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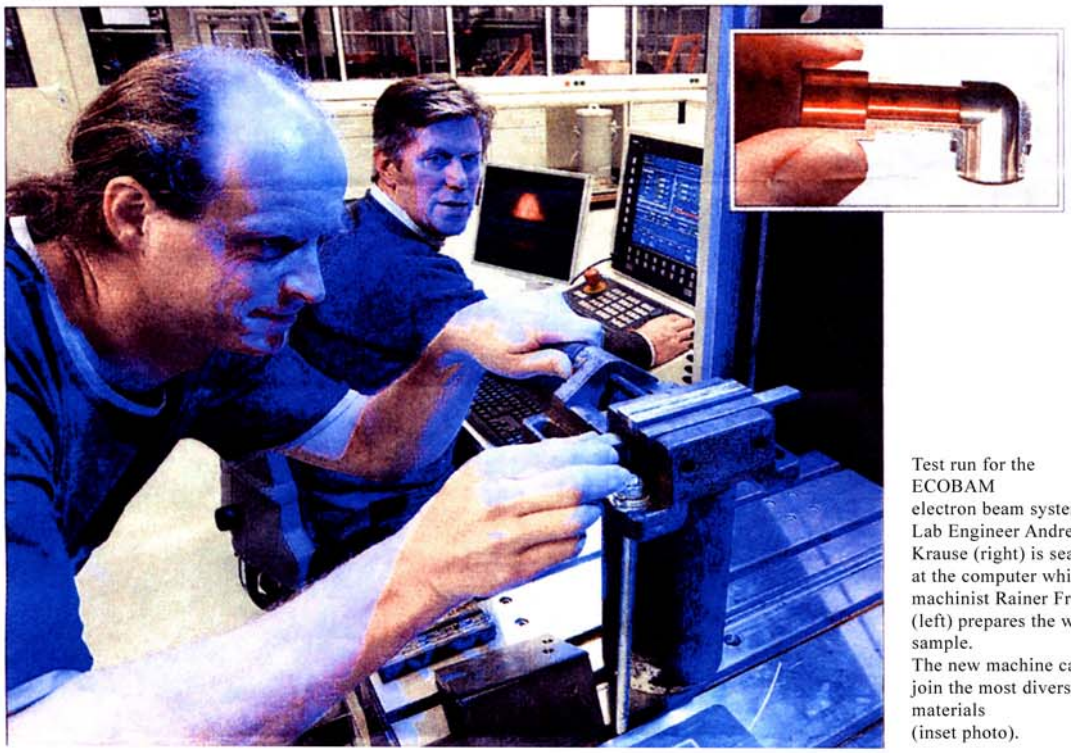
HTW Invests One Million Euro in Electron Beam Technology



Test run for the ECOBAM electron beam system: Lab Engineer Andreas Krause (right) is seated at the computer while machinist Rainer Frey (left) prepares the weld sample. The new machine can join the most diverse materials (inset photo).

Students As Well As Private Enterprise Partners to Benefit from High-Tech System at Dresden Technical School

By Andreas Rentsch
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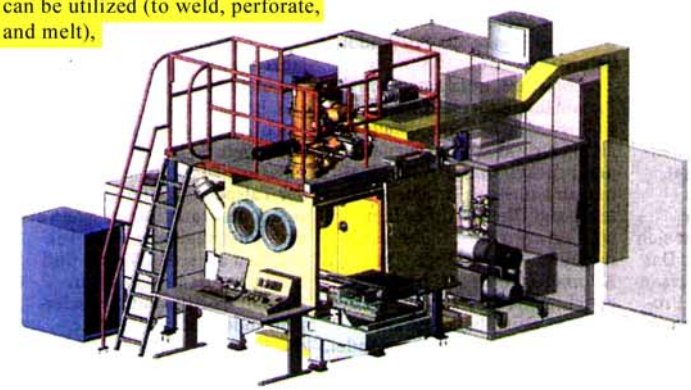
Dresden. Training at the HTW College of Technology & Business will become even more hands-on with new electron beam technology. A Steigerwald machine valued at approx. 1 million Euro will be commissioned by the project partners next week.

"This machine fills a void" says Rainer Bartel of the Frauenhofer Institute for Electron Beam and Plasma Technology (FEP). The technology is unique due to the versatility of its applications. The thermal interaction of electrons can be utilized (to weld, perforate, and melt), as can the non-thermal interactions (to modify synthetic surfaces or to sterilize medical devices). Applications can be found in nearly all departments at HTW from mechanical engineering and process technology to chemical and electrical engineering to agriculture and conservation.

Professor Bernd Ihme of the HTW Center for Applied Research and Technology explains the principle of the complex system by comparing it to the cathode ray tube once used in television sets. The electron beam now used to process material is much more powerful than that used to generate an image on a TV screen.

The customized Steigerwald system opens a whole new range of possibilities for electron beam welding.
Gerhard Eckhart, HTW Professor



The chamber in which this occurs has a one cubic meter capacity and various mechanisms to position the sample. A camera lens views the placement of the sample from above, allowing Lab Engineer Andreas Krause to observe the path of the sparkling beam of light from an external monitor. Students can watch through two circular portholes.

The customized Steigerwald system opens a whole new range of possibilities for electron beam welding says HTW Professor Gerhard Eckhart. It can join materials such as chrome-nickel steel and copper (see inset photo above) that are impossible to weld by conventional means. This is made possible by the machine's high power density of 10^9 watts per square centimeter. Arc welding, by comparison, generates only 10^5 watts per square centimeter.

Whether thermal or non-thermal, the project partners believe there are many companies interested in electron beam technology. The process has already been implemented by the Saxony compressor manufacturer Bannewitz to weld turbocharger parts and by the Radeberger Gamma Service subsidiary to test materials.

■ Representatives of Steigerwald GmbH will release the EBOCAM system to HTW President Prof. Hannes Neumann next Wednesday.