

Curriculum Vitae

Name: CHOU Siaw Kiang (S.K. Chou)

Education

1. 1977-80 Dip. D'Études Approfondies and Dr-Ing., Ecole Nationale Supérieure d'Arts et Métiers, Paris, France.
2. 1973-77 B.Eng., Mechanical Engineering, University of Singapore, Singapore.

Employment History

1. 1990-1992 Executive Director, Science Council of Singapore, and Executive Director, National Science and Technology Board
2. 1992-2000 Director, Industry and Technology Relations Office, NUS.
3. 1995-2002 Managing Director, NUS Technology Holdings Pte Ltd
4. 1998-2003 Head, Department of Mechanical Engineering, National University of Singapore
5. 2003-2008 Vice-Dean, External & Industry Relations Office, Faculty of Engineering, National University of Singapore
6. 2007-2009 and 2010-2017 Executive Director, Energy Studies Institute, NUS

Professional and Public Service (Current)

1. National Focal Point, Board of Advisers, ASEAN Committee on Science and Technology (COST).
2. Chairman, Technical Evaluation Panel, Grant for Energy Efficiency Technology (GREET), National Environment Agency, Singapore.
3. Past President, President (2012-2014), Institution of Engineers, Singapore (IES).
4. Fellow, American Society for Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).
5. Honorary Fellow, Institution of Engineers, Singapore (IES).
6. Fellow, ASEAN Academy of Engineering and Technology (AAET).
7. Fellow, Singapore Academy of Engineering (SAEng).
8. Fellow, Energy Institute (EI), UK.
9. Honorary Fellow, ASEAN Federation of Engineering Organisations (AFEO).

Summary

S.K. Chou obtained a B.Eng. in Mechanical Engineering from the University of Singapore, and a D.E.A. and Dr-Ing. from Ecole Nationale Supérieure d'Arts et Métiers, Paris, under a French Government Scholarship. He joined the Department of Mechanical Engineering, National University of Singapore, as a lecturer, in 1980, and is presently Professor.

From 1990 to 1992, he was seconded to the Science Council of Singapore and the National Science and Technology Board as Executive Director. In 1992, he helped establish the NUS Industry and Technology Relations Office (INTRO), where he was Director from 1992 to 2000. In 1995, he helped found the NUS Technology Holdings Pte Ltd (NUSH), a wholly-owned NUS company responsible for seeding new technology start-ups from university research and inventions. He held the position of Managing Director of NUSH from 1995 to 2001. He was Head of the Department of Mechanical Engineering, NUS, from 1998 to 2003, and Vice-Dean (External and Industry Relations) of the Faculty of Engineering from 2003 to 2008. Professor Chou was the founding executive director of the Energy Studies Institute, established in 2007 at NUS, where he held a joint appointment till June 2017.

S.K. Chou is an Honorary Fellow and Past President of the Institution of Engineers (IES), Singapore, and a Fellow of the American Society of Heating, Refrigerating and Air-Conditioning Engineers. He is a Fellow of the Singapore Academy of Engineering, the ASEAN Academy of Engineering and Technology, the Energy Institute, UK, and the ASEAN Federation of Engineering Organisations. Between 2003 and 2018, he was

Chairman of the Advisory Committee of the School of Mechanical and Aeronautical Engineering of Singapore Polytechnic, and, from 2006 to 2015, he served on the Board of Governors of Singapore Polytechnic. Up till March 2016, he was Chairman of the Advisory Board of the ASEAN Plan of Action on Science and Technology and was a member of the International Advisory Board of the APEC Center for Technology Fore-sighting.

He is the national focal point on the Board of Advisers, ASEAN Committee on Science and Technology (COST). He is Chairman of the Technical Evaluation Panel on the Grant for Energy Efficiency Technology (GREET) of the National Environment Agency, Singapore. He is credited with the formulation of the Envelope Thermal Transfer Value (ETTV) and the Residential Envelope Transmittance Value (RETV) energy standards used in the Singapore Green Mark Incentive Scheme. He is presently an Editor of the Elsevier journal, *Applied Energy*, and serves on the editorial boards of a number of other energy related journals.

Professional Experience

1. Energy systems modelling and simulation.
2. Energy analysis and modelling of buildings.
3. Special air-conditioning and dehumidification processes.
4. Condensation and humidity control.
5. Heat pump drying and dryer design.
6. Renewable energy and heat recovery systems for heating, power and cooling.

