

CURRICULUM VITAE

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Academic Degrees

<i>"Aggregação"</i> (<i>Habilitation</i>)	In Industrial Engineering and Management – Operations and Logistics, Instituto Superior Técnico, Universidade Técnica de Lisboa, Lisboa, Portugal, unanimity.
Ph.D.	Engineering, Imperial College of Science Technology and Medicine, University of London, London, U.K., 1994.
Diploma	Chemical Engineering, Imperial College of Science Technology and Medicine, University of London, London, U.K., 1992.
Master	Chemical Engineering, Faculdade de Ciências e Tecnologia, Universidade de Coimbra, Portugal, 1986.

Academic Present Position

Full Professor in Operations and Logistics, Engineering and Management Department (DEG), Instituto Superior Técnico (IST), Universidade de Lisboa (UTL), Portugal, since 2009

Invited Full Professor, Instituto Superior de Economia – protocol with IST

Academic Previous Positions

Invited Professor	Operations Management Chair, Management Department, Aachen University, 2016-17.
Associate Professor	Engineering and Management Department (DEG), Instituto Superior Técnico (IST), Universidade Técnica de Lisboa (UTL), Portugal. 2003-2009
Assistant Professor	Engineering and Management Department (DEG), Instituto Superior Técnico (IST), Universidade Técnica de Lisboa (UTL), Portugal. 1996 -2002

Research Positions

<i>Senior Researcher</i>	<i>Centre for Management Studies</i> , Instituto Superior Técnico (IST), Universidade Técnica de Lisboa (UTL), Portugal. 1998 – to present.
<i>Colaborating Researcher</i>	<i>Energetic Systems Modeling and Simulation Unit (UNOSE)</i> Laboratório Nacional de Energia e Geologia, Lisboa, Portugal. 1996 – to present.
<i>Colaborating Researcher</i>	Centro de Matemática e Aplicações, Faculdade de Ciências Tecnologia da Universidade Nova de Lisboa, Monte da Caparica, Portugal. 2011 - to present.
<i>Researcher</i>	Department of Processes Modelling and Simulation, Instituto Nacional de Engenharia e Tecnologia Industrial (INETI), Lisbon, Portugal. 1994-1996.
<i>Research Assistant</i>	Center for Process Systems Engineering, Imperial College of Science Technology and Medicine, University of London, London, U.K. 1991-1994
<i>Research Trainee</i>	Unit of Simulation and Process Engineering, INETI, Lisbon, Portugal. 1986 – 1994 (on leave from 1991-1994).

Main Academic Management Activities

- Member of the Instituto Superior Técnico (IST) Main Council, 2017 - to present
- Member of the Instituto Superior Técnico (IST) Scientific Council, 2009 – 2016
- Engineering and Management PhD director, 2015 to present
- Technology Change and Entrepreneurship PhD director, 2015 to 2016
- Industrial Engineering and Management BSc, director, 2010 – 2014
- Industrial Engineering and Management Master, director, 2010 – 2014
- Engineering and Management PhD director, 2009-2010
- Head of the Engineering and Management Department, 2007-2009
- Head of the Centre for Management Studies of IST, 2006-2009.

National and International Organizations Collaboration

It has been actively participating in National and International Scientific and Professional Organizations where below and for the last 5 years the main positions are mentioned:

- Head of the Industrial Engineering and Management Committee, Agency for Assessment and Accreditation of Higher Education - A3ES). 2010 – to present
- Editorial Advisory Board, Computers & Chemical Engineering (Elsevier), 2012 – to present
- Editorial Board, Frontiers in Process and energy system Engineering – section of Frontiers in Energy, 2013 – to present
- Member of the “Advisory Board”, Harvard Deusto Business Research journal, EAE Business School, UPC, 2016 – to present
- Representative from the Portuguese Association of Operational Research (APDIO) into IFORS, 2014-2016.
- Head of the National Assembly Board of Portuguese Association of Operational Research (APDIO). 2010 -2011. 2016 – to present.
- Vice-president of the Portuguese Association of Operational Research (APDIO). 2005-2009 ; 2012 – 2015.
- Member of the Board of the European Working Group In Sustainable Supply Chains. 2013 – to present
- Member of the International Working Party on “Computer Aided Process Engineering” da European Federation of the Chemical Engineers. 1999 – to present
- Member of the International Group of Closed-Loop Supply Chains. 2006 – to present.

