Patent Claims

1. Acceleration protective suit for pilots of high-performance aircraft with a covering (4) made of stretch-resistant textile material, where at least parts of covering (4) are designed with two walls and thus form compartments (6) on the inner and outer side of the covering (4), where air tubes (2) are inserted in the compartment, consisting of flexible and stretchable plastic, and these air tubes (2) can be supplied with acceleration-dependent air pressures and thus can be stretched as bladders, characterised in that the suit is equipped with at least two different types of compartments (6) with air tubes (2) for forming air bladders, namely the first type with compartments (6) acting as "spacer" (10), which has loose air tube inside the compartment, so that contour can be formed during compressed air supply with the air tube (2), which in turn differs from the compartment containing it, whereby the volume of the air tube (2) inside the compartment (6) is smaller than the inner volume of the compartment (6) and the second type with compartments (6) acting as "muscles" (9), where the compartments (6) are clung inside with tube material in their inner side, so that the compartments and air tubes always have the same contour, and in addition there is a pressure bladder (12) in the protective suit, which is located in the abdominal area of the wearer of the acceleration protective suit and to which all air tubes (9, 10) are connected, communicating freely with all air tubes in all compartments (6), whereby the pressure bladder (12) has at least one main valve (13) to which the compressed air supply of the acceleration protective suit can be connected and which is set up in such a way that it closes, if the supply air pressure and/or pressure in cockpit drops.

2. Acceleration protective suit according to claim 1, *characterised in that*, in case of compartments acting as "muscles", these compartments (6) are made of the same inelastic material like the covering (4), whereby the "muscles" (9) are restricted in their maximal volume and in case of compartments acting as "Spacer" the inner side of the compartments (6) is made of stretchable elastic material, so that the "spacer" (10) can be stretched as part of elasticity of the compartments.

3. Acceleration protective suit according to one of the previous claims, characterised in that, the compartments (6) for the air tubes (2) meant to act as spacer have closed, thin-walled bladders (25) at the sides positioned against the outer side of the protective suit to compensate for the reduced barometric pressure.

4. Acceleration protective suit according to one of the previous claims, *characterised in that*, the muscles (9) and spacers (10) of the acceleration protective suit stretch over the following body parts to be covered by the protective suit: Arms, legs, thorax, spine and stomach.

5. Acceleration protective suit according to one of the previous claims, *characterised in that*, the protective suit includes an electrical fan (23) for sucking in ambient air and supplying the same to the ventilation veins (21), which are laid separately in the protective suit and ventilation veins (21) with a number of holes (22) with closing lips are placed in the compartments that act as "spacers", through which air can be supplied to the inner side of the compartments by the fan (23) over separate ventilation veins (21), where the air can be diffused by the compartment material, for cooling the body surface of the wearer of the acceleration protective suit.

6. Acceleration protective suit according to one of the previous claims 1 to 4, *characterised in that*, the protective suit includes an electrical fan (23) for sucking in ambient air and supplying the same to the ventilation veins (21), which are laid separately in the protective suit and ventilation veins (21) with a number of holes (22) with closing lips are integrated in the compartments that act as "muscles", through which air can supplied to the inner side of the compartments by the fan (23) over separate ventilation veins, where the air can be diffused by the compartment material, for cooling the body surface of the wearer of the acceleration protective suit.

7. Acceleration protective suit according to one of claims 1 to 4, *characterised in that*, the protective suit includes an electrical fan (23), for sucking in ambient air and supplying the same to the ventilation veins (21) that are laid separately in the protective suit, and that ventilation veins (21) with a number of holes (22) with closing lips are placed in the compartments acting as "spacers" along air tubes, whereby air can be delivered into the inner side of the compartment via the ventilation veins (21) when there is increased air pressure, whereby air can be diffused by the compartment material for cooling the body surface of the wearer of the protective suit. Likewise there are ventilation veins (21) with a number of holes (22) with closing lips in the compartments acting as "muscles" along the air tubes, which are integrated opposite to the inner side of the compartments, where air can be delivered via ventilation veins when there is increased air pressure and which can be diffused by the adjacent compartment material for cooling the body surface of the wearer of the protective suit.

8. Acceleration protective suit according to one of the previous claims, *characterised in that*, at least 40% of the compartments located on the surface of the compartment sides of the acceleration protective suit adjacent to the body are considered as compartments acting as "spacers" and at least 40% are compartments acting as "muscles".

9. Acceleration protective suit according to one of the previous claims, *characterised in that*, half of the compartments located on the surface of the compartment sides of the acceleration protective suit adjacent to the body are considered as compartments acting as "spacers" and half are compartments acting as "muscles".

