

Prashant Nagapurkar

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Objective	To secure a full time opportunity in the area of Techno-Economic Optimization and Environmental Life Cycle Analysis (LCA) of chemical and manufacturing processes	
Education	Missouri University of Science and Technology, Rolla, MO PhD Chemical Engineering EIT Chemical – Registered in Texas (PE Exam passed)	Jan 2019 GPA: 3.58/4.0
	Missouri University of Science and Technology, Rolla, MO M.S. Chemical Engineering	Dec 2015 GPA: 3.72/4.0
	University of Pune, Pune, India Bachelors in Chemical Engineering (B.E.)	May 2011 GPA: 3.2/4.0
Doctoral Dissertation	Missouri S&T- Energy Research and Development Center Graduate Research Assistant Techno-economic optimization and environmental assessment (LCA) of a microgrid using Genetic algorithm and Artificial Neural Networks for US cities <ul style="list-style-type: none">• Developed a dynamic energy generation and consumption model of a small electric grid (microgrid) consisting of solar PV, wind turbine, lead acid battery, biodiesel generator, fuel cell and electrolyzer• Optimized the size of the microgrid to provide electricity to a small community using stochastic optimization technique (Genetic algorithm) on Matlab software• Used machine learning algorithms such as artificial neural networks, complex trees, SVM, etc. to model and predict electricity consumption based on historical data• Conducted a techno-economic assessment of a supercritical biodiesel production process for a plant situated in the Midwest region of the US using Aspen Plus• Performed an environmental sustainability assessment (LCA) of the biodiesel production process to assess its carbon footprint (CO₂ emissions) using softwares such as GaBi and GREET	Rolla, MO Aug 2015 – Jan 2019
Academic Experience	Oak Ridge National Laboratory Postdoctoral Associate <ul style="list-style-type: none">• Conducted a Life Cycle Analysis (LCA) of integrated chip manufacturing process to compute the embodied energy and environmental impacts using OpenLCA.• Conducted a techno-economic analysis and environmental LCA of a coal to carbon fiber process using Aspen Plus, Open LCA.	Oak Ridge, TN Oct 2019 – Present
	Missouri S&T-Department of Chemical Engineering Researcher Techno-economic optimization and environmental assessment (LCA) of microgrids using Simulated Annealing, Genetic Algorithm and Artificial Neural Networks <ul style="list-style-type: none">• Utilizing Simulated Annealing, Genetic Algorithm and Artificial Neural Networks to conduct Microgrid Techno-Economic Optimization for developing countries in Africa and Asia.	Rolla, MO Jan 2019 - Sep 2019
Industry Experience	Shell Oil Company Post Graduate Intern – Materials & Corrosion <ul style="list-style-type: none">• Gained experience with the materials selection process for subsea equipment (pipelines, etc.) in deepwater oil production systems to comprehend its technical and commercial requirements• Developed a Standard Operating Procedure (SOP) for materials selection process by referring Shell's design engineering practices (DEPs) and interacting with subject matter experts and managerial	Houston, TX May 2016 - Aug 2016

colleagues. The developed SOP has a potential of reducing the man-hours spent in the design phase of a new project resulting in significant annual savings

- Studied the causes of corrosion in pipelines and identified ways to mitigate them by adopting corrosion resistant materials and methods

Praj Industries Ltd

Pune, India

Process Engineer

Feb 2012 - Jul 2013

- Designed mass and energy balances, PFDs, P&IDs, equipment lists, and equipment layouts for ethanol fermentation and distilleries plants (bio refineries)
- Scaled up ethanol distillation processes and conducted techno-economic analyses using softwares such as Aspen Hysys, Chemcad, HTRI
- Developed an in-house techno-economic software tool (BREWSOFT™) for beer manufacture process on Visual Basic. NET platform

Coursework
Projects

Missouri S&T – Graduate coursework projects

Rolla, MO

Increase of flight time for paper helicopter using Six Sigma DMAIC methodology

Aug 2015 – Dec 2015

- Collected flight time data and performed gage R&R to determine baseline conditions
- Analyzed data using FMEA and developed cause and effect diagram (fishbone) to identify key factors
- Quantified the impact of key factors by conducting design of experiments (DOE), hypothesis testing and regression analysis using Minitab
- Incorporated key factors in helicopter design to achieve 75% increase of flight time

Process control design scheme for Fluid Catalytic Cracking Unit (FCCU)

Jan 2014-May 2014

- Constructed a dynamic model of the Fluid Catalytic Cracking Unit (FCCU) on VisSim™ software
- Developed and designed various control design strategies that would maintain outputs of FCCU within specific range so as to meet economic objectives
- Investigated the effect of interactions between inputs and disturbances on the outputs of FCCU
- Successfully implemented control design schemes on the FCCU using multivariable control scheme

Teaching
Experience

Taught courses for Staged Mass Transfer, Applied Computational Fluid Dynamics, Life cycle assessment (LCA) of Energy Systems for undergraduate and graduate students.

Certifications

- Pursuing Data Science course administered by John Hopkins University (completion date Dec 2019)
- Gaining experience in areas of R programming, exploratory data analysis, data visualization, statistical inference and practical machine learning

Coding skills

Matlab, Visual basic.net, Fortran, Python, R Language

Simulation tools Aspen Plus, Hysys, Chemcad, Unisim, HTRI, Ansys Fluent, System Advisor Model, HOMER, Powersim

Software tools MS Office, Polymath, Mathcad, Minitab, GREET, Gabi

Peer-Reviewed
Publications

Prashant Nagapurkar, Joseph Smith, 'Techno-Economic Optimization and Environmental Life Cycle Assessment (LCA) of Microgrids located in the US using Genetic Algorithm', Elsevier's Energy Conversion and Management Journal, 2019, 181, Pg. 272-291 (Impact Factor – 6.3).

Prashant Nagapurkar, Joseph Smith, 'Techno-economic Optimization and Social Costs Assessment Microgrids in the US using Genetic Algorithm and Artificial Neural Networks: A Case Study for Two US Cities' – Elsevier's Journal of Cleaner Production, 2019, 229, 552-569 (Impact Factor – 6.2).

Prashant Nagapurkar, Joseph Smith, 'A review of the risks to water resources due to unconventional Shale gas development in the US – An application to the Kurdistan region of Iraq', International Conference on Environmental impacts of the Oil and Gas Industries: Kurdistan Region of Iraq as case

study, April 17-19, 2017, Kurdistan, Iraq

Prashant Nagapurkar, Shyam Paudel, Joseph Smith, 'Improving Process Sustainability and Profitability for a large US Gray Iron foundry', Green Growth and efficient Resource Use, Paper #1284, 33rd System Dynamic Conference of System Dynamics Conference, July 19-23, 2015, Cambridge, USA.

Prashant Nagapurkar, Joseph Smith, 'Techno-economic and environmental life cycle assessment (LCA) of a supercritical biodiesel process for a plant located in the US' – Submitted and under review.

Conference Presentations **Prashant Nagapurkar**, Joseph Smith, 'Techno-economic assessment of a supercritical biodiesel process for a plant located in the Midwest region of the US', April 22-26, 2018, Orlando, US.

Prashant Nagapurkar, Shyam Paudel, Joseph Smith, 'Improving Process Sustainability and Profitability for a large US Gray Iron foundry", AIChE Annual Meeting, November 16-21, 2014, Atlanta, US.