further reduced. The plug 23 is provided with venting holes such that the air that is forced out of the interconnecting spaces 35 is forced out of the mould 25. However, venting holes may also be provided on other locations.

When the relative hot thermoplastic material 39 in fluid state, for instance having a temperature of 200-250 degrees Celsius, is brought into contact with the relatively cold solid elements 31, the thermoplastic material 39 in fluid state starts to cool and consequently solidifies, while the surface of the solid elements 31 is heated and consequently softens or melts. This results in a mixture M as shown in the detailed view to figure 4 of softened or partly melted solid elements 31 and partly solidified thermoplastic material 39.

After letting the thermoplastic material in the mould 25 solidify to a certain extend the mould 23 is removed, as shown in figure 5, by moving the half shells 15, 17 in the direction of arrows C away from the resulting infill 45.

As shown in figure 6, after full solidification of the thermoplastic material of the infill 45, partly melted solid elements 31 could still be recognisable in the material of the infill 45. In figure 5, it is indicated by means of arrows VI where the view of figure 6 is located.

It is also shown in figure 6 that an anti-corrosion coating 47, 49, or coating improving the adhesion between the outside surface 3a of steel wall 3 and the thermo-insulating coating 5, is provided between the outside surface 3a of steel wall 3 and the thermo-insulating coating 5 before coating the outside surface 3a of the steel wall 3 and before placing the mixture of solid elements 31 and thermoplastic material 39 in fluid state into the gap 13. The coating 47, 49 has a thickness b of about 500 µm.

In figure 7 a further alternative embodiment of the method according to the invention as shown in figures 1 to 6

Claims

1. Method for filling a gap in the coating of a pipeline coated with a coating, preferably a thermo-insulating coating, ~~said coating of the pipeline comprising a thermoplastic polymeric material, the method~~ comprising the steps of:

- placing in the gap a mixture of solid elements and a thermoplastic polymeric material in fluid state; and
- letting the thermoplastic polymeric material in fluid state solidify~~.~~

~~2. Method according to claim 1,~~
wherein

- the solid elements comprise a polymeric material~~.~~

~~3. Method according to claim 2,~~
wherein

- said polymeric material of the solid elements is a thermoplastic polymeric material, and wherein ~~preferably the solid elements consist of thermoplastic polymeric material.~~

~~4. Method according to claim 3,~~
~~wherein~~

- the thermoplastic polymeric material of the solid elements is the same as said thermoplastic polymeric material in fluid state.

2. Method according to claim 1,
wherein

- the solid elements consist of thermoplastic polymeric material.

~~5~~3. Method according to ~~any of~~ claim~~s~~ 1 or 2 ~~to 4~~,

wherein the step of placing in the gap a mixture of solid elements and a thermoplastic polymeric material in fluid state comprises:

- surrounding the gap by means of a mould;
- introducing in the mould the solid elements; and
- injecting into the mould the thermoplastic polymeric material in fluid state after introducing in the mould the solid elements.

~~6~~4. Method according to claim ~~5~~3, further comprising

- pre-bonding the solid elements by heating the solid elements before introducing the thermoplastic polymeric material in fluid state into the mould, wherein preferably the solid elements are heated after introducing the solid elements into the mould.

~~7~~5. Method according to claim ~~5~~ 3 or ~~6~~4, further comprising the step of:

- compacting the solid elements in the mould, preferably by vibrating the solid elements or by using assist hot air.

~~8~~6. Method according to any of claims ~~5~~ 3 to ~~7~~5, wherein

- the solid elements are designed to form a stack of solid elements once introduced into the mould wherein there are interconnected spaces between the solid elements throughout the stack that are configured to be filled with the thermoplastic polymeric material in fluid state once the thermoplastic polymeric material is introduced into the mould.

~~9~~7. Method according to ~~any of~~ claim~~s~~ 1 ~~to 4~~or 2,

wherein the step of placing in the gap a mixture of solid elements and a thermoplastic polymeric material in fluid state comprises:

- surrounding the gap by means of a mould;
- introducing into the mould the solid elements; and
- injecting into the mould the thermoplastic polymeric material in fluid state simultaneous with introducing in the mould the solid elements;

wherein preferably

- the solid elements are added to the thermoplastic polymeric material in fluid state before being introduced into the mould.

~~10~~8. Method according to any of claims ~~5~~ 3 to ~~9~~7, wherein a mixture of solid elements of different sizes and/or shapes is introduced into the mould.

~~11~~9. Method according to ~~any of~~ claims~~s~~ 1 ~~to~~ or ~~4~~2, comprising the steps of:

- placing the solid elements in the gap;
- surrounding the gap by means of the mould after placing the solid elements in the gap; and
- injecting into the mould the thermoplastic polymeric material in fluid state,

wherein preferably

- the solid elements are pre-bonded into a pre-form,

wherein more preferably

- in the pre-form the solid elements are pre-bonded such that there are interconnected spaces between the bonded solid element throughout the pre-form that are configured to be filled with the thermoplastic polymeric material in fluid state once the thermoplastic polymeric material is injected into the mould.

