



Small Signal Modelling and Control of the Hydrogen Mixer for Facility E1

By Enrique Barbieri

BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 22 pages. Dimensions: 9.7in. x 7.4in. x 0.1in. We have undertaken the theoretical modelling of an existing liquid hydrogen (LH2) and gas hydrogen (GH2) mixer subsystem of the E1 Ground Test Facility at NASA John C. Stennis Space Center. The E1 test facility carries out comprehensive ground-based testing and certification of various liquid rocket engines and their components. The mixer described in this work is responsible for combining high pressure LH2 and GH2 to produce a hydrogen flow that meets certain thermodynamic properties before it is fed into a test article. The desired properties are maintained by precise control of the mixture of LH2 and GH2 flows. The mixer is modelled as a general multi-flow lumped volume for single constituent fluids using density and internal energy as states. The set of nonlinear differential equations is linearized about an equilibrium point and the resulting two-state, 3-input linear model is analyzed as a possible candidate for control design. This item ships from La Vergne, TN. Paperback.



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