H∞ and QFT Robust Control Designs for Level Control Plant

Abstract— In this presentation, two robust controller designs are achieved on a practical Process Trainer Level plant. System nonlinearity, existence of time delay and variation in these parameters are the major problems in design of a controller for this plant. To design a controller, the linear models of system at various operating points and also disturbance model are derived. A parametric uncertainty profile is obtained by identification procedure and used directly in QFT control design. Also, multiplicative unstructured model is extracted out of parametric uncertainty for H∞ control design. All constraints in control design, disturbance rejection and control signal are reviewed and based on these limitation appropriate controllers are determined. To improve robust performance μ-Synthesis and DK Iteration are used. Finally all results will be compared after implementing on the plant.