It has also actively participated in the evaluation of research scholarships and projects at the following organizations:

- European Community – H2020 program, Brussels
- Agência Nacional Inovação (Portuguese Innovation Agency), ANI, Portugal
- Fundação para a Ciência e Tecnologia (Portuguese Science and Technology Foundation), FCT, Portugal
- Netherlands Organization for Scientific Research, Now, Netherlands
- Suisse National Science Foundation, SNSF, Switzerland
- Alberta Heritage Foundation for Science and Engineering Research, Canada

- ETH Zurich Research Commission for scientific evaluation, Switzerland
- Engineering and Physical Sciences Research Council, EPSRC, UK

Recent Awards and Honors (selection)

- Scientific Prize Lisbon Universidade / Caixa Geral de Depósitos – Best researcher in the area of Management - Industrial Management at University of Lisbon (UL), 2016
- Paper selected by the European Journal of Operational Research (EJOR) Editors to be presented at Euro 2015 in a special session – meet the EJOR Editors – as the paper with higher interest published EJOR in 2013 - with the paper - Cardoso, S. A.P.F.D. Barbosa-Póvoa, S. Relvas (2013), Design and Planning of Supply Chains with Integration of Reverse Logistics Activities under Demand Uncertainty, EJOR, 226, 3, 436–451
- Best paper award of the European Journal of Operational Research (EJOR) in the Methodological Area – 2013 - with the paper - Salema, I., A. P. F. D. Barbosa-Póvoa, A. Q. Novais (2010), Simultaneous design and planning of supply chains with reverse flows: a generic modelling framework, EJOR, 203, 336-349.
- 2013 – ERP Eco Sustainability Award’12
- 2013 - Isabel Themido, best paper in Operational Research, published in international journals, Associação Portuguesa de Investigação Operacional (APDIO), 2013, with the paper, Mestre, A., M. Oliveira, A. P. F. D. Barbosa-Póvoa (2012). Organizing Hospitals into Networks: A Hierarchical and Multiservice Model to define Location, Supply and Referrals in Planned Hospital Systems, OR Spectrum, 34, 2, 319-348.
- Scientific Prize Universidade Técnica/ Santander Totta – Best researcher in the area of Industrial Management at Technical University of Lisbon (UTL), 2007

Research Interests and Group

I am the coordinator of the Operations and Logistics Group at the Centre at the Centre of Management Studies of IST (CEG-IST). My research focus is on the development of a sound understand of industrial processes and supply chains, supported by novel mathematical programming models and techniques, of a variety of industrial real. In particular problems related to the

- Design and Planning of Flexible Systems: process and manufacturing industry
- Sustainable Supply Chains

- Reverse Logistics

have been explored. The work involved over the last 5 years, 6 Pos-docs, around 30 PhD students and 80 Master thesis, whose research has been focus on developing consistent theoretical concepts with a close interaction to the solution of real cases.

Several projects have been developed founded by National and International Organizations as well as Companies.

