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Scalability of technologies for highly granular calorimeters

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After the successful demonstration of the performance of highly granular electromagnetic and hadronic calorimeters by the CALICE collaboration, emphasis has shifted to system issues and large scale production. These are addressed by varied technological prototypes currently in production. We present work on silicon, scintillator, and gas-detector based imaging calorimeters for future electron-positron colliders, pointing out the relevance also for LHC upgrades and other applications. Emphasis will be placed on techniques developed for mass production, such as automatic testing of active detector elements; packaging, wrapping, and mounting of scintillators; and automatised assembly chains as well as on solutions for large-size detector components, precision mechanics and services. We also report results from recent laboratory and beam tests of electromagnetic and hadronic calorimeter prototypes using these production and testing techniques.

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