Effect of Governor Deadbands on Valve Travel using Long-Term Dynamic Simulation

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Abstract—The abstract goes here.
Index Terms—Governor deadbands, long-term dynamic simulation, time-sequenced power flow, valve travel

I. Introduction

Should cover: the reason for using deadbands, Kou example of how simulating deadbands is important but typically ignored, deadband considered in transient stability time frame, not long-term, possible real life benefits of improved deadbands there doesn't seem to be a valve movement metric, instead some 'power hours' calculation is used.

II. Explanation of Simulation Technique

Why not use transient stability for this study? Explain time-sequenced power flows. Explain assumptions and simplifications.

III. Implementation of Deadbands

NERC suggestions for droop and deadband

A. Types of Deadbands

intentional vs unintentional None, step, no-step, non-linear droop. and equations for calculating

B. ERCOT Experience

Improved freq deviation (elimination of 'flat top' effect) 2012 creation of TRE-BAL-001...

IV. Simulation Validation

This will be a step and ramp perturbance as shown in gradsem pres.

V. Simulation and Results

Noise tests, valve travel movement, table inputs, etc.

VI. Testing of Format

Figures will behave as Fig. 1. Note that the placement may seem random, but is chosen by LaTeX automatically.

The default table example leaves something to be desired that is fulfilled by using the booktabs package. This is shown in Table I.

References are only included if cited. For instance [1] or [2] are randomly cited. Note that the sorting order is set to none, which lists references in order cited.

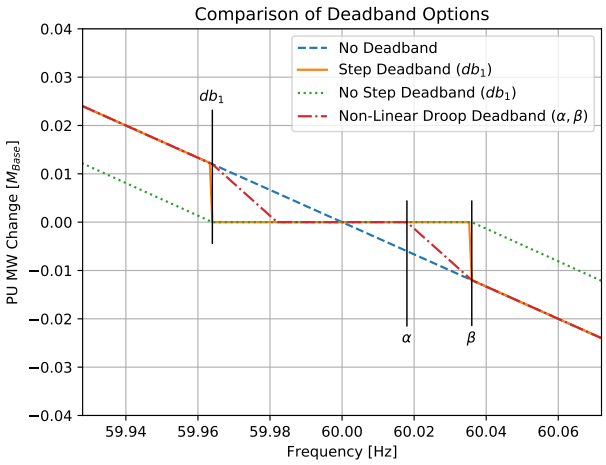

Fig. 1. Testing of figure format.

TABLE I
Generic governor model parameters.

Parameter	Steam	Hydro	Gas
Ts	0.04	0.40	0.50
Tc	0.20	45.00	10.00
T3	0.00	5.00	4.00
T4	1.50	−1.00	0.00
T5	5.00	0.50	1.00

Equations are entered as one may normally do in a LaTeX situation and referenced as (3).

$$\text{ACE}_{\text{tie line}} = P_{gen} - P_{load} - P_{\text{sched interchange}} \quad (1)$$

$$\text{ACE}_{\text{frequency bias}} = 10B(f_{\text{actual}} - f_{\text{sched}})f_{base} \quad (2)$$

$$\text{ACE} = \text{ACE}_{\text{tie line}} - \text{ACE}_{\text{frequency bias}} \quad (3)$$

Acknowledgment

The authors would like to thank...

References

[1] P. Kundur, Power System Stability and Control. McGraw-Hill, 1994.

[2] E. Heredia, D. Dosterev, and M. Donnelly, "Wind hub reactive resource coordination and voltage control study by sequence power flow," IEEE, 2013.