Patent claims

1. A lining hose for lining a pressure pipe to be renovated, comprising at least one first layer (1) and a second layer (2) which is adjacent the first layer (1), wherein the first layer (1) forms a fluid-tight and/or gas-tight diffusion barrier and wherein the second layer (2) is a textile sheet formation which is impregnated with a resin, has a thickness of at least 3 mm and is configured for a gapless and full-surfaced, non-positive bonding connection to an inner wall of the pressure pipe to be renovated, wherein the lining hose is flexible in a condition, in which the resin is not cured, and wherein the textile sheet formation and the resin are selected such that the lining hose forms a self-supporting pipe in a condition in which the resin is cured,
characterised in that
the textile sheet formation together with the resin forms a fibre-reinforced plastic, wherein the resin is or contains an unsaturated polyester resin or an unsaturated vinyl ester resin, wherein an acrylic resin or epoxy resin is additionally provided as an adhesive, which either as an adhesive layer (5) which in a cured condition is suitable for creating a bonding connection between the self-supporting pipe and an inner side of the pressure-pipe to be renovated, is deposited on a surface of the second layer (2) which is away from the first layer (1), or which together with the polyester resin or vinyl ester resin as a mixture forms the resin, with which the textile sheet formation of the second layer (2) in impregnated.

2. A lining hose according to claim 1, characterised in that the self-supporting pipe which is suitable for forming the lining hose, has a rated stiffness of at least SN 630 or a nominal stiffness of at least 630 N/m^2.

3. A lining hose according to one of the claims 1 or 2, characterised in that the first layer (1) which is provided for forming an inner surface of the renovated pressure pipe is arranged outside the second layer (2), so that the lining hose by way of reversing is suitable for incorporation into the pressure pipe to be renovated.

4. A lining hose according to one of the claims 1 or 2, characterised in that the first layer (1) which is provided for forming an inner surface of the renovated pressure pipe is arranged within the second layer (2), so that the lining hose by way of drawing in is suitable for incorporating into the pressure pipe to be renovated.

5. A lining hose according to one of the claims 1 to 4, characterised in that the resin, with which the textile sheet formation is impregnated, comprises a thickening agent and is thickened such that it has a viscosity of between 100000 mPas and 500000 mPas at 20°C.

6. A lining hose according to one of the claims 1 to 5, characterised in that the resin is selected such that in the cured condition it is suitable for creating a bonding connection between the self-supporting pipe and an inner side of the pressure pipe to be renovated.

7. A lining hose according to one of the claims 1 to 6, characterised in that the first layer (1) is impermeable to the resin or comprises a ply which is impermeable to the resin.

8. A lining hose according to one of the claims 1 to 7, characterised in that the first layer (1) is formed by a composite which comprises a low-diffusion film (3), as well as a fibre-containing ply (4) on a side of the film (3) which faces the second layer (2).

9. A lining hose according to one of the claims 1 to 8, characterised in that the first layer (1) is connected to the second layer (2) by way of the resin.

10. A lining hose according to one of the claims 1 to 9, characterised in that the resin is a resin which can be cured by way of UV radiation or other electromagnetic radiation.

11. A lining hose according to one of the claims 1 to 10, characterised in that the textile sheet formation is formed from glass fibres or carbon fibres or fibres of PES or PET.

12. A lining hose according to one of the claims 1 to 11, characterised in that the resin is styrene-free.

13. A renovated pressure pipe, comprising an old pipe (6) as well as a self-supporting pipe which is arranged within the old pipe (6) and is connected to an inner wall of the old pipe (6) by way of a complete-surfaced bonding connection, wherein the self-supporting pipe is formed from a lining hose according to one of the claims 1 to 12.

14. A method for renovating a pressure pipe amid the use of a lining hose according to one of the claims 1 to 12, wherein the method comprises the following steps:

- incorporating the lining hose into an old pipe (6) in a single working step,
- creating a bonding connection between the lining hose and an inner wall of the old pipe (6),
- curing the resin, so that the lining hose forms a self-supporting pipe which is connected to the old pipe (6) in a bonding manner over the whole surface.

15. A method according to claim 14, characterised in that the resin on impregnating the textile sheet formation has a viscosity of between 600 mPas and 25000 mPas.

16. A method according to one of the claims 14 or 15, characterised in that the resin comprises a thickening agent, so that after the impregnating of the textile sheet formation it thickens to a viscosity of between 100000 mPas and 500000 mPas.

