

ABSTRACT SUBMISSION FORM
MODELING OF UNIFIED POWER FLOW CONTROLLER USING MODELICA

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Abstract:

A Unified Power Flow Controller consists of two voltage source converters. The first converter (shunt converter) known as STATCOM (static synchronous compensator) injects almost sinusoidal current of variable magnitude. The second converter (series converter), known as SSSC (static synchronous series compensator) provides main functionality of the UPFC by injecting an AC voltage with controllable voltage magnitude and phase angle. The aim of the model is simulate various scenarios and analyses their results. The model is implemented in the Modelica language. To demonstrate the effectiveness of the proposed model along with controllers, the following case studies are simulated:

- A) No power flow and initial parameters setting of UPFC are zero i.e. series injected voltage and injected reactive power current are zero.
- B) A pulse disturbance in sending end voltage is applied at $t = 0.15s$.
- C) Series transformer impedance and line charging is removed to observe their effects.

The expected results will provide insight into the operating behavior of the UPFC.