Current Research Interests

Energy performance of buildings and thermal performance of building envelopes, energy and thermal systems, microscale combustion, micro thrusters and propulsion, energy management and policy.

Journal Publications

1. Chua, K. J., Chou, S. K., & Islam, M. R. (2018). On the experimental study of a hybrid dehumidifier comprising membrane and composite desiccants. *Applied Energy*, 220, 934-943. doi:[10.1016/j.apenergy.2017.12.116](https://doi.org/10.1016/j.apenergy.2017.12.116)
2. Yan, J., Sun, F., Chou, S. K., Desideri, U., Li, H., Campana, P. E., & Xiong, R. (2017). Transformative Innovations for a Sustainable Future. *Applied Energy*, 204, 867-872. doi:[10.1016/j.apenergy.2017.09.010](https://doi.org/10.1016/j.apenergy.2017.09.010)
3. Yan, J., Chou, S. K., Chen, B., Sun, F., Jia, H., & Yang, J. (2017). Clean, affordable and reliable energy systems for low carbon city transition. *Applied Energy*, 194, 305-309. doi:[10.1016/j.apenergy.2017.03.066](https://doi.org/10.1016/j.apenergy.2017.03.066)
4. Cui, X., Mohan, B., Islam, M. R., Chou, S. K., & Chua, K. J. (2017). Energy performance evaluation and application of an air treatment system for conditioning building spaces in tropics. *APPLIED ENERGY*, 204, 1500-1512. doi:[10.1016/j.apenergy.2017.03.067](https://doi.org/10.1016/j.apenergy.2017.03.067)
5. Yan, J., Sun, F., Chou, S. K., Desideri, U., Li, H., Campana, P. E., & Xiong, R. (2017). Transformative innovations for a sustainable future. *Applied Energy*. doi:[10.1016/j.apenergy.2017.08.155](https://doi.org/10.1016/j.apenergy.2017.08.155)
6. Yan, J., Shamim, T., Chou, S. K., Desideri, U., & Li, H. (2017). Clean, efficient and affordable energy for a sustainable future. *APPLIED ENERGY*, 185, 953-962. doi:[10.1016/j.apenergy.2016.06.005](https://doi.org/10.1016/j.apenergy.2016.06.005)
7. Tay, K. L., Yang, W., Li, J., Zhou, D., Yu, W., Zhao, F., . . . Mohan, B. (2017). Numerical investigation on the combustion and emissions of a kerosene-diesel fueled compression ignition engine assisted by ammonia fumigation. *APPLIED ENERGY*, 204, 1476-1488. doi:[10.1016/j.apenergy.2017.03.100](https://doi.org/10.1016/j.apenergy.2017.03.100)
8. Yan, J., Desideri, U., Chou, S. K., & Li, H. (2016). Energy solutions for a sustainable world. *INTERNATIONAL JOURNAL OF GREEN ENERGY*, 13(8), 757-758. doi:[10.1080/15435075.2016.1168648](https://doi.org/10.1080/15435075.2016.1168648)
9. Yan, J., Chou, S. -K., Desideri, U., & Lee, D. -J. (2016). Transition of clean energy systems and technologies towards a sustainable future (Part II). *APPLIED ENERGY*, 162, 1109-1113. doi:[10.1016/j.apenergy.2015.10.063](https://doi.org/10.1016/j.apenergy.2015.10.063)

