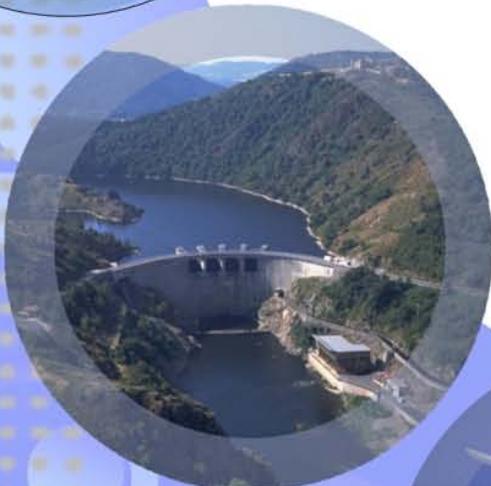Le Printemps de
la Recherche
2011

COPI'11

Paris, France
November 23-25, 2011

Conference on
Optimization
& Practices
in Industry

PROGRAM

Organized and supported by
Electricité de France – Research and Development

eDF

CONFERENCE TOPICS

Topic 1   Numerical Optimization Techniques and Other Industrial Applications
Decomposition methods, dynamic optimization, combinatorial optimization, real-time optimization, model predictive control, stochastic programming, robust optimization, meta-heuristics.
Stocks, logistic supply management ; large scale problems.

Topic 2   Generation Management
Operation, generation and maintenance scheduling.
Renewable energy.

Topic 3   Mathematical Economics, Energy Markets and Risk Management
Portfolio management, risk management and dynamic hedging.
Market prices and imperfect competition, decentralized control in energy market.
Game theory and equilibrium concepts, auction models.

COMMITTEES

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Wednesday November 23, 2011
Numerical Optimization Techniques and Industrial Applications

08:15	Hall Ailleret	*Registration - Breakfast Buffet*
09:00	*Room Ailleret*	**Opening by Laetitia ANDRIEU and Yannick Jacquemart (EDF)**

	Room Ailleret	**Plenary sessions**	*Chairman: J. Gondzio*
09:15	**Jean-François FAUGERAS ,** EDF R&D, France *Smart grids: a wind of change in power systems and new opportunities for optimization*		
10:00	**Uday SHANBHAG**, University of Illinois, USA *Stochastic variational problems: theory, algorithms and applications to energy systems and markets*		

10:45	Hall Ailleret	*Coffee break*

	Room Ailleret *Chairman: J. Gondzio* **Theory and Algorithms 1**	*Room Amphi 2* *Chairman: E. Jacquet-Lagrèze* **Transmission System Modelling / Fleet Mix Optimization**
11:00	**J. GONDZIO, P. GONZALEZ-BREVIS[1], P. MUNARI** [1]University of Edinburgh, Scotland , UK *On the theory and new applications of the primal-dual column generation method*	**P. PISCIELLA, M. T. VESPUCCI[1], M. BERTOCCHI** [1]University of Bergamo, Italy *A bilevel programming approach to coordination of generation and transmission capacity planning*
11:30	**H. A. LE THI, T. PHAM DINH, M. LE HOAI[1], F. LAUER,** [1]University Paul Verlaine of Metz, France *Learning piecewise affine functions by DC programming and DCA*	**S. WESOLKOWSKI[1], K. WILLICK, D. WOJTASZEK** [1]CORA, Defense Research and Development Canada, Canada *A surrogate model for multi-objective fleet mix optimization*
12:00	**J. GONDZIO** University of Edinburgh, Scotland, UK *Limited-memory matrix-free interior point method*	

12:30	Room TA220	*Lunch break*
13:45	Hall Ailleret	**Posters session**

	Room Ailleret	**Plenary session**	*Chairman: Y. Jacquemart*
14:15	**Grégoire ALLAIRE[1], Laetitia ANDRIEU[2], Sandrine CHAROUSSET[2], Yves LASZLO[3]** [1]Ecole Polytechnique/FMJH, France ; [2]EDF R&D, France ; [3]University of Paris-Sud/FMJH, France *The Gaspard Monge Program in Optimization and Operations Research*		

