Georg Rosenbauer, Lothar Balling, Frank Hannemann and Henrik Stiesdal

PERSPECTIVES ON THE DEVELOPMENT OF POWER GENERATING TECHNOLOGY UNDER THE SPECIFIC EUROPEAN MARKET REQUIREMENTS

G. Rosenbauer: Manager Business Development Climate Change, Siemens Power Generation
L. Balling: Vice President Marketing, Siemens Power Generation
F. Hannemann: Director Product Management - IGCC, Siemens Power Generation
H. Stiesdal: Director Technology and Special Projects, Siemens Wind Power

Future market requirements of power generation technology are so much divergent, that no single technology will be able to fulfill all these requirements simultaneously. However a well balanced mix of technologies might be able to meet the demands for cost efficient, secure and environmentally sound power generation. On the basis of three examples the future potential for power plant technology is shown:

Next generation Combined Cycle Power Plants CCPP will not only set new standards in terms of efficiency (>60%) and life cycle costs. The Siemens plant concept with a fully air cooled GT and BENSON type HRSG will also offer a new dimension of operational flexibility. This will not only pay off from a life cycle cost point of view. Fast start up and fast load changes will be a backbone of future grid stability.

To unite climate mitigation and secure fuel supply, coal fired power plants with carbon capture and storage (CCS) will be a crucial building block. Various possible plant cycles with CO2 separation are still in an early phase of pilot projects. Amongst these Zero Emission IGCC will be a promising possibility to realize CCS at lowest costs. By developing a gas turbine for H2 rich gases and the elaboration of commercial IGCC concepts substantial work is under preparation. The operation of a demonstration unit as final step could start in 2014.

The time-critical items, however, will be the proof of safe CO2 storage and its acceptance. Wind turbines are the most economic pathway of new renewable sources – delivering power with virtually no emissions and helping to diversify the fuel mix. Besides the intelligent integration into grids the further reduction of generation costs are and will be the key effort. Turbine rating has proven to be a key factor in the reduction of cost, with a simple relationship between rating, cost and time. Neither technology leaps nor incremental technology developments have disturbed this basic and steady trend. Although challenges exist, no fundamental barrier is seen for further cost reductions.