~~12~~10. Method according to any of claims 1 to ~~11~~9, wherein

- the solid elements comprise an adhesion promoter, preferably a heat activatable adhesion promoter, such as an outer layer of different material or exothermic chemicals; or wherein

- the solid elements have been surface treated to promote adhesion, preferably by plasma or corona treatment.

~~13~~11. Method according to any of the claims 1 to ~~12~~10, wherein

- the mixture of the solid elements and the thermoplastic material in fluid state contains 30 vol-% to 98 vol-%, preferably 70 vol-% to 95 vol-%, more preferably 80 vol-% to 92 vol-% solid elements.

~~14~~12. Method according to any of claims 1 to ~~13~~11, wherein

- the solid elements have the form of balls, rods, or blocks.

~~15~~13. Method according to any of claims 1 to ~~14~~12, wherein

- the solid elements each have a size along any line intersecting the solid elements comprised between 10 and 100 mm.

~~16~~14. Method according to any of claims 1 to ~~15~~13, wherein

- the coating of the pipeline has a thickness of more than 5 mm, preferably more than 10 mm.

~~17~~15. Method according to at least any of claims ~~5~~3, ~~9~~7, and ~~11~~9, wherein the thermoplastic polymeric material in

fluid state is injected into the mould by means of a barrel containing a screw, preferably by means of an accumulator connected to the barrel and to the mould.

~~18~~16. Method according to at least claims ~~9~~ 7 and ~~17~~15, wherein

- the solid elements are added to the thermoplastic polymeric material in fluid state between the barrel and the mould.

~~19~~17. Method according to any of the claims 1 to ~~18~~16, wherein

- the polymeric material of the solid elements and/or the thermoplastic polymeric material in fluid form comprises a polymer chosen from the group polypropylene (PP), polyethylene (PE), polyethylene terephtalate (PET), polyvinyl halide (such as polyvinyl fluoride (PVF), polyvinyl difluoride (PVDF), polyvinyl chloride (PVC), polyvinyl dichloride (PVDC), polytetrafluoroethylene (PTFE)), polyvinyl actetate (PVA), polyacrylonitrile butadiene styrene (ABS).

~~20~~18. Method according to any of the claims 1 to ~~19~~17, wherein

- the polymeric material of the solid elements and/or the thermoplastic polymeric material in fluid form is a homopolymer or a copolymer.

~~21~~19. Method according to at least any of claims ~~5~~3, ~~9~~7, ~~11~~9, wherein the solid elements are cooled before injecting the thermoplastic polymeric material in fluid state into the mould, preferably before being introduced into the mould.

~~22~~20. Method according to at least claims ~~6~~ 4 and ~~21~~19, wherein

- the solid elements are cooled before pre-bonding the solid elements.

~~23~~21. Method for field joint coating, comprising the steps of:

- providing two lengths of pipe coated with a coating, preferably a thermo-insulating coating, wherein at least one end of each length of pipe is uncoated along a certain part of the length of pipe;
- placing the uncoated ends against each other;
- applying a girth weld to join said ends to form a pipeline coated with a coating and with a gap in said coating surrounding the girth weld; and
- filling said gap by means of the method according to any of the claims 1 to ~~22~~20.

22. Method according to claim 21, wherein

- the coating of said two lengths of pipe comprises a thermoplastic polymeric material.

~~24~~23. Method according to claim ~~23~~22, wherein

- the thermoplastic polymeric material in fluid state that is placed in the gap is the same thermoplastic polymeric material as thermoplastic polymeric material of the coating of said two lengths of pipe.

~~25. Pipeline coated by means of the method according to any of the claims 1 to 24.~~

~~26. Pipeline coated with a coating, the coating comprising a thermoplastic polymeric material, preferably a~~

~~thermo-insulating coating, comprising a gap in said coating filled by a mixture of solid elements, preferably comprising a polymeric material, more preferably a thermoplastic polymeric material, and a thermoplastic polymeric material in fluid state.~~

~~27. Kit of parts for performing the method according to at least any of claims 5, 9, and 11, comprising~~

~~- a mould configured to surround the gap in the coating of the pipeline coated with a coating;~~

~~- solid elements configured to be introduced into the mould preferably comprising a polymeric material, more preferably a thermoplastic polymeric material;~~

~~- a device configured to melt thermoplastic material into fluid state and to introduce said thermoplastic polymeric material in fluid state into the mould; and~~

~~- thermoplastic polymeric material adapted to be melted into fluid state and to be introduced in fluid state into the mould by means of said device.~~