



## Alexander Belov



**Biography:** Alexander Belov received his Engineering Diploma in Computer Engineering from the Ufa State Aviation Technical University (USATU), Russia in July 2009 with the project titled "Microprocessor Structural Health Monitoring System Based on Distributed Fiber Optics Sensors". He followed PhD courses at IMT Lucca, Italy from February till September 2012, before that he was working for the System Operator of Unified Energy System of Russia since September 2009. Alexander has been a PhD candidate in Pervasive Systems research group at University of Twente in the Netherlands since 2012 up to current time. Work in Go-Green project funded by Netherlands Enterprise Agency (Rijkdienst voor Ondernemend Nederland) and related to electric energy and money savings in residential houses with respect to consumer comfort. His research interests include Energy Systems and Smart Grids, Demand-Side Management, Optimal Control and Machine Learning.

**Session Title:** Peak Load Reduction of Multiple Water Heaters: Respecting Consumer Comfort and Money Savings

**Abstract:** Demand Response programs can allow residential electricity consumers to cut their energy bills. However, in case of contingencies in the energy system when the guaranteed peak load reduction is needed, comfort of consumers can be significantly deteriorated and they can choose to opt out. This paper investigates the possibility of peak load reduction and yet highly respecting consumers' comfort by coordinating a group of electric tank water heaters. The proposed peak shaving mechanism accounts for interests of both utility companies and their customers. It employs two optimization models tailored to the needs of both sides to optimally schedule individual water heaters. The suggested Simulation results show the potential of the proposed mechanism to provide the guaranteed peak load reduction thus contributing to the stability of the electrical grid, while transparent balancing between comfort-money and comfort-energy incorporated in the control scheme is of interest and use to green consumers.