A strict collaboration has been developed with national and international universities as well as companies:

Selected Publications

Has published more than 180 papers. A selected range is shown below. For detail see:

Research ID: <http://www.researcherid.com/rid/A-8578-2012>

ORCID: <http://orcid.org/0000-0001-6594-9653>

- Barbosa-Póvoa A.P., Silva, C, Carvalho, A, (2017), Opportunities and Challenges in Sustainable Supply Chain: An Operations Research Perspective, EJOR, doi.org/10.1016/j.ejor.2017.10.036.
- Lima, C. Relvas, R.; Barbosa-Póvoa A.P. (2017), Stochastic programming approach for the optimal tactical planning of the downstream oil supply chain, Comp Chem Engng, In publication.
- Pacheco, C., Cannela, S., Luders, R. Barbosa-Póvoa, A.P., (2017). Order-up-to-level policy update procedure for a supply chain subject to market demand uncertainty, Computers and Industrial Engineering, em publicaçãoDominguez, R., Cannela, S., Barbosa-Póvoa, A.P., Framinan, J. (2017). Exploring partial information sharing at retailers with different operation, OMEGA, in publication
- Dominguez, R., Cannela, S., Barbosa-Póvoa, A.P., Framinan, J. (2017). Exploring partial information sharing at retailers with different operation, OMEGA, in publication
- Ramos, T., Gomes, M.I., Barbosa-Póvoa, A.P. (2017), Multi-depot vehicle routing problem: a comparative study of alternative formulations, Frontiers of Engineering Management, in publication.
- Vicente, J., S. Relvas, A.P.F.D. Barbosa-Póvoa (2017), Effective bullwhip metrics for multi-echelon distribution systems under order batching policies with cyclic demand, International Journal of Production Research, in publication.
- +Mota, B, Gomes, I., Carvalho, A. Barbosa-Póvoa A.P. (2017), Sustainable supply chains: an integrated modelling approach under uncertainty, Omega, in publication

- Vicente, J., S. Relvas, A.P.F.D. Barbosa-Póvoa (2017), Optimal Distribution supply chain inventory planning under uncertainty, *International Journal of Operational Research*, in publication.
- Marques, C., Moniz; S. Pinho de Sousa; J, Barbosa-Póvoa, A.P., (2017), A simulation-optimization approach to integrate process design and planning decisions under technical and market uncertainties: a case from the chemical-pharmaceutical industry, *Computers & Chemical Engineering*, in publication
- Vieira, M. Pinto-Varela, T., Moniz, S. A.P.F.D. Barbosa-Póvoa (2017), Production and maintenance planning optimisation in biopharmaceutical processes under performance decay using a continuous-time formulation: a multi-objective approach, *Computers & Chemical Engineering*, *Computers & Chemical Engineering*, in publication
- Pinto-Varela, T.; Barbosa-Póvoa, A.P, Carvalho, A. (2017). Sustainable batch process retrofit design under uncertainty - An Integrated Methodology, *Computers & Chemical Engineering*, 102 (2017) 226–237
- Lima, C. Relvas, R.; Barbosa-Póvoa A.P. (2016), Downstream oil supply chain management: a critical review and future directions, *Comp Chem Engng*, 92, 78–92.
- Zeballos, L.; Méndez, C.; Barbosa-Povoa, A.P., (2016), Design and Planning of Closed Loop Supply Chains: A risk averse multi-stage stochastic approach. *Ind Eng Chem. Research*, 55,21,6236-6249.
- Vieira, M. Pinto-Varela, T., Moniz, S. A.P.F.D. Barbosa-Póvoa e Papageorgiou, L. (2016), Optimal planning and campaign scheduling of biopharmaceutical processes using a continuous-time formulation, *Computers & Chemical Engineering*, 91,422–444.
- Amorim, P., Crucio, E., Almada-Lobo, B., Barbosa-Povoa, A.P.F.D., Grossmann, I. (2016) Supplier Selection for Supply Chains in the Processed Food Industry, *European Journal of Operations Research*, 252,3,801-814.
- Cardoso, T., Oliveira M, A.P.F.D. Barbosa-Póvoa, S. Nickel (2016), Moving towards an equitable long-term care network: A multi-objective and multi-period planning approach, *OMEGA* , 58, 69-85.
- Bing X., Blomeof, J., Ramos, T. Barbosa-Póvoa, A.P., Wong, C., Vandervost, J., (2016) Research Opportunities in Modelling Household Waste Logistics", *Waste Management*, 48, 584–592.
- Martins, H. Pinto-Varela, T., A.P.F.D. Barbosa-Póvoa e A.Q. Novais (2016), A Multi-Objective Meta-Heuristic Approach for the Design and Planning of Green Supply Chains – MBSA, *Expert Systems With Applications*, 47, 71–84.
- Cardoso, S. A.P.F.D. Barbosa-Póvoa, S. Relvas (2016), Integrating Financial Risk Measures into the Design and Planning of Closed-loop Supply Chains, *Computers & Chemical Engineering*, *Comp Chem Engng*, 85,105-123.

