CLAIMS

1. An upending device (1) for upending tubular piles, the upending device (1) comprising;
   a base element (20) for insertion into an end of, and for extending along an inside of, the tubular pile (FP);
   a plurality of connection elements connected to the base element (20) and configured to engage with one or more inside surfaces of the tubular pile; and
   a lifting arm (30) for coupling the upending device (1) to a hoisting element (H);
   wherein the lifting arm (30) is rotatably coupled to the base element (20), the lifting arm (30) being rotatable relative to the base element (20) about a first axis (A1), wherein the first axis (A1) is a central axis of the base element (20) and is substantially parallel to a central axis of the tubular pile (FP), in use,
   characterised in that the lifting arm (30) is rotatable relative to the base element (20) about a second axis (A2), wherein the second axis (A2) is substantially perpendicular to the first axis (A1).

2. The upending device (1) of claim 1, comprising a mounting element (40), wherein the lifting arm (30) is rotatably coupled to the base element (20) via the mounting element (40), wherein the mounting element (40) is rotatably coupled to the base element (20), the mounting element (40) being rotatable relative to the base element (20) about the first axis (A1).

3. The upending device (1) of claim 1 or 2, wherein the lifting arm (30) is rotatably coupled to the mounting element (40), wherein the lifting arm (30) is rotatable relative to the mounting element (40) about the second axis (A2).

4. The upending device (1) of any preceding claim, comprising a lifting arm driving device (90) for rotation of the lifting arm (30) about the second axis (A2), relative to the base element (20).

5. The upending device (1) of claim 4, wherein the lifting arm driving device (90) is a linear actuator (90), wherein the linear actuator (90) is pivotally connected, at a first end, to the lifting arm (30) at a position spaced from the second axis (A2), and is pivotally connected, at a second end, to the mounting element (40).

6. The upending device (1) of any of claims 1 to 5, comprising driving means located between the mounting element (40) and the base element (20), for controlling rotational movement, about the first axis (A1), of the base element (20) relative to the mounting element (40).

7. The upending device of claim 6, wherein the driving means comprises a pinion and a gear, wherein the gear is rotatably mounted to the mounting element (40) and the pinion is provided in the base element (20).

8. The upending device (1) of any preceding claim, wherein each connection element comprises:

an engagement part (70), the engagement part (70) comprising a coupling portion, wherein the coupling portion has a coupling surface facing radially inwardly; and
a connection part, , the connection part (601) comprising:
a radially outer portion, wherein the radially outer portion has a coupling surface facing radially outwardly, wherein the coupling surface of the engagement part (70) abuts the coupling surface of the radially outer portion of the connection part (601), and wherein each connection part (601) and corresponding engagement part (70) are moveable in the radial direction; and
first connection means at the radially outer end of each connection part (601), the first connection means for connection to axial locking means, the axial locking means being for connection between the connection part (601) and the engagement part (70), for restricting axial movement of the engagement part (70) relative to the connection part,
and wherein the base element comprises second connection means for connection to actuation means connectable between the base element and the engagement part (70), for moving the engagement part (70) along the coupling surface of the connection part (601).

9. The upending device (1) of claim 8, wherein the coupling portion of the engagement part (70) is a tapered portion, wherein the radial thickness of the tapered portion is tapered away from the side of the base element on which the lifting arm (30) is located, and wherein the radial thickness of the radially outer portion of the connection part (601) is tapered towards the side of the base element (20) on which the lifting arm (30) is located.

10. The upending device (1) of either of claims 8 or 9, wherein each connection element comprises a further connection part parallel to the connection part (601) and wherein each engagement part (70) comprises a further coupling surface, wherein the further coupling surface of each engagement part (70) abuts the coupling surface of the further connection part (601).

11. The upending device (1) of any of claims 8 to 10, comprising a drive shaft (607) located between a radially inner end of each connection part (601) and the base element (20), each drive shaft (607) being configured to translate the respective connection part (601) in the radial direction.

12. The upending device (1) of any preceding claim, comprising at least one guiding element (214) attached to the base element (20), for contacting a radially inner surface of the tubular pile (FP) to control the radial position of the base element (20) with respect to the tubular pile (FP), in use.

13. The upending device of claim 12, wherein the at least one guiding element comprises at least two centralisers (214), each centraliser (214) being radially slidably connected to the base element (20), located on a respective radial half of the base element (20), and extendable from a radially outer surface of the base element (20).

14. A method of upending a tubular pile (FP), the method comprising the following steps:
    a) inserting a base element (20) into a first end of the tubular pile (FP);
    b) rotating the base element (20) about a first axis (A1), the first axis (A1) being a central axis of the base element (20) and being substantially parallel to a central axis of the tubular pile (FP), to a desired orientation with respect to the tubular element;
    c) radially outwardly moving an engagement part (70) of each of a plurality of connection elements to engage with one or more inside surfaces of the tubular pile (FP);
    d) lifting the first end of the tubular pile (FP) by hoisting a lifting arm (30), using a hoisting element (H) connected to the lifting arm (30), the lifting arm (30) being connected to the base element (20);

characterised in that the method further comprises step a1), wherein step a1) precedes step a), step a1) comprising lowering the base element (20), the plurality of connection elements and the lifting arm (30) into a position adjacent the first end of the tubular pile (FP), and rotating the base element (20) and the plurality of connection elements relative

to the lifting arm (30) about a second axis (A2), the second axis (A2) being perpendicular to the first axis (A1), to substantially align the first axis (A1) and the central axis of the tubular pile (FP).

15. The method of claim 14, wherein step d) comprises rotating the lifting arm (30), relative to the base element (20) and the plurality of connection elements, about the or a second axis (A2), the second axis (A2) being perpendicular to the first axis (A1), while the first end of the tubular pile (FP) is suspended by the upending device.

16. A method of deploying a tubular pile (FP), the method comprising a method of upending the tubular pile (FP) according to claim 14 or 15, the method comprising the subsequent step of rotating the base element (20), the plurality of connection elements and the tubular pile (FP) about the first axis (A1) to adjust the heading of the tubular pile (FP).