5. Method according to any of claims 1 – 4, c h a r a c t e r i z e d in that pressure medium is brought into the bellows means that function as sealing means (31, 33) via pressure-medium channels (28, 29) arranged in the body (24) of the device.

6. Method according to any of claims 1 – 5, c h a r a c t e r i z e d in that the pipe joint to be tested is formed by using a sleeve part (4), which comprises a chamber space, into which the opposing butt ends (5, 6) of the pipe parts (2, 3) to be connected together are placed essentially against each other such that the sleeve part (4) extends a distance from the point of connection of the pipe parts (2,3) to be connected together on top of both pipe parts (2, 3), which sleeve part (4) comprises heating means (7), such as resistance wires, as a consequence of the heating of which resistance wires a joint forms between the sleeve part (4) and the pipe parts (2, 3), and in that an inspection aperture (8) is formed in the sleeve part (4) through the wall of the sleeve part from the outside to the inside at a point in which the positioning of the butt end surfaces (5, 6) placed essentially against each other of the pipe parts (2, 3) to be connected together can be verified, and in that the inspection aperture (8) is fitted for the purpose of a pressure-medium hose or a measuring sensor, such as a temperature sensor or a pressure measuring sensor.

7. Apparatus for testing and/or for pressure testing the tightness of the joints of the transfer piping of a pneumatic pipe transport system for waste, c h a r a c t e r i z e d in that the device is fitted to be inserted into and extracted from the piping, which device comprises a first wall part (21), which comprises first sealing means (31), and a second wall part (22), which comprises second sealing means (33), in which case the pipe section to be tested, more particularly the point of connection, remains between the first wall part (21) and the second wall part (22), in which case the device comprises means for bringing the sealing means (31) of the first wall part to be tighter to the inside surface (14) of the pipe and means for bringing the sealing means (33) of the second wall part (22) to be tighter to the inside surface (15) of the pipe, and means for bringing pressure medium into the chamber space (23)

Claims

1. Method for testing and/or for pressure testing the tightness of the joints of the transfer piping of a pneumatic pipe transport system for wastes, in which method the pipe section to be tested is separated inside the pipe from the other piping and pressure medium is conducted into the section, and leaks and/or the pressure of the pressure medium are monitored on the section of pipe to be tested, c h a r a c t e r i z e d in that in the method a device is taken inside the piping, which device comprises a first wall part (21), which comprises first sealing means (31), and a second wall part (22), which comprises second sealing means (33), in which case the pipe section to be tested, more particularly the point of connection, remains between the first wall part (21) and the second wall part (22), in which case the sealing means (31) of the first wall part are brought to be tighter to the inside surface (14) of the pipe and the sealing means (33) of the second wall part (22) are brought to be tighter to the inside surface (15) of the pipe, and pressure medium is brought into the chamber space (23) bounded by the first wall part (21) and the second wall part (22) as well as by the inside surface of the pipe section, and the pressure or a change of pressure is measured or a possible sealing defect of the pipe section is otherwise indicated.

2. Method according to claim 1, c h a r a c t e r i z e d in that the sealing means (31, 33) of the first wall part and/or of the second wall part is a pressure-medium operated bellows means, which when pressurized expands from a first position to a second position in the radial direction and becomes tighter to the inner surface of the pipe.

3. Method according to claim 1 or 2, c h a r a c t e r i z e d in that pressure medium is brought into the chamber space (23) from an aperture (12) formed in the wall of the pipe.

4. Method according to any of claims 1 – 3, c h a r a c t e r i z e d in that pressure medium is brought into the chamber space (23) via a pressure-medium channel (27) arranged in the body (24) of the device.

bounded by the first wall part (21) and the second wall part (22) as well as by the inside surface of the pipe section, and means for measuring the pressure or a change in pressure of the chamber space (23), or for indicating in some other manner a possible sealing defect of the pipe section.

8. Apparatus according to claim 7, c h a r a c t e r i z e d in that the sealing means (31, 33) of the first wall part (21) and/or of the second wall part (22) is a pressure-medium operated bellows means, which when pressurized expands from a first position to a second position in the radial direction and becomes tighter to the inner surface of the pipe.

9. Apparatus according to claim 7 or 8, c h a r a c t e r i z e d in that the device comprises pressure-medium channels (28, 29) arranged in the body (24) of the device for bringing pressure medium to the bellows means that function as sealing means (31, 33), into the chambers (32, 34) of said bellows means.

10. Apparatus according to any of claims 7 – 9, c h a r a c t e r i z e d in that a pressure-medium channel (27) is arranged in the body (24) of the device for bringing pressure medium into the chamber space (23).

11. Apparatus according to any of claims 7 – 10, c h a r a c t e r i z e d in that pressure medium is brought into the chamber space (23) from an aperture (12) formed in the wall of the pipe.

12. Apparatus according to any of claims 7 – 11, c h a r a c t e r i z e d in that in connection with the wall part (21, 22) at a distance from each other are supporting walls (35, 36; 37, 38) in the transverse direction of the pipe part, into the space between which supporting walls a bellows means functioning as a sealing means (31, 33) is arranged.

