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"Gheorghe Asachi" Technical University of Iasi, Romania

QUALITY FUNCTION DEPLOYMENT (QFD) BASED EXPERT SYSTEM FOR RENEWABLE ENERGY STRUCTURES. A WIND TURBINE CASE STUDY

Monica Leba[1*], Andreea Ionica[1], Remus Dobra[1], Vlad Mihai Pasculescu[2]

[1]*University of Petrosani, 20 Universitatii Str., Petrosani, Romania*
[2]*INCD INSEMEX, 32-34 G-ral Vasile Milea Str., Petrosani, Romania*

Abstract

Most of the European countries have implemented large renewable energy systems that use wind energy, solar energy and water energy. In our country only water energy was used for many years. In the last period there is an obvious orientation towards the use of all types of renewable energy systems, which are both efficient and environmental friendly. The objective of our paper is to design an instrument for the evaluation of the best suited renewable energy system for different areas and type of use. Generally, the evaluation is made using some kind of expert system (ES) based on general rules. The novelty of our approach is the integration of the Quality Function Deployment (QFD) method in this evaluation process. The main advantage of the use of QFD method is that it offers a means to globally evaluate the best suited renewable energy system based on the specified requirements and the quality characteristics of the available systems. The QFD based expert system is validated by evaluating the best suited types of wind turbines for several different areas.

Key words: expert system, QFD, quality evaluation, renewable energy, wind turbine

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[*] Author to whom all correspondence should be addressed: E-mail: monicaleba@yahoo.com; Phone: + 40 736980865