

A) General Information



Acronym:

CA-VPP – 20100531-02

Title of the User-Project:

Carbon Agents for a Virtual Power Plant
1st Call of Proposals, 31st May 2010

TA Call:

Host Research Infrastructure:

Centre for Renewable Energy Sources and Saving, Dept. of PVs and Distributed Generation, DG Laboratory (in cooperation with ICCS/NTUA)

Starting Date:

15/11/2010

End Date:

23/12/2010

Lead User:

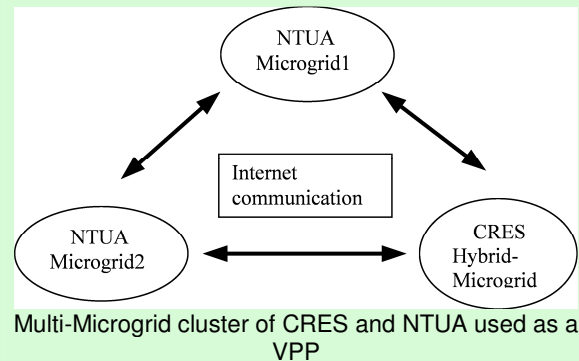
Spyros Skarvelis-Kazakos, Cardiff University,
School of Engineering, United Kingdom

Additional Users:

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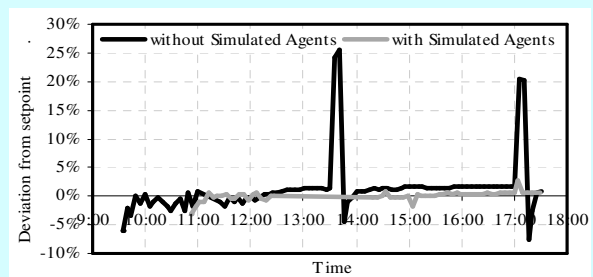
B) Summary of the User-Project

The purpose of this project was to test the operation of a Multi-Agent System developed in Cardiff University, using the installations of CRES and ICCS-NTUA operated as a Virtual Power Plant (VPP). The design of the multi-agent system is based on the EU Emissions Trading Scheme. A simulated ETS is set up within a VPP, in order to control the emissions output of the micro-generators (MGs) participating in the VPP. Three types of agents were created: (i) VPP agent (ii) micro-grid agent and (iii) microgeneration agent.



C) Main Achievements

Overall, it has been shown that the system that was tested was able to operate under real conditions. It was proven that the direct control of the emissions of a Virtual Power Plant is possible, by implementing a simulated internal emissions trading scheme. Thus, the control of the emissions output of micro-generation is possible from a central point, using a hierarchical structure such as the VPP.



Deviation of VPP emissions from supplied Carbon Credits (set-point)

D) Dissemination of the Results

S. Skarvelis-Kazakos, E. Rikos, E. Kolentini, L. M. Cipcigan, N. Jenkins: "Implementing agent-based emissions trading for controlling Virtual Power Plant emissions" - Electrical Power Systems Research (Elsevier) (planned to be submitted)

E) Use of the Resources

Nr. of Users involved: 1

Access Days/Units (CRES+NTUA): 32

Stay Days (CRES+NTUA): 32