

Curriculum Vitae



Personal information

Surname/ First name	Gunawan/ Tubagus Aryandi
Address	4400 Province Line Rd, Princeton, New Jersey 08540 United States of America
Mobile	+1 609 385 8516
E-mail	arya.gunawan@princeton.edu
Nationality	Indonesian
Date of birth	January 4, 1989
Gender	Male
URL	Linkedin ResearchGate ORCID

Work experiences

Dates	Current, from October 2021
Occupation	Postdoctoral Research Associate at the Energy Systems Analysis Group
Main activities and responsibilities	<ul style="list-style-type: none">· Modelling and analysing of carbon capture, utilisation and storage (CCUS) and bioenergy with carbon capture and storage (BECCS).· Responsible for the deliverable reports and academic publications.· Responsible for the reliable techno-economic data.· Responsible for the inventory of emission sources.· Development of feedstocks supply chains for BECCS.· Development of carbon accounting methodology.
Name and address of employer	Andlinger Center for Energy and the Environment at Princeton University 86 Olden St, Princeton, New Jersey 08540 United States of America Tel: +1 609 258 4899
Website	https://acee.princeton.edu/
Type of business	A multidisciplinary research and education center to develop technologies and solutions to secure our energy and environmental future

Dates	September 2017 - September 2021
Occupation	Postgraduate Researcher of GENCOMM project (GENerating energy secure COMMunities through smart renewable hydrogen)
Main activities and responsibilities	<ul style="list-style-type: none"> · Techno-economic modelling of H₂ production, transportation & dispensing. · Establishment of the Europe-wide Community H₂ Forum (CH₂F) · Development of an online & interactive map-based Decision Support Tool (DST) towards sustainable urban transport at http://communityh2.eu/dst/. · Responsible for the monthly and deliverable report. · Responsible for the monthly and technical meetings. · Responsible for reliable techno-economic data. · Participation in work dissemination. · Exploration of future research. · Contribution to public engagement and stakeholder consultation
Name and address of employer	National University of Ireland Galway University Road, H91 TK33 Galway - Ireland Tel: +353 91 524411
Website	https://www.nweurope.eu/projects/project-search/gencomm-generating-energy-secure-communities/
Type of business	Regional project in renewable energy funded by EU Interreg North-West Europe Programme (Project number of NWE 334)
Dates	April 2016 – September 2016
Occupation	Master Thesis
Main activities and responsibilities	<p>The master thesis topic is modelling and techno-economic evaluation of a CSP/Fischer-Tropsch fuel production plant.</p> <ul style="list-style-type: none"> · Responsible for techno-economic modelling of metal oxide and Fischer-Tropsch in Aspen Plus. · Responsible for energetic system optimisation (heat integration). · Optimisation of heat demand at Reverse Water–Gas Shift (RWGS) reactor and utilisation of solar heat for RWGS reactor · Responsible for system improvement on recycling streams and electricity generation for plant own demand from the byproducts. · Responsible for the key economic parameters, techno-economic evaluation, and sensitivity analysis. · Optimisation of carbon conversion to liquid fuels.
Name and address of employer	Deutsches Zentrum für Luft- und Raumfahrt (DLR) Institut für Technische Thermodynamik Pfaffenwaldring 38-40 70569 Stuttgart - Germany Tel: +49 711 6862 0
Website	https://www.dlr.de/
Type of business	Research institution in the fields of Energy, Transportation, Aeronautics & Space

Dates	August 2015 – September 2015
Occupation	Internship
Main activities and responsibilities	<ul style="list-style-type: none"> · Support the scientific work in the energy system department with literature and data. · Research on the structure of the energy system in a developing country. · Responsible for the analysis on energy economic indicators, energy balance, Sankey diagram, electricity market segmentation, energy production, cost of electricity production, the tariff of electricity, interruption duration (blackout) and energy policy.
Name and address of employer	Fachgebiet Energiesysteme Fakultät III Prozesswissenschaften Institut für Energietechnik Sekretariat TA 8, Einsteinufer 25, D-10587 Technische Universität Berlin
Website	https://www.tu-berlin.de/fak_3/menue/einrichtungen/institute/institut_fuer_energietechnik/
Type of business	Department of Energy System
Dates	October 2010 – June 2013
Occupation	Customer Technical Service Staff - Quality Assurance
Main activities and responsibilities	<ul style="list-style-type: none"> · Responsible for the inspection of the quality problems in the customer plant and ensuring the causes of problems. · Responsible for the risk management in the Quality Assurance areas, detecting the possible source of risk, analysing the impact of the risk, classifying risk type, providing responsive options. · Responsible for the writing of Corrective Action Report to improve the steel production process · Responsible for the writing of Monthly Report on Claims Settlement and Products Performance for the General Manager of Quality Assurance. · Responsible for assisting the external auditor (Ernst and Young) in collecting data of claim and quality.
Name and address of employer	PT. Krakatau Steel Gedung Krakatau Steel, floor 6th Jl. Gatot Subroto Kav. 54 12950 Jakarta - Indonesia Tel: +62-21 5221255
Website	https://www.krakatausteel.com/
Type of business	Iron and Steel Industry
Dates	July 2009 – September 2009
Occupation	Internship
Main activities and responsibilities	<ul style="list-style-type: none"> · Learning the company's business process, the production processes of caustic soda and polyvinyl chloride, the utility system, demineralisation water process, waste water treatment plant, steam production, and electricity supply. · Responsible for the optimisation of coal boiler, particularly on the flow rate of flue gas and excess air, efficiency and burning temperature.
Name and address of employer	PT. Asahimas Chemical Ds Gunung Sugih, Jalan Raya Anyer, Km-122 Cilegon 42447 Banten - Indonesia Tel: +62 254 601252
Website	https://asc.co.id/
Type of business	Chemical Industry of chlor-alkali, vinyl chloride monomer and polivinyll chloride.