10. Zhao, F., Yang, W., Tan, W. W., Yu, W., Yang, J., & Chou, S. K. (2016). Power management of vessel propulsion system for thrust efficiency and emissions mitigation. *APPLIED ENERGY*, 161, 124-132. doi:[10.1016/j.apenergy.2015.10.022](https://doi.org/10.1016/j.apenergy.2015.10.022)
11. Yan, J., Chou, S. -K., Desideri, U., & Lee, D. -J. (2015). Transition of clean energy systems and technologies towards a sustainable future (Part I). *APPLIED ENERGY*, 160, 619-622. doi:[10.1016/j.apenergy.2015.10.062](https://doi.org/10.1016/j.apenergy.2015.10.062)
12. Li, J., Yang, W. M., An, H., & Chou, S. K. (2015). Modeling on blend gasoline/diesel fuel combustion in a direct injection diesel engine. *APPLIED ENERGY*, 160, 777-783. doi:[10.1016/j.apenergy.2014.08.105](https://doi.org/10.1016/j.apenergy.2014.08.105)
13. Lee, D. -J., Yan, J., Chou, S. -K., & Desideri, U. (2015). Clean, efficient, affordable and reliable energy for a sustainable future Preface. *ENERGY CONVERSION AND MANAGEMENT*, 102, 1-3. doi:[10.1016/j.enconman.2015.05.059](https://doi.org/10.1016/j.enconman.2015.05.059)
14. Yan, J., Chou, S. K., & Desideri, U. (2015). The Editor's Best Reviewer awards for Applied Energy, 2014. *Applied Energy*, 150, A1. doi:[10.1016/j.apenergy.2015.05.009](https://doi.org/10.1016/j.apenergy.2015.05.009)
15. Vedharaj, S., Vallinayagam, R., Yang, W. M., Chou, S. K., Chua, K. J. E., & Lee, P. S. (2015). Performance Emission and Economic Analysis of Preheated CNSL Biodiesel as an Alternate Fuel for a Diesel Engine. *INTERNATIONAL JOURNAL OF GREEN ENERGY*, 12(4), 359-367. doi:[10.1080/15435075.2013.841162](https://doi.org/10.1080/15435075.2013.841162)
16. Yan, J., Chou, S. K., Dahlquist, E., & Li, H. (2015). Innovative Research For Sustainable Energy Systems. *INTERNATIONAL JOURNAL OF GREEN ENERGY*, 12(3), 191. doi:[10.1080/15435075.2014.958042](https://doi.org/10.1080/15435075.2014.958042)
17. Nian, V., & Chou, S. K. (2014). The state of nuclear power two years after Fukushima - The ASEAN perspective. *APPLIED ENERGY*, 136, 838-848. doi:[10.1016/j.apenergy.2014.04.030](https://doi.org/10.1016/j.apenergy.2014.04.030)
18. Yan, J., Chou, S. K., Desideri, U., & Xia, X. (2014). Innovative and sustainable solutions of clean energy technologies and policies (Part II). *APPLIED ENERGY*, 136, 756-758. doi:[10.1016/j.apenergy.2014.09.078](https://doi.org/10.1016/j.apenergy.2014.09.078)
19. Vedharaj, S., Vallinayagam, R., Yang, W. M., Chou, S. K., & Lee, P. S. (2014). Effect of adding 1,4-Dioxane with kapok biodiesel on the characteristics of a diesel engine. *APPLIED ENERGY*, 136, 1166-1173. doi:[10.1016/j.apenergy.2014.04.012](https://doi.org/10.1016/j.apenergy.2014.04.012)
20. Mohan, B., Yang, W., Yu, W., Tay, K. L., & Chou, S. K. (2015). Numerical investigation on the effects of injection rate shaping on combustion and emission characteristics of biodiesel fueled CI engine. *APPLIED ENERGY*, 160, 737-745. doi:[10.1016/j.apenergy.2015.08.034](https://doi.org/10.1016/j.apenergy.2015.08.034)
21. Yan, J., Chou, S. K., Desideri, U., & Hunt, S. (2014). The Editor's Best Reviewer awards for Applied Energy, 2013. *Applied Energy*, 130. doi:[10.1016/j.apenergy.2014.07.016](https://doi.org/10.1016/j.apenergy.2014.07.016)
22. Vallinayagam, R., Vedharaj, S., Yang, W. M., Lee, P. S., Chua, K. J. E., & Chou, S. K. (2014). Pine oil-biodiesel blends: A double biofuel strategy to completely eliminate the use of diesel in a diesel engine. *APPLIED ENERGY*, 130, 466-473. doi:[10.1016/j.apenergy.2013.11.025](https://doi.org/10.1016/j.apenergy.2013.11.025)
23. Mohan, B., Yang, W., Raman, V., Sivasankaralingam, V., & Chou, S. K. (2014). Optimization of biodiesel fueled engine to meet emission standards through varying nozzle opening pressure and static injection timing. *APPLIED ENERGY*, 130, 450-457. doi:[10.1016/j.apenergy.2014.02.033](https://doi.org/10.1016/j.apenergy.2014.02.033)
24. Yan, J., Chou, S. K., Desideri, U., & Xia, X. (2014). Innovative and sustainable solutions of clean energy technologies and policies (Part I). *APPLIED ENERGY*, 130, 447-449. doi:[10.1016/j.apenergy.2014.05.052](https://doi.org/10.1016/j.apenergy.2014.05.052)
25. An, H., Yang, W., Li, J., Maghbouli, A., Chua, K. J., & Chou, S. K. (2014). A numerical modeling on the emission characteristics of a diesel engine fueled by diesel and biodiesel blend fuels. *APPLIED ENERGY*, 130, 458-465. doi:[10.1016/j.apenergy.2014.01.004](https://doi.org/10.1016/j.apenergy.2014.01.004)
26. Vallinayagam, R., Vedharaj, S., Yang, W. M., Saravanan, C. G., Lee, P. S., Chua, K. E., & Chou, S. K. (2014). Impact of pine oil biofuel fumigation on gaseous emissions from a diesel engine. *FUEL PROCESSING TECHNOLOGY*, 124, 44-53. doi:[10.1016/j.fuproc.2014.02.012](https://doi.org/10.1016/j.fuproc.2014.02.012)
27. Fahd, M. E. A., Lee, P. -S., Chou, S. K., Yang, W., & Yap, C. (2014). Experimental study and empirical correlation development of fuel properties of waste cooking palm biodiesel and its diesel blends at elevated temperatures. *RENEWABLE ENERGY*, 68, 282-288. doi:[10.1016/j.renene.2014.02.007](https://doi.org/10.1016/j.renene.2014.02.007)
28. Nian, V., Chou, S. K., Su, B., & Baully, J. (2014). Life cycle analysis on carbon emissions from power generation - The nuclear energy example. *APPLIED ENERGY*, 118, 68-82. doi:[10.1016/j.apenergy.2013.12.015](https://doi.org/10.1016/j.apenergy.2013.12.015)

