ATTEST project: Tools for Ancillary Service Procurement in Day Ahead Operation and Real-Time Activation in Distribution Grid

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Introduction
Clean energy transition
Distribution grids face challenges which require innovative approaches for planning and operation

Two-stage ATTEST solution for ancillary service procurement and activation in distribution grids
• Day-ahead tool
• Real-time tool

Day-ahead ancillary service procurement in distribution grids

Inputs:
• Scenarios for RES through ARIMA model
• Flexible DER (loads, RES, storages & OLTC transformer) participation information
• Ancillary services (congestion management & voltage control) request from TSO

Outputs:
• Flexible DER optimal set-points & associated cost to real-time activation tool

Mathematical Model:
• Stochastic Multi-Period OPF framework based on mixed-integer non-linear programming (MINLP)

Real-time ancillary service activation in the distribution network

Inputs:
• Flexible source limits and costs from day-ahead procurement tool: loads, distributed generators and storage units
• Distribution network state from measurement data: voltage magnitudes and angles, power flows and bus injections from state estimation tool

Uncertainty – model predictive control

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