- Meckenstock, J., A.P.F.D. Barbosa-Póvoa, Carvalho, A.C. (2016), The Wicked Character of Sustainable Supply Chain Management: Evidence from Sustainability reports, *Business Strategy and the Environment*, 25,7,449-477.
- Paulo, H., Azuce, X., S. Relvas, A.P.F.D. Barbosa-Póvoa (2015) Supply chain optimization of residual forestry biomass for bioenergy production: the case study of Portugal, *Biomass and Bioenergy Journal*, 83, 245-256
- Cardoso, T., Oliveira M, A.P.F.D. Barbosa-Póvoa, S. Nickel (2015), An integrated approach for planning a long-term care network with uncertainty, strategic policy and equity considerations, *European Journal of Operational Research*, 247 (2015) 321–334
- Cardoso, S. A.P.F.D. Barbosa-Póvoa, S. Relvas (2015), Resilience Metrics in the Assessment of Complex Supply-Chains Performance Operating under Demand Uncertainty, *OMEGA*, i56 (2015) 53–73.
- Cannela, S, Bruccoleri , M. Framinan, J, A.P Barbosa-Póvoa, R. Relvas, (2015), The effect of Inventory Record Inaccuracy in Information Exchange Supply Chains, *EJOR*, 243, 1, 120–129
- Mota, B, Gomes , I., Carvalho, A. Barbosa-Póvoa A.P. (2014), Towards supply chain sustainability: economic, environmental and social design and planning, *Journal of Cleaner Production*, 15, 14-27.
- Cannela, S, Bruccoleri , M. Framinan, J, A.P Barbosa-Póvoa, R. Relvas, (2015), The effect of Inventory Record Inaccuracy in Information Exchange Supply Chains, *EJOR*, 243, 1,120–129.
- Mestre, A., M. Oliveira, e A. P. F. D. Barbosa-Póvoa (2015), Location-allocation approaches for hospital network planning under uncertainty, 240, 3 , 791-806.
- Moniz, S, A.P.F.D. Barbosa-Póvoa, J. Pinho de Sousa, P. Duarte, (2015). Solution methodology for scheduling problems in batch plants, *Ind. Eng. Chem. Res*, 53, 49 ,19265-19281
- Vieira P, Vieira, S.M, Sousa, J., Gomes M.I., (2014), Barbosa-Póvoa, Designing Closed-Loop Supply Chains with Nonlinear Dimensioning Factors Using Ant Colony Optimization, *Soft Computing*, DOI: 10.1007/s00500-014-1405-7.
- Moniz, S, A.P.F.D. Barbosa-Póvoa, Pinho de Sousa, (2014) Simultaneous regular and non-regular production scheduling of multipurpose batch plants: a real chemical-pharmaceutical case study, *Comp. Chem. Engrn.* 67, 83–102.
- Barbosa-Póvoa A.P. (2014), Process Supply Chains Management - Where are we ? Where to go next ? *Frontiers in Energy Research- Process and Energy Systems Engineering*, 22 June 2014 | doi: 10.3389/fenrg.2014.00023.

