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复合材料缠绕后置处理方法研究

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Research on Post Disposal of Composite Winding

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摘要

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摘要 利用芯模表面的离散落纱点, 依据空间几何和微分几何理论, 针对纤维缠绕过程提出纤维缠绕出纱点轨迹的网格后置处理方法。该方法首先通过纤维缠绕轨迹的落纱点, 以及缠绕过程中等悬纱长约束条件来求取出纱点, 然后通过计算相邻出纱点的各坐标差得到机床运动轨迹, 最后分别通过对三通管和组合回转体的缠绕成型实验, 来验证该网格后置处理方法在处理非回转体和回转体缠绕出纱点轨迹的可行性和准确性。

关键词: 网格后置处理 三通管 组合回转体 缠绕 异型件

Abstract: According to the theories of differential geometry and space geometry, this article proposes a mesh post disposal method of the winding trajectory by applying the doffing points on the mould surface aiming in the fiber winding process. First, the spit points are obtained by the same distance between the spit point and its corresponding doffing point, and then, the machine trajectory can be worked out depending on the coordinate difference between the neighboring spit points. Finally, to validate the feasibility of the mesh post disposal method in disposing the trajectories of both gyration mould and non gyration mould, two fiber winding experiments on tee shape and combination shape are carried out. Both winding trajectories are realized well by the NC code programmed according to the mesh post disposal.

Keywords: mesh post disposal tee shape combination gyration shape winding abnormal form mould

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