	Room Ailleret *Chairman: J. André* **Theory and Algorithms 2**	*Room Amphi 2* *Chairman: J.-P. Vial* **Optimization for Industry**
14:45	**J. CHENG, A. LISSER[1]** [1]University of Paris-Sud, France *SDP relaxation for solving stochastic 0-1 linear problems with joint probabilistic constraints*	**H. A. LE THI, D. Q. TRAN[1], T. PHAM DINH** [1]University Paul Verlaine of Metz, France *DC programming approach for solving some non convex optimization problems in production management*
15:15	**P. CARPENTIER[1], J.-P. CHANCELIER, G. COHEN** [1]ENSTA ParisTech, France *Optimal control under probability constraint*	**M. GEHAN[1], R. REBAI, L. ROUSSEAU** [1]Eurodécision, France *Minimizing energetic costs in datacenter*
15:45	**A. WIECZOREK, A. BUSIC, E. HYON[1]** [1]University of Paris Ouest Nanterre, France *Critical level policies in lost sales inventory systems with different demand classes*	**F. BABONNEAU, O. LISTES, C. van DELFT, J.-P. VIAL[1]** [1]Ordecsys, Switzerland *A tool for the design and analysis of robust flexible manufacturing processes facing uncertain demands*

16:15	Hall Ailleret	*Coffee break*

	Room Ailleret	**Plenary sessions**	*Chairman: A. Ouorou*
16:30	**Francis SOURD**, SNCF, France *Application of scheduling theory to solve real-life railway problems*		
17:15 **18:00**	**Benoît ROTTEMBOURG**, Eurodécision, France *Optimizing length of stay control policies for budget hotels revenue management*		

08:00	*Hall Ailleret*	*Breakfast Buffet*	

	Room Ailleret	**Plenary sessions**	*Chairman: J. F. Bonnans*
08:30	**Patrick PANCIATICI,** RTE, France *Optimization tools to improve the operation and operational planning of Transmission Systems: challenges and possible solutions*		
09:15	**Marc STUBBE,** Tractebel, Belgium *The PEGASE project: new algorithms for state estimation, time domain simulation and optimization of very large power systems*		

10:00	*Hall Ailleret*	*Coffee break*	

	Room Ailleret　　*Chairman: J. F. Bonnans* **Hydro thermal generation planning 1**	*Room Amphi 2*　　*Chairman: L. A. Barroso* **Day-ahead and intra-day production planning**	*Room TB10*　　*Chairman: E. Jacquet-Lagrèze* **Renewable energy**
10:20	**A. COUETOUX, O. TEYTAUD, O. RATIER**[1]**, N. OMONT, A. RENAUD** [1]Artelys, France *Monte-Carlo tree search applied to hydrothermal power generation planning*	**B. CORNELUSSE, A. BEN-ABBES, L. WEHENKEL**[1] [1]University of Liège, Belgium *Intra-day power generation rescheduling by supervised learning from Monte-Carlo simulations*	**S. LUMBRERAS**[1]**, A. RAMOS** [1]Universidad Pontificia Comillas, Spain *OWL (Offshore Windfarm Layout optimizer) applying Bender's decomposition to the design of offshore wind farms*
10:50	**A. HELSETH, G. WARLAND, B. MO, A. GJELSVIK**[1] [1]SINTEF, Norway *Prodnett: a computer code for optimal stochastic hydro thermal scheduling with power flow constraints and approximate start-up cost modeling*	**B. CORNELUSSE**[1]**, G. SCOUVART, Y. LANGER, M. van VYVE** [1]n-Side, Belgium *Coupling day-ahead electricity markets with COSMOS*	**A. BILLIONNET, M.-C. COSTA**[1]**, P.-L. POIRION** [1]ENSTA ParisTech - CEDRIC, France *Optimizing an hybrid energy system*
11:20	**M.S. ARONNA**[1]**, J. F. BONNANS, P. A. LOTITO** [1]INRIA SACLAY, France *Optimal hydrothermal scheduling study of singular arcs and numerical resolution*	**E. RACHELSON** EDF R&D, France *Towards a hybrid approach for infra-daily recourse strategies*	**G. WARLAND**[1]**, B. MO, A. HELSETH** [1]SINTEF, Norway *Planning in a hydropower dominated power system taking into account network constraints. Enhancements to the EMPS models*
11:50	**V. L. DE MATOS**[1]**, E. C. FINARDI** [1]Universidade Federal de Santa Catarina, Brazil *Policy evaluation in the long-term hydrothermal scheduling problem*	**N. DUPIN**[1]**, P. BENDOTTI** [1]University of Bordeaux 1, France *ILP resolution of unit commitment problem with minimum stop constraints*	