- Zeballos, L, Méndez, C., Barbosa-Povoa, AP, Novais, AQ., (2014) Multi-Period Design and Planning of Closed-Loop Supply Chains with Uncertain Supply and Demand, *Comp. Chem. Engn.*, [66](#), 51–164.
- Fabro J., Stebel S., Rossato D, Polli H, Arruda L, Neves F, Ribas P, Barbosa-Póvoa APFD, Relvas R., (2014). A MILP (Mixed Integer Linear Programming) decomposition solution to the scheduling of heavy oil derivatives in a real-world pipeline, *Comp. Chem. Engn.*, [66](#), 124–138.
- Cardoso, G, Stadler, M., Bozchalui, MC., Marnay, C, Barbosa-Póvoa, A.;Ferrão. P. (2014), Optimal investment and scheduling of distributed energy resources with uncertainty in electric vehicle driving schedules, *Energy*, 64, 17-30.
- Ramos, T, Gomes, I: A.P.F.D. Barbosa-Póvoa, (2014) Planning Service Areas and Vehicle Routes in a Packaging Waste Collection System, *Resources, Conservation and Recycling*, [85](#), 116–129.
- Ramos, T, Gomes, I: A.P.F.D. Barbosa-Póvoa, (2014) A Multi-Product, Multi-Depot Vehicle Routing Problem with Economic and Environmental Concerns: Application to a Real Recyclable Waste Collection System, *Transportation Research – Parte E*, in publication, 62, 34–54 .
- Ramos, T, Gomes, I: A.P.F.D. Barbosa-Póvoa, (2014) Planning a sustainable reverse logistics system: balancing costs with environmental and social concerns, *Omega*, [48](#), 60–74
- Moniz, S, A.P.F.D. Barbosa-Póvoa, Pinho de Sousa, (2013), A new general discrete-time scheduling model for multipurpose batch plants, *Ind. Eng. Chem. Res*, 52, 17206–17220.
- Relvas, S., Magatão, R., Barbosa-Póvoa, A.P., Neves, F, (2013) Integrated Scheduling and Inventory Management of an Oil Products Distribution System, *Omega*, 41,955-968.
- Cardoso, S. A.P.F.D. Barbosa-Póvoa, S. Relvas (2013), Design and Planning of Supply Chains with Integration of Reverse Logistics Activities under Demand Uncertainty, *EJOR*, 226, 3, 436–451.
- Barros, A.C., A.P.F.D. Barbosa-Póvoa, e Blanco, E., (2012), Selection of Tailored Practices for Supply Chain Management, *International Journal of Operations and Production Management*,33, 8, 3-15.
- Cannela, S, A.P.F.D. Barbosa-Póvoa, R. Relvas, J. Framian (2013), Metrics for Bullwhip Effect Analysis, *Journal of the Operational Research Society*,64, 1–16.
- Barbosa-Póvoa (2012), Progresses and Challenges in Process Industry Supply Chains Optimization, *Current Contents in Chemical Engineering*, 1:446–452.

