The book reports on the latest theoretical and experimental advances in the field of active flow and combustion control. It covers new developments in actuator technology and sensing, in robust and optimal open- and closed-loop control, as well as in model reduction for control. It collects contributions presented during the third edition of the Active Flow and Combustion Control conference, held in September 10–12, 2014 at the Technische Universität Berlin (Germany). This conference, as well as parts of the research presented in the book, have been supported by the collaborative research center SFB 1029—Substantial efficiency increase in gas turbines through direct use of coupled unsteady combustion and flow dynamics, funded by the DFG (German Research Foundation).