**电力市场**

# 低碳经济下能效电厂的半方差风险投资组合优化模型

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**摘要：**

探讨了低碳经济下能效电厂在各种节电措施下的风险投资优化组合问题。考虑到在低碳经济下，能效电厂的收益不仅包括售电收入，而且包括碳市场交易收入，将能效电厂在投资优化选择时要考虑的风险因素分为售电电价波动风险、碳交易价格波动风险和节电量波动风险。用半方差(mean semi-variance，MSV)代替传统的方差理论度量这些风险大小，以保证决策正确。算例分析结果表明：碳交易收入对于能效电厂的整体利润水平贡献很大；半方差理论较方差理论更能真正体现投资者在投资时遇到的风险大小，更有助于理性决策。

**关键词：** 低碳经济　能效电厂　组合优化模型　半方差　投资风险

# A Risk Investment Portfolio Optimization Model of Energy Efficiency Power Plant Based on Mean Semi-Variance Theory in Low-Carbon Economy Environment

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Abstract:

The risk investment portfolio optimization of energy efficiency power plant under various electricity-saving measures in low carbon economy environment is researched. Considering the fact that in low carbon economy environment the income of energy efficiency power plant constitutes by two parts, namely the income from selling electricity and that from the transaction in carbon market, so following risks should be considered during the investment portfolio optimization of energy efficiency power plant: the risk of price fluctuation of electricity to be sold, the risk of price fluctuation of carbon transaction and the risk of fluctuation of electricity-saving. To ensure the correctness of decision-making, the mean semi-variance (MSV) is utilized to replace traditional variance theory to measure the degrees of these risks. Analysis on results of calculation example shows that the income from carbon transaction has a big contribution to overall profit level, and MSV theory can incarnate the risk degree that the investors will encounter better than traditional variance theory and more contributes to rational decision-making.

Keywords: low carbon economy　energy efficiency power plant　portfolio optimization model mean semi-variance (MSV)　risk of investment

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