eventueel met aanduiding van speciaal van belang zijnde passages	Van belang voor conclusie nr.
A	WO 2014/057034 A1 (IHC SEA STEEL LTD [GB]) 17 april 2014 (2014-04-17) * het gehele document *	1-15
A	WO 2013/014416 A1 (IHC SEA STEEL LTD [GB]; GOODBOURN TOM [GB]; MACK JAMES [GB]) 31 januari 2013 (2013-01-31) * het gehele document *	1-15

☐ Verdere documenten worden vermeld in het vervolg van vak C.

☒ Leden van dezelfde octroofamilie zijn vermeld in een bijlage

*** Speciale categorieën van aangehaalde documenten**

"A" niet tot de categorie X of Y behorende literatuur die de stand van de techniek beschrijft

"C" in de octrooiaanvraag vermeld

"E" eerdere octroop(aanvraag), gepubliceerd op of na de indieningsdatum, waarin dezelfde uitvinding wordt beschreven

"L" om andere redenen vermeldde literatuur

"O" niet-schriftelijke stand van de techniek

"P" tussen de voorafgedatum en de indieningsdatum gepubliceerde literatuur

"T" na de indieningsdatum of de voorafgedatum gepubliceerde literatuur die niet bezwaarlijk is voor de octrooiaanvraag, maar wordt vermeld ter verheldering van de theorie of het principe dat ten grondslag ligt aan de uitvinding

"X" de conclusie wordt als niet nieuw of niet inventief beschouwd ten opzichte van deze literatuur

"Y" de conclusie wordt als niet inventief beschouwd ten opzichte van de combinatie van deze literatuur met andere geciteerde literatuur van dezelfde categorie, waarbij de combinatie voor de vakman voor de hand liggend wordt geacht

"Z" lid van dezelfde octroofamilie of overeenkomstige octrooipublicatie

Datum waarop het onderzoek naar de stand van de techniek van internationaal type werd voltooid

26 oktober 2015

Verzenddatum van het rapport van het onderzoek naar de stand van de techniek van internationaal type

Naam en adres van de instantie

European Patent Office, P.O. Box 5818, Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040
Fax: (+31-70) 340-3016

De bevoegde ambtenaar

Geiger, Harald

**ONDERZOEKSRAPPORT BETREFFENDE HET
RESULTAAT VAN HET ONDERZOEK NAAR DE STAND
VAN DE TECHNIEK VAN HET INTERNATIONALE TYPE**
informatie over leden van dezelfde octrooifamilie

Nummer van het verzoek om een onderzoek naar
de stand van de techniek
NL 2014689

In het rapport genoemd octrooigezinslid	Datum van publicatie	Overeenkomstig(e) geschrift(en)	Datum van publicatie	
WO 2014057034	A1	17-04-2014	AU 2013328635 A1	02-04-2015
			CA 2886008 A1	17-04-2014
			CN 104797758 A	22-07-2015
			EP 2909379 A1	26-08-2015
			NL 2009610 C	14-04-2014
			US 2015284927 A1	08-10-2015
			WO 2014057034 A1	17-04-2014
.....				
WO 2013014416	A1	31-01-2013	AU 2012288595 A1	06-02-2014
			CN 103764917 A	30-04-2014
			DK 2737134 T3	05-10-2015
			EP 2737134 A1	04-06-2014
			US 2014193209 A1	10-07-2014
			WO 2013014416 A1	31-01-2013
.....				

WRITTEN OPINION

File No. SN64504	Filing date (day/month/year) 22.04.2015	Priority date (day/month/year)	Application No. NL2014689
International Patent Classification (IPC) INV. E02D13/04 E02D27/52			
Applicant IHC Sea Steel Ltd.			

This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the application
- ☐ Box No. VIII Certain observations on the application

	Examiner Geiger, Harald
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WRITTEN OPINION

Application number
NL2014689

Box No. I Basis of this opinion

1. This opinion has been established on the basis of the latest set of claims filed before the start of the search.
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ on paper
 - ☐ in electronic form
 - c. time of filing/furnishing:
 - ☐ contained in the application as filed.
 - ☐ filed together with the application in electronic form.
 - ☐ furnished subsequently for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

Box No. V Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty	Yes: Claims	1-15
	No: Claims	
Inventive step	Yes: Claims	1-15
	No: Claims	
Industrial applicability	Yes: Claims	1-15
	No: Claims	

2. Citations and explanations

see separate sheet

Item V

The subject matter of claims **1-15** is new over the prior art and is based on an inventive step.

re independent claim 1

Closest prior art document **D1** (= WO2014/057034 A1) discloses

- . een heipaalgeleider (Fig. 4) voor het geleiden van een heipaal tijdens het onderwater heien, omvattende
- . een frame (1) met
- . een doorgang (5) voor het opnemen van een heipaal, ten minste
- . twee geleidingsorganen (7 in Fig. 2) voor het geleiden van een heipaal, welke geleidingsorganen ten opzichte van het frame beweegbaar zijn tussen respectievelijke geleidingsposities en respectievelijke vrijgaveposities, waarbij
- . in de geleidingsposities de geleidingsorganen in de doorgang uitsteken en naar elkaar zijn gericht, en waarbij
- . in de vrijgaveposities de geleidingsorganen zich op grotere afstand van elkaar bevinden dan in de respectievelijke geleidingsposities (Fig. 2).

The subject matter of claim **1** differs therefrom in that

- . ten minste één van de geleidingsorganen (4) een passief geleidingsorgaan (4a) is met
- . een vaste geleidingspositie.

The subject matter of claim **1** is therefore new over the prior art as available.

The distinguishing features have the technical effect of facilitating of deep water piling operations as the construction allows for faster reloading of the guiding mechanism.

Since the prior art does not disclose these technical features in conjunction with the above problem, the solution according to claim 1 is not rendered obvious but based on an inventive step.

Even more so, since the skilled man -when left to his own device- would not be prompted to make use of these inventive technical features.

The same reasoning applies for claim 15 which is directed to a "*werkwijze voor het installeren van een heipaal in de zeebodem*" and makes use of the corresponding features -simply mirrored as and translated into method steps- and also provides a solution for the problem discussed above.

Hence, also claim 15 is new and based on inventive step.

re dependent claims

The subject matter of the dependent claims 2-14 is new and inventive per se.