12:20	*Room TA220*	*Lunch break*	

13:45	**Room Ailleret**	**Plenary session**	*Chairman: J. Gondzio*
	Luiz A. BARROSO, PSR , Brazil *Integrated scheduling of electricity and gas resources taking into account storage, contracts and transportation networks*		

	Room Ailleret *Chairman: M. Gendreau* **Hydro thermal generation planning 2**	*Room Amphi 2* *Chairman: M. Minoux* **Nuclear scheduling**	*Room TB10* *Chairman: A. Renaud* **Scheduling problems for electricity and mining**
14:30	<u>**G. EMIEL**[1]</u>**, M. GENDREAU** [1]Ecole Polytechnique de Montréal, Canada *Applying SDDP for Hydro Quebec production planning*	<u>**L. PFEIFFER**[1]</u>**, F. BONNANS, K. BARTY** [1]INRIA Saclay, France *Sensitivity analysis for the outages of nuclear power plants*	<u>**S. LANNEZ**[1]</u>**, J.-C. PASSELERGUE** [1]Alstom, France *Unit commitment problem: from decomposition to branch-and-bound method*
15:00	<u>**P. COTE** [1]</u>**, M. LATRAVERSE, B. LAROUCHE** [1]Rio Tinto Alcan, Canada *Operation of a hydropower system in northern east Canada using hydrological ensemble prediction and nonlinear interior point optimization algorithm*	<u>**M. PORCHERON**[1]</u>**, K. BARTY, B. KADDOUR** [1]EDF R&D, France *Using stochastic programming to compute usage values for the French nuclear power reactors*	<u>**A. HAIT**[1]</u>**, C. ARTIGUES** [1]University of Toulouse, France *An efficient continuous-time MILP formulation for scheduling with energy cost*
15:30	**G. EMIEL, <u>M. GENDREAU</u>**[1] [1]Ecole Polytechnique de Montréal, Canada *Developing new approaches to address Hydro-Québec's production planning problems*	<u>**A. CHICHE**[1]</u>**, J.-C. GILBERT, M. PORCHERON** [1]EDF R&D & INRIA, France *Convergence of the progressive hedging algorithm applied to the medium-term electricity planning problem*	**N. BEEKER, <u>M. DE LARA</u>**[1]**, F. MEUNIER** [1]University of Paris-Est, France *Open-pit mine scheduling optimization strategies with and without uncertainty*

16:00	*Hall Ailleret*	*Coffee break*	
	Room Ailleret	**Plenary sessions**	*Chairman: M. Gendreau*
16:15	**Ken McKINNON**, University of Edinburgh, UK *Minimizing load shedding by preventive islandling*		
17:00	**Antonio J. CONEJO**, University of Castilla, Spain *Scheduling energy and reserve in systems with high wind penetration*		
17:45	*Free time*		
20:00 **22:30**	**DINNER** **MAISON DES CENTRALIENS – 75008 PARIS**		

Friday November 25, 2011
Mathematical Economics, Energy Markets and Risk Management

| 08:30 | Hall Ailleret | *Breakfast Buffet* |

| | *Room Ailleret* | **Plenary sessions** | *Chairman: R. Aid* |

| 09:00 | **Mette BJORNDAL**, NNH, Norway
Congestion management methods for the Nordic electricity market |

| 09:45 | **Daniel RALPH,** University of Cambridge, UK
Risk averse investment in electricity generation |

| 10:30 | Hall Ailleret | *Coffee break* |

| | *Room Ailleret* — *Chairman: R. Aid*
Risk Management | *Room Amphi 2* — *Chairman: O. Bardou*
Energy Economics |

| 10:50 | **A. SHAPIRO, W. TEKAYA[1], J. P. DA COSTA, M. PERIRA SOARES**
[1]Georgia Institute of Technology, USA