- Stebel, S., SN Boschetto, V., Arruda, Flávio Neves-Jr, APFD, Barbosa-Póvoa, S. Relvas, S., (2012), MILP formulation for aiding planning activities in a complex pipeline network, *Ind Eng. Chem Res*, 51, 35, 11417-11433.
- Cardoso, T, Oliveira, M., A.P.F.D. Barbosa-Póvoa, Nickel, S. (2012). Simulation model proposed to predict the future demand of long-term care services, *Health Care Management Science*, 15, 4, 385-412.
- Zeballos, L., Gomes, I., A.P.F.D. Barbosa-Póvoa, A.Q. Novais (2012), Addressing the uncertain quality and quantity of returns in closed-loop supply chain, *Computers & Chemical Engineering*, 47, 20, 237-247.
- Boschetto, SN Leandro Magatão, H. Polli, Flávio Neves-Jr, Lucia V. R. Arruda, S. Relvas, A. P. F. D. Barbosa-Póvoa, (2012), Planning and sequencing product distribution in a real-world pipeline network: An MILP decomposition approach, *Ind Eng. Chem Res*, 51, 12, 4591-4609.
- Mestre, A., M. Oliveira, A. P. F. D. Barbosa-Póvoa (2012). Organizing Hospitals into Networks: A Hierarchical and Multiservice Model to define Location, Supply and Referrals in Planned Hospital Systems, *OR Spectrum*, 34, 2, 319-348.
- Pinto-Varela, T., A.P.F.D. Barbosa-Póvoa, A.Q. Novais (2011), Bi-objective optimization approach to the design and planning of a supply chain: economic versus environmental performances, *Computers and Chemical Engineering*, 35, 8, 1454-1468.
- Gomes, I., A. P. F. D. Barbosa-Póvoa, A. Q. Novais (2011), Modelling a recovery network for WEEE: a case study in Portugal, *Waste Management*, 31, 1645-1660.
- Amaro, A.C; A. P. F. D. Barbosa-Póvoa (2011), Supply Chains Planning with Reverse Flows: optimal alternative time formulations, *Ind Eng. Chem Res*, 50 (9), 5005–5022.
- Barros, I, A.P.F.D. Barbosa-Póvoa, A. Castro (2011), Performance Measurement in Buyer-Supplier Collaboration Programs: Implementing the Common Scorecard, *International Journal of Procurement Management (IJPM)*, 4, 3, 259-273.
- Gomes, C. M., A. P. F. D. Barbosa-Póvoa, A. Q. Novais (2010), Optimal reactive scheduling for new order insertion in job shop, make-to-order industries, *International Journal of Production Research*, 48, 24, 7395–7422.
- Suelen N. Boschetto, Leandro Magatão, William M. Brondani, Flávio Neves-Jr, Lucia V. R. Arruda, Ana P. F. D. Barbosa-Póvoa, S. Relvas, (2010) An operational scheduling model to product distribution through a pipeline network, *Ind. Eng. Chem Res.*, 49, 5661–5682.

- Duque, J., A. P. F. D. Barbosa-Póvoa, A. Q. Novais (2010), Design and Planning of Sustainable Industrial Networks: Application to a Recovery Network of Residual Products, *Ind Eng. Chem Res*, 49, 4230–4248.
- Salema, I., A. P. F. D. Barbosa-Póvoa, A. Q. Novais (2010), Simultaneous design and planning of supply chains with reverse flows: a generic modelling framework, *EJOR*, 203, 336-349.
- Amaro, A. C., A.P.F.D. Barbosa-Póvoa (2009), The Effect of Uncertainty on the Optimal Closed-Loop Supply Chain Planning under Different Partnerships Structure, *Computers & Chemical Engineering (Comp. Chem Engng)*, *Computers and Chemical Engineering*, 33, 2144–2158 .
- Pinto, T., A.P.F.D. Barbosa-Póvoa, A.Q. Novais (2009), Design and Scheduling of Periodic Multipurpose Batch Plants under Uncertainty, *Ind. Eng. Chem Res.* 48, 9655–9670.
- Relvas, S., A.P.F.D. Barbosa-Póvoa, H. Matos, J. Fialho, (2009), Heuristic Batch Sequencing on a Multiproduct Oil Distribution System, *Computers & Chemical Engineering*, 33, 712–730.
- Salema, I., A. P. F. D. Barbosa-Póvoa, A. Q. Novais (2009), A strategic and tactical model for closed-loop supply chains, *ORSpectrum*, 31, 573-599.
- Amaro, A. C. , A.P.F.D. Barbosa-Póvoa (2008), Planning and Scheduling of Industrial Supply Chains with Reverse Flows: A real pharmaceutical case-study, *Computers & Chemical Engineering - Special Issue in Enterprise Wide Optimization*, 32, 2606-2635.
- Pinto, T., A.P.F.D. Barbosa-Póvoa, A.Q. Novais (2008), Design of Multipurpose Batch Plants: A Comparative Analysis between the STN, m-STN and RTN Representations and Formulations, *Industrial & Engineering Chemistry Research*, 47, 6025-6044.
- Amaro, A. C. e A.P.F.D. Barbosa-Póvoa (2008), Optimal Supply Chain Management with Detailed Scheduling, *Ind. Eng. Chem. Res.*, 47 (1), 116 -132, CEG-IST, WP 3/2007, ISSN 1646-2955.
- Relvas S., A. H. Matos, A. P. F. D. Barbosa-Póvoa, J. Fialho, A. S. Pinheiro (2007), Reactive Scheduling Framework for a Multiproduct Pipeline with Inventory Management, *Ind. Eng. Chem Res.*, 46, 5659-5672.
- Barbosa-Póvoa, A. P. F. D. (2007), A Critical Review on the Design and Retrofit of Batch Plants, *Comp. Chem Engng*, 31, 833-855.
- Salema, I., A. P. F. D. Barbosa-Póvoa, A. Q. Novais (2007), An Optimization Model for the Design for a Capacitated Multi-product Reverse Logistics Network with Uncertainty, *European Journal of Operations Research (EJOR)*, 179,1063-1077.