Education

Dates	September 2017 - September 2021
Title of qualification	Doctor of Philosophy in Mechanical Engineering
Research activities	<ul style="list-style-type: none">· Modelling of distributed & regional hydrogen production from renewables· Integration of wind power with solar and batteries to produce hydrogen· Techno-econo-environmental modelling and evaluation· Sizing of the optimum electrolyser capacity (MW)· Supply chain optimisation· Modelling of the total cost of vehicle ownership· Modelling of the carbon abatement cost· Sensitivity analysis· Renewable energy economics and policy· Case studies include hydrogen supply for the gas grid injection, remote island, public city bus, taxi fleet, heavy-duty truck, refuse collector, agricultural tractor & ferry.· Writing proposal for research funding· Assistance to 10 master students in total for research direction
Name of institution	National University of Ireland Galway (Ireland)
Website	http://www.nuigalway.ie/
Dates	October 2014 – October 2016
Title of qualification	Master of Science in Energy Engineering
Principal subjects	Conversion Technologies of Renewable Energies, Components of Energy Conversion Systems, Integration of Renewable Energies, Energy Storage and Conversion, and Project Energy Systems
Name of institution	Technical University of Berlin (Germany)
Website	https://www.tu-berlin.de/
Dates	August 2010 – August 2013
Title of qualification	Bachelor of Engineering in Chemical Engineering
Principal subjects	Fluid Mechanics, Mass and Energy Balance, Chemical Reaction Engineering, Process Controlling, Statistic and Probability, Petroleum Processing, Natural Gas Treatment, and Petrochemical Processes.
Name of institution	University of Indonesia, Jakarta (Indonesia)
Website	https://www.ui.ac.id/
Dates	August 2007 – August 2010
Title of qualification	Diploma of Engineering in Chemical Engineering
Principal subjects	Thermodynamics, Materials Science, Industrial Water Treatment, Pilot Plant, Process Automation, Corrosion Prevention Technology, and Polymer and Membrane Technology.
Name of institution	Bandung State Polytechnic, Bandung (Indonesia)
Website	https://www.polban.ac.id/en/home/

Achievements

2021	International Student Ambassador From the National University of Ireland Galway & Education in Ireland
2020	Nomination of Hydrogen Europe Research Young Scientist Award from the Hydrogen Europe
2018	Best Poster Award at MaREI Symposium from the MaREI, the SFI Research Centre for Energy, Climate and Marine
2017	Scholarship Recipient for Ph.D. Studentship from the European Union in the framework of the Interreg Northwest Europe
2014	Scholarship Recipient for Master Programme from the Indonesian Local Government
2010	5th Best Research in Chemical Engineering from the Bandung State Polytechnic
2009	Scholarship Recipient in BBM Programme from the Ministry of Education, Indonesia
2008	Scholarship Recipient in PPA Programme from the Ministry of Education, Indonesia
2004	2nd Best Student in Junior High School from the SMP Negeri 28 Bandung

Trainings & technical competences

Training	Institution	Year	Place
Responsible Conduct of Research (RCR): Engineering Researcher	Collaborative Institutional Training Initiative	2021	Online
IWEA Annual 2020 Conference	Irish Wind Energy Association	2020	Online
Workshop on the Scale-Up Zero-Emission Vehicles	European Automobile Manufacturers' Association	2020	Online
Teaching & Learning	NUI Galway	2019	Galway
Workshop on Ireland's Future Hydrogen Economy	University College Dublin	2019	Dublin
All-Energy Research Hub	All Energy	2019	Glasgow
Research Integrity in Engineering & Technology	Oxford University	2018	Online
MaREI Symposium	Marine Renewable Energy Ireland (MaREI)	2018	Cork
Workshop on the Hydrogen Production	NUI Galway	2017	Galway
Ryan Institute Research Day	NUI Galway	2017	Galway
Deutschkurse B1	die deutSCHule	2016	Berlin
Deutschkurse A2	die deutSCHule	2015	Berlin
Team Building	DAAD Cairo	2015	El Gouna
Super Intensive Program	Goethe Institut Indonesia	2014	Bandung
Petrogas Day	University of Indonesia	2013	Jakarta
Foreman Development Program	Krakatau Steel Ltd	2012	Cilegon
Quality Control Circle Leader	Krakatau Steel Ltd	2012	Cilegon
Management Trainee	Krakatau Steel Ltd	2011	Jakarta
Presentation Techniques	Beprof Multi Daya Ltd	2011	Cilegon
Mental Training Program	Selaras Inti Prima Indonesia Ltd	2010	Sukabumi
France Conversation	Institut Francais d'Indonesie	2010	Bandung
ISO 14001	Konermag	2010	Bandung
ISO 9001	Konermag	2010	Bandung
OHSAS 18001	Konermag	2010	Bandung
Industrial Leadership Training	Bandung State Polytechnic	2010	Bandung