Multistage energy planning - risk neutral and risk averse approaches | **M. ARMSTRONG[1], A. GALLI**
[1]Mines-Paris, France
Using copulas to model the impact that production incidents have on commodity prices with a stochastic optimization framework |

| 11:20 | **P. CARPENTIER, J.-P. CHANCELIER[1], G. COHEN, M. DE LARA, P. GIRARDEAU**
[1]Ecole des Ponts ParisTech, France
Dynamic consistency for stochastic optimal control problems with risk constraints | **S. LEPAUL**
EDF R&D, France

A micro-economic view of long-run marginal costs in programming models |

| 11:50 | Room TA220 | *Lunch break* |

| | *Room Ailleret* | **Plenary session** | *Chairman: Y. Smeers* |

| 13 :15 | **Stein-Erik FLETEN**, Norwegian University of Science and Technologies, Norway
Hedging policies in hydroelectricity companies - an empirical study |

| | *Room Ailleret* — *Chairman: O. Bardou*
Liquidity Risk | *Room Amphi 2* — *Chairman: Y. Smeers*
Energy Markets |

| 14:00 | **S. VILLENEUVE[1], X. WARIN**
[1]Toulouse School of Economics, France

Optimal liquidity management and hedging in the presence of a non- predictable investment opportunity | **F. BABONNEAU[1], A. KANUDIA, M. LABRIET, R. LOULOU, J.-P. VIAL**
[1]Ordecsys, Switzerland
Energy security: a robust programming approach application to European energy supply via TIAM |

| 14:30 | **F. BABONNEAU, J.-P. VIAL, O. FERON, O. KLOPFENSTEIN[1]**
[1]EDF R&D, France
Robust optimization of strategic portfolio allocation for asset liability management | **D. AUSSEL**
University of Perpignan, France

On spot electricity markets with transmission losses |

| 15:00 | Hall Ailleret | *Coffee break* |

| | *Room Ailleret* | **Plenary sessions** | *Chairman: R. Aid* |

| 15:15 | **Alfred GALICHON**, Ecole Polytechnique, France
Risk measurement: pitfalls and solutions |

| 16:00 | **Axel PIERRU[1],** IFP Energies Nouvelles, France
[1]That talk is given by Yves Smeers in the absence of Axel Pierru.

On the development of dynamic stochastic general equilibrium models for climate change policies |

| 16:45 17:00 | *Room Ailleret* | **Closing by Yannick Jacquemart (EDF)** |

Posters

A. CHIKHAOUI[1], B. DJEBBAR, A. BELABBACI, A. MOKHTARI, [1]Univ. of Tiaret, Algeria

Quadratic simplex algorithm for calculating optimal solution

E.A. PAPA QUIROZ[1], P. R. OLIVEIRA, [1]Univ. Nacional del Callao, Brazil

An extension of proximal methods for quasiconvex minimization on the nonnegative orthant

N. BRAHIMI[1], T. AOUAM, [1]Univ. of Sharjah, United Arab Emirates

Production routing problem with backlogging

P.-L. CARPENTIER[1], M. GENDREAU, F. BASTIN, [1]Ecole Polytechnique, Montréal, Canada

Mid-term production planning for a large hydro-dominated power system in Quebec by the progressive hedging algorithm

A. S. TA[1], H. A. LE THI, T. PHAM DINH, M. LE HOAI, D. KHADRAOUI, [1]INSA Rouen, France

Solving many to many multicast QoS routing problems by DCA using proximal decomposition technique

Y. -S. NIU[1], T. PHAM DINH, [1]INSA Rouen, France
An efficient DC programming approach for portfolio decision with higher moments

I. AHMAD, King Fahd University of Petroleum, Saudi Arabia
Optimality conditions and duality in nondifferentiable multiobjective programming

M. T. VESPUCCI[1], M. BERTOCCHI, M. INNORTA, S. ZIGRINO, [1]University of Bergamo, Italy
A stochastic model for generation expansion planning in the long period

C. CORCHERO[1], F. Javier Heredia, [1]Universitat Politecnica de Catalunya, Spain
Optimal electricity market bidding strategies considering emission allowances