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A METHOD FOR MANUFACTURING A PLASTIC COMPOSITE BEAM OR PILLAR.

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Description

The invention relates to a method for manufacturing a steel-reinforced plastic composite beam or pillar.

In prior art, beams and pillars to be manufactured of plastic composites are known, in which beams or pillars e.g. glass fiber or carbon fiber is used as a reinforcement. However, such known beams have not been sufficiently rigid for all applications. Beams or pillars comprising reinforced plastic bodies having steel reinforcements are known and their preparation disclosed in DE-A-1956826.

According to the invention there is provided a method for manufacturing a steel-reinforced plastic composite beam or pillar, characterized in that the plastic composite beam or pillar (20) is manufactured by placing steel reinforcements (30, 40) in the beam or pillar (20) by utilizing the pultrusion technique at the same time as the beam or pillar (20) is formed by pultrusion.

The pultrusion technique is, for example, described in US-A-4301201 and US-A-4394338.

The cross-sectional area of the beam produced according to the invention can in certain applications be dimensioned smaller than that of a conventional beam, whereby material is saved and also material costs are reduced, since the rigidity of the beam increases owing to the additional requirements.

The inner section of the beam or pillar can be filled with a poly-urethane, a cellular polystyrene or concrete filling for preventing the buckling of the plane-like surfaces of the cross-section during bending stresses.

The invention also provides more applications for plastic composite beams or pillars due to their additional rigidity, and the steel parts make the fixing of profiles with screw joints possible. The solution according to the invention can also replace e.g. corresponding reinforced-concrete, wood or aluminium structures.

The invention is next described in more detail with reference to the figures of the accompanying drawing, in which

Fig. 1 shows schematically a straight beam or pillar,

Fig. 2 shows schematically a cross-section B-B of Fig. 1 according to one embodiment, and

Fig. 3 shows a cross-section according to a further embodiment of the inventive beam, e.g. a section B-B of Fig. 1.

In Fig. 1 is shown a straight beam or pillar 20, whose ends are supported via supports 12. The additional reinforcements are marked with dotted lines indicated by a reference number 30.

In the inventive example of Fig. 2, a plastic composite beam or pillar 20 comprises a reinforced-plastic body and as an inner material 32 polyurethane or cellular polystyrene. The plastic composite beam or

pillar 20 according to the embodiment shown in Fig. 2 is manufactured by utilizing the pultrusion technique in such a way that the steel reinforcements 30 are added to the plastic composite beam or pillar 20 in connection with the pultrusion.

Fig. 3 shows a plastic composite beam or pillar 20, in which the steel reinforcements are in the form of steel plates 40. The remaining structure of the plastic composite beam or pillar 20 corresponds to that shown in the other figures in such a way that the reinforced-plastic body is indicated by the reference number 31 and the inner section of the beam, made of polyurethane or cellular polystyrene, is indicated by the reference number 32.

The invention has above been described only with reference to its certain preferred embodiments. However, the intention is in no way to limit the invention to these examples, but many changes and modifications are possible within the inventive idea defined in the following patent claims.

Claims

1. A method for manufacturing a steel-reinforced plastic composite beam or pillar, characterized in that the plastic composite beam or pillar (20) is manufactured by placing steel reinforcements (30, 40) in the beam or pillar (20) by utilizing the pultrusion technique at the same time as the beam or pillar (20) is formed by pultrusion.
2. A method according to claim 1, characterized in that a bar (30), e.g. a corrugated bar, is used as the steel reinforcement.
3. A method according to claim 1, characterized in that a steel plate (40) is used as the steel reinforcement.

Patentansprüche

1. Verfahren zur Herstellung eines Balkens oder einer Säule in Form eines stahlverstärkten Verbundstoffes auf Kunststoffbasis, dadurch gekennzeichnet, daß der Kunststoffverbundbalken oder die Kunststoffverbundsäule (20) hergestellt wird indem man Stahlverstärkungen (30, 40), unter Anwendung der Pultrusionstechnik, in den Balken oder in die Säule (20) hineinbringt in demselben Moment wo der Balken oder die Säule (20) durch Pultrusion geformt wird.
2. Verfahren gemäß Anspruch 1, dadurch gekennzeichnet, daß ein Stab (30), zum Beispiel ein gerippter Stab, als die Stahlverstärkung benutzt wird.

3. Verfahren gemäß Anspruch 1, dadurch gekennzeichnet, daß eine Stahlplatte (40) als die Stahlverstärkung benutzt wird.

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Revendications

1. Procédé de fabrication d'une poutre ou d'un pilier en plastique composite renforcé à l'acier, caractérisé en ce que la poutre ou le pilier en plastique composite (20) est fabriqué en intégrant les renforcements en acier (30, 40) par la voie de la pultrusion dans la poutre ou dans le pilier (20) en même temps que la poutre ou le pilier (20) est formé par pultrusion. 10 15
2. Procédé suivant la revendication 1, caractérisé en ce qu'une barre (30), par exemple une barre d'armature crénelée, est utilisée en tant qu'acier de renforcement. 20
3. Procédé suivant la revendication 1, caractérisé en ce qu'une plaque en acier (40) est utilisée en tant qu'acier de renforcement. 25

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