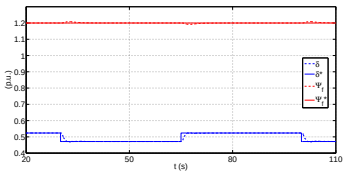
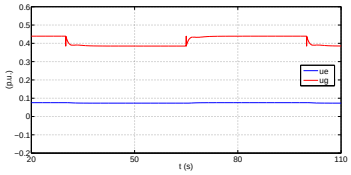
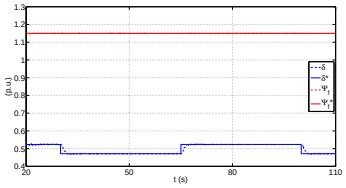


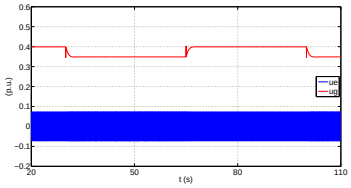
(a) References $\Psi_f{}^*$, δ^* and outputs Ψ_f and δ, using the PI.



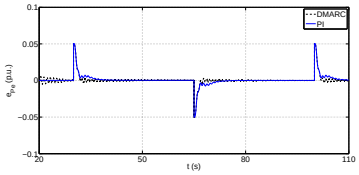
(b) Control signals u_e and u_g, using the PI.



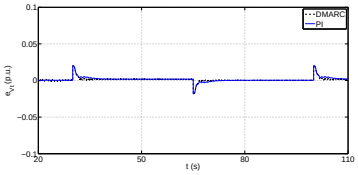
(c) References $\Psi_f{}^*$, δ^* and outputs Ψ_f and δ, using the DMARC.



(d) Control signals u_e and u_g, using the DMARC.



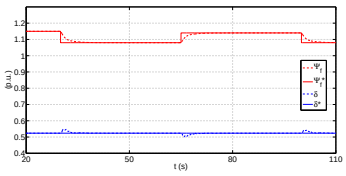
(e) The error between the generated electric power and the produced electric power using the controllers PI and DMARC.



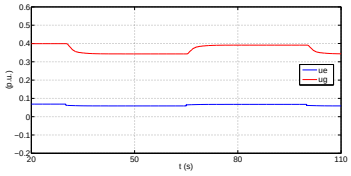
(f) The error between the terminal voltage required and the terminal voltage produced using the controllers PI and DMARC.

Figure 1: Simulation of the synchronous generator with modification at the point of operation of the load angle (δ).

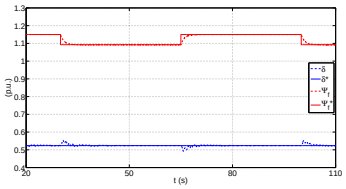
Results - Parameters: $\theta_1 = 0$



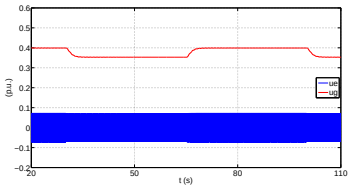
(a) References $\Psi_f{}^*$, δ^* and outputs Ψ_f and δ, using the PI.



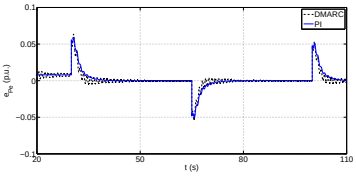
(b) Control signals u_e and u_g, using the PI.



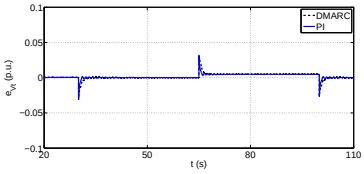
(c) References $\Psi_f{}^*$, δ^* and outputs Ψ_f and δ, using the DMARC.



(d) Control signals u_e and u_g, using the DMARC.

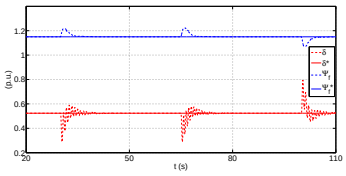


(e) The error between the generated electric power and the produced electric power using the controllers PI and DMARC.

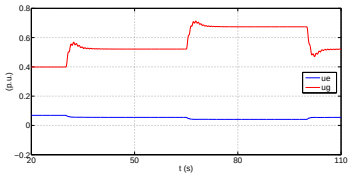


(f) The error between the terminal voltage required and the terminal voltage produced using the controllers PI and DMARC.

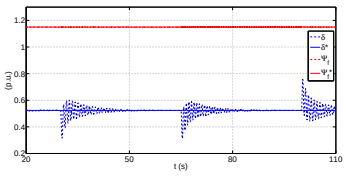
Figure 2: Simulation of the synchronous generator with modification at the point of operation of the field flow (Ψ_f).



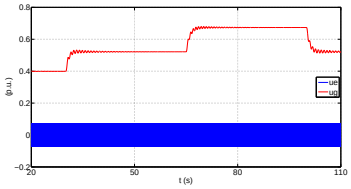
(a) References $\Psi_f{}^*$, δ^* and outputs Ψ_f and δ, using the PI.



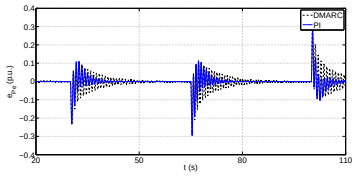
(b) Control signals u_e and u_g, using the PI.



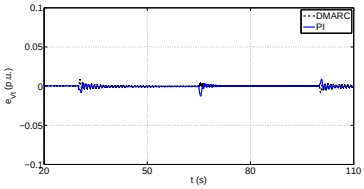
(c) References $\Psi_f{}^*$, δ^* and outputs Ψ_f and δ, using the DMARC.



(d) Control signals u_e and u_g, using the DMARC.



(e) The error between the generated electric power and the produced electric power using the controllers PI and DMARC.



(f) The error between the terminal voltage required and the terminal voltage produced using the controllers PI and DMARC.

Figure 3: Simulation of the synchronous generator with parametric variations.