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Economic analysis of superconducting magnet production

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This study reveals the industrial impact potentials of key processes needed in the construction of an intensity frontier electron-positron collider and identifies new application fields. Suppliers and manufacturing partners of CERN benefit from their know-how being used in other markets in order to improve their internal efficiency and competitivity on the world-market. Higher cost effectiveness and leveraging further markets ultimately translates into lower costs of the superconducting magnets of a future high-energy particle collider.

Method

The study aims to find new application fields for the three most promising technologies and processes (superconducting rutherford cable, thermal treatment and vaccum impregnation with epoxy) by utilizing the TCL method. The most valuable application fields are identified by calculating Benefit Relevance and Strategic Fit.

Results

Among the 38 identified application fields, following three high potential application fields can be highlighted:

- Highly efficient wind turbines
- Efficient recycling of scrap metal
- Management of highly-activated radioactive waste

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