

"Why are superconductors relevant to industry and energy?"

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Abstract:

Applications based on commercially available high temperature superconductors are of increasing importance. Perhaps superconductivity is about to become the important cross-sectional technology in the use of electrical power.

We report here on recent progress both in the energy and the industry sector. In the energy sector, the use of superconductivity is specifically promising in renewables. Recent progress includes work towards an 8 MW to 10 MW wind power generator that will cut weight into 1/3rd. Another focus is a hydro power generator that delivers 36% more electricity out of the same amount of water. Installation of world's first prototype device to go into the grid will be Spring of 2010 in Bavaria.

Another example is an industrial heating device that uses only 1/2 of the energy normally required. This device uses magnetic fields from superconducting coils to heat metal slabs based on Faraday's principles of induction.

This application oriented work is fundamentally supported by concurrent research enabling higher performance superconductors at an improved price/performance ratio. So, notice shall be made on progress with epitaxial layers of YBCO on mechanically induced cube textured substrates.