Claims

1. Method ~~Device~~ for additive manufacturing by extrusion of an~~of~~ anisotropic fibrous concrete, comprising a multi-axis robot (1) having a head (3) bearing an extrusion assembly (5) including an extrusion nozzle (23) for extruding a bead of mortar (31) jointly with continuous fibres (9) oriented along the longitudinal direction of this bead and means for the injection in the mortar (31) of a setting accelerator additive (34), the injection of the setting accelerator additive (39) causing an at least sixfold multiplication of the shear threshold of the mortar (31) between the region of injection of the setting accelerator additive (39) and the end (29) of the nozzle (23).

2. Method~~Device~~ according to claim 1, wherein the extrusion assembly (5) comprises a mortar mixer (17) situated upstream of the extrusion nozzle (23).

3. Method~~Device~~ according to claim 2, wherein said extrusion assembly (5) comprises a constriction area (21) situated between said mixer (17) and said extrusion nozzle (23).

~~4. Device according to claim 1, wherein the extrusion assembly (5) comprises means for injecting into the mortar (31) a setting accelerator additive (34).~~

4. ~~5.~~ Method~~Device~~ according to claim~~s~~ 3 ~~and 4~~, wherein the means for injecting the setting accelerating additive (34) comprise~~comprising~~ an injection head (39) which is situated between the mixer (17) and the constriction area (21) for injecting the setting accelerator additive (34).

5. ~~6.~~ Method~~Device~~ according to claim 1, wherein said extrusion nozzle (23) comprises radial bridges (33) provided with orifices (27) for introducing said fibres (9).

6. ~~7.~~ Method~~Device~~ according to claim 1, wherein said extrusion nozzle (23) comprises peripheral orifices (27) for introducing said fibres (9).

7. ~~8.~~ Method~~Device~~ according to claim 1, comprising a magazine (13) of coils (11) on which said fibres (9) are wound, and members for guiding (15a, 15b, 15c) said fibres (9) from said coils (11) to said extrusion nozzle (23).

8. ~~9. Installation comprising a device~~ according to claim 2, comprising the provision of ~~and~~ a system for supplying and pumping (7) said mortar (31) to said mixer (17).

9. ~~10. Additive manufacturing method implementing a device~~ according to claim 1, wherein it is the adherence of the fibres (9) with the mortar (31) that drives these fibres into the bead.

10. ~~11. Additive manufacturing method implementing a device~~ according to claim 1, wherein said fibres (9) are subjected to a surface treatment and/or to a mechanical treatment before extrusion with said mortar (31).

11. ~~12. Additive manufacturing method implementing a device~~ according to claim 1, wherein ~~flexurally flexible~~ fibres (9) are used that are introduced into the heart of said mortar (31).

12. ~~13. Additive manufacturing method implementing a device~~ according to claim 1, wherein ~~flexurally rigid~~ fibres (9) are used that are introduced into the periphery of said mortar (31).

13. ~~14. Additive manufacturing method implementing a device~~ according to claim 1, wherein said fibres (9) are chosen from the group comprising fibres made of carbon, metal, glass, basalt, polymer, unitary or stranded.

~~15. Method implementing a device according to claim 3, wherein the injection of the setting accelerator additive (39) causes an at least sixfold multiplication of the shear threshold of the mortar (31) between the region of injection of the setting accelerator additive (39) and the end (29) of the nozzle (23).~~