- Duque, J., A.P.F.D. Barbosa-Póvoa, A.Q. Novais (2007), Synthesis and Optimisation of the Recovery Route for Residual Products with Uncertain Product Demands, *Computers and Operations Research*, 34, 1463-1490.
- Relvas S., A. H. Matos, A. P. F. D. Barbosa-Póvoa, J. Fialho, A. S. Pinheiro (2006), Optimal Pipeline Scheduling and Inventory Management of a Multiproduct Oil System, *Ind. Eng. Chem Res*, 45, 7841-7855.
- Salema, I., A. P. F. D. Barbosa-Póvoa, A. Q. Novais (2006), A Warehouse based Design Model for Reverse Logistics, *Journal of Operational Research Society (JORS)*, 57, 6, 615-629.
- Pinto, T., A.P.F.D. Barbosa-Póvoa, A.Q. Novais (2005), Optimal Design and Retrofit of Batch Plant with a Periodic Mode of Operation, *Comp. Chem. Engng*, 29, 1293-1304.
- Gomes, C. M., A. P. F. D. Barbosa-Póvoa, A. Q. Novais (2005), Optimal Scheduling for Flexible Job-Shop Operation, *International Journal of Production Research*, 43, 11, 2323-2353.
- Castro, P., A. P. F. D. Barbosa-Póvoa, A. Q. Novais (2005), Simultaneous Synthesis, Design and Scheduling of Multipurpose Plants using RTN-based Continuous-time Formulations, *Ind. Eng. Chem Res*, 44, 2, 343-357.
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- Castro, P., A. P. F. D. Barbosa-Póvoa, H. Matos, A. Q. Novais (2004), A Simple Continuous Time Formulation for Short-Term Scheduling of Batch and Continuous Processes, *Ind. Eng. Chem Res*, 43, 1, 105-118.
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- Pinto, T., A.P.F.D. Barbosa-Póvoa, A.Q. Novais (2003), Optimal Design of Heat-Integrated Multipurpose Batch Facilities with Economic savings in Utilities: A Mixed Integer Mathematical Formulation, *Annals of Operations Research*, 120, 201-230.
- Barbosa-Póvoa A.P.F.D., R. Mateus, A.Q. Novais (2002), Optimal 3D Layout of Industrial Facilities, *International Journal of Production Research*, 40, 7.

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- Barbosa-Póvoa, A. P. F. D., C. C. Pantelides (1999), The Design of Multipurpose Production facilities: A RTN Decomposition-Based Algorithm, *Comp. Chem. Engng*, 23, S7-S10.
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