A taxonomy and review of the multiple criteria decision-making literature in chemical engineering

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Abstract: Many situations and problems in the chemical and related industries involve complex decision-making demanding discerning abilities and methods. Multiple criteria decision-making (MCDM) tools and methods have been widely used to solve chemical engineering (CE) problems that involve conflicting and multiple objectives of diverse types. The main aims of this contribution are to:

1. Explain and compare the most common MCDM methods
2. Present and classify more than 300 published papers related to the application of MCDM in CE.

The various MCDM publications are classified based on the application area, decision context, and journal and year of publication to highlight the trends over the past three decades. This article can serve as a complete state-of-the-art reference for chemical engineers and it highlights the potential applications of MCDM in CE problems.

Keywords: multicriteria decision-making; MCDM; decision support system; multi-objective optimisation; chemical engineering; CE.


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