Claims

1. A lining hose for lining a pressure pipe to be renovated, comprising at least one first layer (1) and a second layer (2) which is adjacent the first layer (1), wherein the first layer (1) forms a fluid-tight and/or gas-tight diffusion barrier and wherein the second layer (2) is a textile sheet formation which is impregnated with a resin, has a thickness of at least 3 mm and is configured for a gapless and full-surfaced, non-positive bonding connection to an inner wall of the pressure pipe to be renovated, wherein the lining hose is flexible in a condition in which the resin is not cured and wherein the textile sheet formation and the resin are selected such that the textile sheet formation together with the resin forms a fibre-reinforced plastic and that the lining hose forms a self-supporting pipe with a rated stiffness of at least SN 630 or a nominal stiffness of at least 630 N/m^2 in a condition in which the resin is cured, wherein the resin is or contains an unsaturated polyester resin or an unsaturated vinyl ester resin, wherein an acrylic resin or epoxy resin is additionally provided as an adhesive, which either as an adhesive layer (5) which in a cured condition is suitable for creating a bonding connection between the self-supporting pipe and an inner side of the pressure-pipe to be renovated, is deposited on a surface of the second layer (2) which is away from the first layer (1), or which together with the polyester resin or vinyl ester resin as a mixture forms the resin, with which the textile sheet formation of the second layer (2) in impregnated.

2. A lining hose according to claim 1, characterised in that the first layer (1) which is provided for forming an inner surface of the renovated pressure pipe is arranged outside the second layer (2), so that the lining hose by way of reversing is suitable for incorporation into the pressure pipe to be renovated.

3. A lining hose according to claim 1, characterised in that the first layer (1) which is provided for forming an inner surface of the renovated pressure pipe is arranged within the second layer (2), so that the lining hose by way of drawing in is suitable for incorporating into the pressure pipe to be renovated.

4. A lining hose according to one of the claims 1 to 3, characterised in that

the resin, with which the textile sheet formation is impregnated, comprises a thickening agent and is thickened such that it has a viscosity of between 100000 mPas and 500000 mPas at 20°C.

5. A lining hose according to one of the claims 1 to 4, characterised in that the resin is selected such that in the cured condition it is suitable for creating a bonding connection between the self-supporting pipe and an inner side of the pressure pipe to be renovated.

6. A lining hose according to one of the claims 1 to 5, characterised in that the first layer (1) is impermeable to the resin or comprises a ply which is impermeable to the resin.

7. A lining hose according to one of the claims 1 to 6, characterised in that the first layer (1) is formed by a composite which comprises a low-diffusion film (3), as well as a fibre-containing ply (4) on a side of the film (3) which faces the second layer (2).

8. A lining hose according to one of the claims 1 to 7, characterised in that the first layer (1) is connected to the second layer (2) by way of the resin.

9. A lining hose according to one of the claims 1 to 8, characterised in that the resin is a resin which can be cured by way of UV radiation or other electromagnetic radiation.

10. A lining hose according to one of the claims 1 to 9, characterised in that the textile sheet formation is formed from glass fibres or carbon fibres or fibres of PET.

11. A lining hose according to one of the claims 1 to 10, characterised in that the resin is styrene-free.

12. A renovated pressure pipe, comprising an old pipe (6) as well as a self-supporting pipe which is arranged within the old pipe (6) and is connected to an inner wall of the old pipe (6) by way of a complete-surfaced bonding connection,

wherein the self-supporting pipe is formed from a lining hose according to one of the claims 1 to 11.

13. A method for renovating a pressure pipe amid the use of a lining hose according to one of the claims 1 to 11, wherein the method comprises the following steps:

- incorporating the lining hose into an old pipe (6) in a single working step,
- creating a bonding connection between the lining hose and an inner wall of the old pipe (6),
- curing the resin, so that the lining hose forms a self-supporting pipe which is connected to the old pipe (6) in a bonding manner over the whole surface.

14. A method according to claim 13, characterised in that the resin on impregnating the textile sheet formation has a viscosity of between 600 mPas and 25000 mPas.

15. A method according to one of the claims 13 or 14, characterised in that the resin comprises a thickening agent, so that after the impregnating of the textile sheet formation it thickens to a viscosity of between 100000 mPas and 500000 mPas.