Claims

1. Method for testing and/or for pressure testing the tightness of the joints of the transfer piping of a pneumatic pipe transport system for wastes, in which method the pipe section to be tested is separated inside the pipe from the other piping and pressure medium is conducted into the section, and leaks and/or the pressure of the pressure medium are monitored on the section of pipe to be tested, in which a device is taken inside the piping, which device comprises a first wall part, which comprises first sealing means, and a second wall part, which comprises second sealing means, in which case the pipe section to be tested, more particularly the point of connection, remains between the first wall part and the second wall part, in which case the sealing means of the first wall part are brought to be tighter to the inside surface of the pipe and the sealing means of the second wall part are brought to be tighter to the inside surface of the pipe, and pressure medium is brought into the chamber space (23) bounded by the first wall part and the second wall part as well as by the inside surface of the pipe section, c h a r a c t e r i z e d in that the sealing means of the first wall part and/or of the second wall part is a pressure-medium operated bellows means, which when pressurized by conducting pressure medium to a chamber expands from a first position to a second position in the radial direction and becomes tighter to the inner surface of the pipe, and in the method the pressure or a change of pressure is measured or a possible sealing defect of the pipe section is otherwise indicated.

2. Method according to claim 1, characterized in that in connection with the first wall part and/or with the second wall part at a distance from each other are arranged supporting walls in the transverse direction of the pipe part, and into the space between the supporting walls is arranged the sealing means that is the bellows means so that the bellows means in the first position, in the retracted position, is to some extent closer in the radial direction to the body of the device than the outer edges of the supporting walls and that the diameter of the supporting walls is to some extent smaller than the internal diameter of the pipe part so that the outer edges of the supporting walls extend to

closer to the inside surface of the pipe than the bellows means and that in the first position of the bellows means the device is arranged inside the pipe part and extracted therefrom so that the sealing means do not hamper the placing of the device into its position..

3. Method according to claim 1 or 2, characterized in that pressure medium is brought into the chamber space from an aperture formed in the wall of the pipe.

4. Method according to any of claims 1 – 3, characterized in that pressure medium is brought into the chamber space via a pressure-medium channel arranged in the body of the device.

5. Method according to any of claims 1 – 4, characterized in that pressure medium is brought into the bellows means that function as sealing means via pressure-medium channels arranged in the body of the device.

6. Method according to any of claims 1 – 5, characterized d in that the pipe joint to be tested is formed by using a sleeve part, which comprises a chamber space, into which the opposing butt ends of the pipe parts to be connected together are placed essentially against each other such that the sleeve part extends a distance from the point of connection of the pipe parts to be connected together on top of both pipe parts, which sleeve part comprises heating means, such as resistance wires, as a consequence of the heating of which resistance wires a joint forms between the sleeve part and the pipe parts, and in that an inspection aperture is formed in the sleeve part through the wall of the sleeve part from the outside to the inside at a point in which the positioning of the butt end surfaces placed essentially against each other of the pipe parts to be connected together can be verified, and in that the inspection aperture is fitted for the purpose of a pressure-medium hose or a measuring sensor, such as a temperature sensor or a pressure measuring sensor.

7. Apparatus for testing and/or for pressure testing the tightness of the joints of the transfer piping of a pneumatic pipe transport system for

waste, which apparatus comprises a device fitted to be inserted into and extracted from the piping, which device comprises a first wall part, which comprises first sealing means, and a second wall part, which comprises second sealing means, in which case the pipe section to be tested, more particularly the point of connection, remains between the first wall part and the second wall part, in which case the device comprises means for bringing the sealing means of the first wall part to be tighter to the inside surface of the pipe and means for bringing the sealing means of the second wall part to be tighter to the inside surface of the pipe, and means for bringing pressure medium into the chamber space bounded by the first wall part and the second wall part as well as by the inside surface of the pipe section, characterized in that the sealing means of the first wall part and/or of the second wall part is a pressure-medium operated bellows means, which when pressurized expands from a first position to a second position in the radial direction and becomes tighter to the inner surface of the pipe, and that the apparatus comprises means for measuring the pressure or a change in pressure of the chamber space, or for indicating in some other manner a possible sealing defect of the pipe section.

8. Apparatus according to claim 7, characterized in that in connection with the first wall part and/or with the second wall part at a distance from each other are supporting walls in the transverse direction of the pipe part, and into the space between the supporting walls is arranged the sealing means that is the bellows means so that the bellows means in the first position, in the retracted position, is to some extent closer in the radial direction to the body of the device than the outer edges of the supporting walls and that the diameter of the supporting walls is to some extent smaller than the internal diameter of the pipe part so that the outer edges of the supporting walls extend to closer to the inside surface of the pipe than the bellows means.

9. Apparatus according to claim 7 or 8, characterized in that the device comprises pressure-medium channels arranged in the body of the device for bringing pressure medium to the bellows means that function as sealing means, into the chambers of said bellows means.

10. Apparatus according to any of claims 7 – 9, characterized in that a pressure-medium channel is arranged in the body of the device for bringing pressure medium into the chamber space.

11. Apparatus according to any of claims 7 – 10, characterized in that pressure medium is brought into the chamber space from an aperture formed in the wall of the pipe.