10. Acceleration protective suit according to one the previous claims, *characterised in that*, the pressure bladder (12) is the supplier of compressed air to the air pockets (16) and also has a device to which the air bladder (12) is connected and with which a clocked or cycled feeding for pumping up of the air pockets (16) can be achieved.

11. Acceleration protective suit according to claim 10, *characterised in that*, the device for clocked pumping of air pockets (16) connected to the pressure bladder (12) interacts with compartments of the first type, where the compartments stretch from the feet up to the throat section and which has veins partially filled with water and multiple air pockets, which are fixed on the inside in the water veins and can be filled with compressed air sequentially from bottom to top, so that water can be pushed from bottom to top and which builds a rhythmically increasing and, in the case of sequential or total venting of the air pockets, decreasing pressure in the acceleration protective suit, for relieving circulation or for increasing of the electrolyte level of the heart of the wearer.

12. Acceleration protective suit according to one of the previous claim, *characterised in that*, the air supply of the ventilation veins (21) are supplied by the bladder (12).

13. Acceleration protective suit according to one of the previous claim, *characterised in that*, the pressure bladder (12) connects downstream to another check valve and upstream to ventilation veins (21), which closes if there is a sudden pressure loss in the supply line of the aircraft and/or in the cockpit atmosphere.

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2. Acceleration protective suit according to claim 1, characterised in that, in case of compartments acting as "muscles", these compartments (6) are made of the same inelastic material like the covering (4), whereby the "muscles" (9) are restricted in their maximal volume and in case of compartments acting as "Spacers" the inner side of the compartments (6) is made of stretchable elastic material, so that the "spacers" (10) can be stretched as part of the elasticity of the compartments.

3. Acceleration protective suit according to one of the previous claims, characterised in that, the compartments (6) for the air tubes (2) meant to act as spacer have closed, thin-walled bladders (25) at the sides positioned against the outer side of the protective suit to compensate for the reduced barometric pressure.

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7. Acceleration protective suit according to one of claims 1 to 4, characterised in that, the protective suit includes an electrical fan (23) for sucking in ambient air and supplying the same to the ventilation veins (21) that are laid separately in the protective suit, and that ventilation veins (21) with a number of holes (22) with closing lips are placed in the compartments acting as "spacers" along air

tubes, whereby air can be delivered into the inner side of the compartment via the ventilation veins (21) when there is increased air pressure, whereby air can be diffused by the compartment material for cooling the body surface of the wearer of the protective suit, and likewise there are ventilation veins (21) with a number of holes (22) with closing lips in the compartments acting as "muscles" along the air tubes, which are integrated opposite to the inner side of the compartments, where air can be delivered via ventilation veins when there is increased air pressure and which can be diffused by the adjacent compartment material for cooling the body surface of the wearer of the protective suit.

8. Acceleration protective suit according to one of the previous claims, characterised in that, at least 40% of the compartments located on the surface of the compartment sides of the acceleration protective suit adjacent to the body are considered as compartments acting as spacers" and at least 40% are compartments acting as "muscles".

9. Acceleration protective suit according to one of the previous claims, characterised in that, half of the compartments located on the surface of the compartment sides of the acceleration protective suit adjacent to the body are considered as compartments acting as "spacers" and half are compartments acting as muscles".

10. Acceleration protective suit according to one the previous claims, characterised in that, the pressure bladder (12) is the supplier of compressed air to the air pockets (16) and also has a device to which the air bladder (12) is connected and with which a clocked or cycled feeding for pumping up of the air pockets (16) can be achieved.

11. Acceleration protective suit according to claim 10, characterised in that, the device for clocked pumping of air pockets (16) connected to the pressure bladder (12) interacts with compartments of the first type, where the compartments stretch from the feet up to the throat section and which has veins partially filled with water and multiple air pockets, which are fixed on the inside in the water veins and can be filled with compressed air sequentially from bottom to top, so that water can be pushed from bottom to top which builds up a rhythmically increasing pressure, and in the case of sequential or total venting

of the air pockets, a decreasing pressure in the acceleration protective suit, for relieving circulation or for increasing of the electrolyte level of the heart of the wearer.

12. Acceleration protective suit according to one of the previous claim, characterised in that, the air supply of the ventilation veins (21) is supplied by the bladder (12).

13. Acceleration protective suit according to one of the previous claim, characterised in that, the pressure bladder (12) connects downstream to another check valve and upstream to ventilation veins (21), which closes if there is a sudden pressure loss in the supply line of the aircraft and/or in the cockpit atmosphere.