

# Performance per Watt - Mission for Architecture and Design in Computing

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## Abstract:

High Performance Computing is reaching power limits. The energy bill of a computing center over its lifetime is surpassing the cost of its initial computer equipment purchase. "Performance per Watt" is now the new paradigm in compute-architectures, modes of operation, and design methodology, in view to avoid an imminent energy crisis in computing.

The ever continuing momentum however, for next generation deep submicron technologies beyond 45 and 32 nanometer, complements the power reduction design strategies on the drawing board today. However, the right technology and design choices cannot be made without the strong support from the EDA industry, as the time-window for implementation of new power saving methodologies is very short. In addition, the high system complexity is forcing a close cooperation of all system partners beyond component optimization of CPU, memory, I/O and power supplies.

This talk will outline IC design strategies for computing chips and describe system and technology considerations for next generation power-aware computing solutions.

## Curriculum Vitae



Gerd Teepe is heading the Dresden Design Center for AMD Saxony in Dresden, Germany. Dr. Teepe studied electrical engineering at the RWTH Aachen University, concluding with a Ph.D. in 1986. From then on he has been with the semiconductor industry, first with NEC in Tokyo, Japan, where he carried out research in fault-tolerant micro-architectures. Before joining AMD in 2004, Dr. Teepe has been with Motorola-Semiconductors in the following functions: IC-Design Engineering, IC-Design Management, as well as Marketing- and Operations-management. In his last position he was heading the "Strategy and Advanced Systems Labs" in Munich and Detroit, chartered to develop the strategy for the entire automotive semiconductors business unit of Motorola. In his career with Motorola, Dr. Teepe has been working out of Geneva, Toulouse and Munich with reports from Austin, Detroit and Tokyo. He holds over 50 formal publications. In addition he is vice-chairman of the GMM microelectronics engineering association, which is part of German VDE/VDI.