Organisational Experiences

Position & Organisation	Period
Member of Student Council at the National University of Ireland Galway	2019 - 2020
Coordinator of Overseas Indonesian Students Association Alliance (OISAA)	2018 - 2019
Chairman of Indonesian Students Association in Ireland	2017 - 2018
Member of The Indonesian Student Union in Berlin	2015 - 2016
Member of Student Union TU Berlin Campus EI- Gouna	2014 - 2016
Member of Employee Union of Krakatau Steel - Jakarta	2010 - 2013

Computer skills and competences

Advanced	<ul style="list-style-type: none"> · Microsoft Office programmes · EBSILON Professional · Aspen Plus · ArcGIS · IDA Indoor Climate and Energy · SAP
Intermediate	<ul style="list-style-type: none"> · Polysun Simulation Software · CASAnova · MATLAB
Basic	<ul style="list-style-type: none"> · Visual Basic · COMSOL Multiphysics · C++ · Fortran

Languages

	Understanding		Speaking	Writing
	Listening	Reading		
Indonesian (Mother tongue)	4	4	4	4
English	4	4	4	4
German	2	3	2	2

4: fluently/mother tongue 3: good 2: sufficient 1: basic

Academic journals (*italic texts: under preparation/review*)

Gunawan, T.A; Monaghan, R.F.D. Techno-Econo-Environmental Comparisons of Zero- and Low-Emission Heavy-Duty Trucks Integrated with Wind Electricity – Case Study for a Quarrying Fleet in Ireland.

Gunawan, T.A; Cavana, M; Leone P; Monaghan, R.F.D. Solar Hydrogen for High Capacity, Dispatchable, Long-Distance Energy Transmission – A Case Study for Injection in the Greenstream Natural Gas Pipeline.

Gunawan, T.A; O'Sullivan, J; Monaghan, R.F.D. Decarbonisation Costs of Multiple Vehicles by A Regional Hydrogen Hub – Case Study in Galway, Ireland.

Gunawan, T.A; Williamson, I.; Raine, D.; Monaghan, R.F.D. Decarbonising City Bus Networks in Ireland with Renewable Hydrogen. Special Issue Hydrogen Energy System. International Journal of Hydrogen Energy. 2020. [Link to the article](#)

Gunawan, T.A.; Singlitico, A.; Blount, P.; Burchill, J.; Carton, J.G.; Monaghan, R.F.D. At What Cost Can Renewable Hydrogen Offset Fossil Fuel Use in Ireland's Gas Network?. Special Issue Computational Analysis of Natural Gas Supply Chains. Energies 2020, 13, 1798. [Link to the article](#)

Gunawan, T.A; Wahid, A. Pengendalian Proses Purifikasi DME dan Metanol pada Pabrik DME dari Gas Sintesis (PI Controller Tuning in Process Control System of Purification DME And Methanol in DME Plant From Synthesis Gas). Sinergi, ISSN: 1410-2331, Vol. 19, No. 1, 2015. [Link to the article](#)

International conferences

Moran, C.; Moylan, E.; Reardon, J.; Gunawan, T.A.; Monaghan, R.F.D. Can regional hubs make green hydrogen viable? – A case study for Ireland. Applied Energy Symposium: MIT A+B, Cambridge, USA 2021.

Gunawan, T.A.; Monaghan, R.F.D. Decarbonising City Bus Networks in Ireland with Hydrogen from a Hybrid Wind-Photovoltaic-Battery-Electrolyser System. The 23rd World Hydrogen Energy Conference (WHEC), Istanbul, Turkey 2020.

Gunawan, T.A.; Singlitico, A.; Blount, P.; Burchill, J.; Carton, J.G.; Monaghan, R.F.D. Towards techno-economic evaluation of renewable hydrogen production from wind curtailment and injection into the Irish gas network. Proceedings of ECOS 2019. The 32nd International Conference on Efficiency, Cost, Optimisation, Simulation and Environmental Impact of Energy Systems (ECOS), Wroclaw, Poland 2019. [Link to the article](#)

Other publications

Gunawan, T.A.; Berhendt, F.; Albrecht, F.G. Modelling and techno-economic evaluation of a CSP/ Fischer-Tropsch fuel production plant. Energy Engineering Department of the Technical University of Berlin. ISBN: 978-3-945682-40-1, 2016. [Link to the article](#)