Claims

1. An underwater pipe and connector assembly comprising:

an underwater pipe made of plastic and having a pipe body extending along a longitudinal axis, and an annular connecting end section at one end of said pipe body, said pipe body having inner and outer circumferential surfaces;

a connector made of metal and including a tubular connector body extending along the longitudinal axis and fixed in said connecting end section, an annular flange extending radially and outwardly from a peripheral end of said connector body, and an inner coil embedded between said connector body and said connecting end section;

a reinforcing unit surrounding said pipe body at a position corresponding to a junction between said pipe body and said connector body, and including at least one annular reinforcing layer made of plastic and at least one outer coil, said at least one annular reinforcing layer including a first fixed cover section fused to and covering said connecting end section, and a second fixed cover section connected to said first fixed cover section along the longitudinal axis (L) and fused to and covering said outer circumferential surface of said

pipe body immediately adjacent said connecting end section, said at least one outer coil extending from said first fixed cover section to said second fixed cover section and being embedded between said first fixed cover section and said connecting end section and between said second fixed cover section and said outer circumferential of said pipe body immediately adjacent said connecting end section; and

a clamping unit removably mounted on said pipe body at the position corresponding to the junction between said pipe body and said connector body, said clamping unit including a support member movably disposed at a position corresponding to said inner circumferential surface of said pipe body immediately adjacent said connecting end section, an inflatable ring disposed between said support member and said inner circumferential surface of said pipe body immediately adjacent said connecting end section, and at least one clamping member detachably clamped around an outer portion of said reinforcing unit.

2. The underwater pipe and connector assembly as claimed in Claim 1, wherein said support member includes a support ring surrounding the longitudinal axis, a connecting ring disposed inside said support ring, a plurality of angularly spaced-apart spokes

connected between said support ring and said connecting ring, a cross frame connected to said connecting ring, and a plurality of rollers mounted on said cross frame and rollable inside said connector and said underwater pipe.

3. The underwater pipe and connector assembly as claimed in Claim 1, wherein said connector body has an outer circumferential surface fixed to an inner circumferential surface of said connecting end section, and a wave pattern formed on said outer circumferential surface.

4. The underwater pipe and connector assembly as claimed in Claim 1, wherein a length of said first fixed cover section along the longitudinal axis is greater than that of said second fixed cover section along the longitudinal axis.

5. A method of assembling an underwater pipe and a connector, comprising the steps of:

(A) preparing a connector, an underwater pipe, a reinforcing unit and a clamping unit, the connector being made of metal and including a tubular connector body extending along a longitudinal axis, an inner coil sleeved on an outer circumferential surface of the connector body, and an annular flange extending

radially and outwardly from a peripheral end of said connector body, the underwater pipe being made of plastic and including a pipe body extending along the longitudinal axis and an annular connecting end section at one end of the pipe body, the reinforcing unit including at least one annular reinforcing layer made of plastic and at least one outer coil, the at least one annular reinforcing layer including a first fixed cover section and a second fixed cover section connected to the first fixed cover section along the longitudinal axis, the clamping unit includes a support member, an inflatable ring and at least one clamping member, the support member including a support ring surrounding the longitudinal axis;

(B) inserting the connector body into the connecting end section of the underwater pipe so as to press radially outward the connecting end section;

(C) consecutively disposing the at least one outer coil and the at least one annular reinforcing layer around the underwater pipe such that the first fixed cover section of the at least one annular reinforcing layer corresponds to the tubular connector body and the connecting end section of the underwater pipe and such that the second fixed cover section of the at least one annular reinforcing layer

corresponds to an outer circumferential surface of the pipe body immediately adjacent the connecting end section;

(D) clamping tightly the reinforcing unit around the underwater pipe using the clamping unit;

(E) energizing the inner coil and the at least one outer coil so as to generate heat which melts the connecting end section, the pipe body immediately adjacent the connecting end section, and the at least one annular reinforcing layer to integrally connect the underwater pipe and the reinforcing unit as one body and to fixedly connect the connecting end section and the connector; and

(F) removing the clamping unit from the underwater pipe;

the method further comprising the steps of disposing the inflatable ring around the support ring and moving the inflatable ring and the support member inside the pipe body and the connector body to a position corresponding to an inner circumferential surface of the pipe body immediately adjacent the connecting end section after step (C) and before step (D), and inflating the inflatable ring after step (D) and before step (E).

6. The method as claimed in Claim 5, wherein, in step (A), the support member further includes a

connecting ring disposed inside the support ring, a plurality of angularly spaced-apart spokes connected between the support ring and the connecting ring, a cross frame connected to the connecting ring, and a plurality of rollers mounted on the cross frame, the step of moving the inflatable ring and the support member inside the pipe body and the connector body being realized through the rollers.

7. The method as claimed in Claim 6, wherein, in step (A), the connector body has an outer circumferential surface, and a wave pattern formed on the outer circumferential surface, and wherein the connecting end section is welded to the outer circumferential surface of the connector body in step (E).

8. The method as claimed in Claim 5, wherein, in step (C), a length of the first fixed cover section along the longitudinal axis is greater than that of the second fixed cover section along the longitudinal axis.