Attribute based selection of thermoplastic resin for vacuum infusion process: A decision making methodology

The composite industry looks toward a new material system (resins) based on thermoplastic polymers for the vacuum infusion process, similar to the infusion process using thermosetting polymers. A large number of thermoplastics are available in the market with a variety of properties suitable for different engineering applications, and few of those are available in a not yet polymerised form suitable for resin infusion. The proper selection of a new resin system among these thermoplastic polymers is a concern for manufacturers in the current scenario and a special mathematical tool would be beneficial. In this paper, the authors introduce a new decision making tool for resin selection based on significant attributes. This article provides a broad overview of suitable thermoplastic material systems for vacuum infusion process available in today’s market. An illustrative example—resin selection for vacuum infused of a wind turbine blade—is shown to demonstrate the intricacies involved in the proposed methodology for resin selection.

General information
State: Published
Organisations: Risø National Laboratory for Sustainable Energy, Materials Research Division, Composites and Materials Mechanics
Contributors: Prabhakaran, R. D., Lystrup, A., Legstrup Andersen, T.
Pages: 31-52
Publication date: 2011
Peer-reviewed: Yes

Publication information
Journal: International Journal of Manufacturing, Materials, and Mechanical Engineering
Volume: 1
Issue number: 3
ISSN (Print): 2156-1680
Ratings:
Web of Science (2019): Indexed yes
Scopus rating (2017): CiteScore 0.62 SJR 0.272 SNIP 0.361
Web of Science (2017): Indexed yes
Scopus rating (2016): CiteScore 0.41 SJR 0.208 SNIP 0.189
Scopus rating (2015): CiteScore 0.38 SJR 0.168 SNIP 0.203
Scopus rating (2014): CiteScore 0.27 SJR 0.163 SNIP 0.267
Scopus rating (2013): CiteScore 0.3 SJR 0.197 SNIP 0.133
Scopus rating (2012): SJR 0.143 SNIP 0.088
Original language: English
Keywords: Materials and energy storage, Light strong materials for energy purposes
DOIs: 10.4018/ijmmme.2011070104
Source: orbit
Source-ID: 268797
Research output: Research - peer-review > Journal article – Annual report year: 2011