Power Admission Control with Predictive Thermal Management in Smart Buildings - DTU Orbit (15/12/2018)

**Power Admission Control with Predictive Thermal Management in Smart Buildings**

This paper presents a control scheme for thermal management in smart buildings based on predictive power admission control. This approach combines model predictive control with budget-schedulability analysis in order to reduce peak power consumption as well as ensure thermal comfort. First, the power budget with a given thermal comfort constraint is optimized through budget-schedulability analysis which amounts to solving a constrained linear programming problem. Second, the effective peak power demand is reduced by means of the optimal scheduling and cooperative operation of multiple thermal appliances. The performance of the proposed control scheme is assessed by simulation based on the thermal dynamics of a real eight-room office building located at Danish Technical University.

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