29. An, H., Yang, W. M., Maghbouli, A., Li, J., Chou, S. K., Chua, K. J., . . . Li, L. (2014). Numerical investigation on the combustion and emission characteristics of a hydrogen assisted biodiesel combustion in a diesel engine. *FUEL*, *120*, 186-194. doi:[10.1016/j.fuel.2013.12.021](https://doi.org/10.1016/j.fuel.2013.12.021)
30. Li, J., Yang, W. M., An, H., Maghbouli, A., & Chou, S. K. (2014). Effects of piston bowl geometry on combustion and emission characteristics of biodiesel fueled diesel engines. *FUEL*, *120*, 66-73. doi:[10.1016/j.fuel.2013.12.005](https://doi.org/10.1016/j.fuel.2013.12.005)
31. Vedharaj, S., Vallinayagam, R., Yang, W. M., Saravanan, C. G., Chou, S. K., Chua, K. J. E., & Lee, P. S. (2014). Reduction of harmful emissions from a diesel engine fueled by kapok methyl ester using combined coating and SNCR technology. *ENERGY CONVERSION AND MANAGEMENT*, *79*, 581-589. doi:[10.1016/j.enconman.2013.12.056](https://doi.org/10.1016/j.enconman.2013.12.056)
32. Vallinayagam, R., Vedharaj, S., Yang, W. M., Raghavan, V., Saravanan, C. G., Lee, P. S., . . . Chou, S. K. (2014). Investigation of evaporation and engine characteristics of pine oil biofuel fumigated in the inlet manifold of a diesel engine. *APPLIED ENERGY*, *115*, 514-524. doi:[10.1016/j.apenergy.2013.11.004](https://doi.org/10.1016/j.apenergy.2013.11.004)
33. Vedharaj, S., Vallinayagam, R., Yang, W. M., Chou, S. K., Chua, K. J. E., & Lee, P. S. (2014). Experimental and finite element analysis of a coated diesel engine fueled by cashew nut shell liquid biodiesel. *EXPERIMENTAL THERMAL AND FLUID SCIENCE*, *53*, 259-268. doi:[10.1016/j.expthermflusci.2013.12.018](https://doi.org/10.1016/j.expthermflusci.2013.12.018)
34. Jin, L. W., Lee, P. S., Kong, X. X., Fan, Y., & Chou, S. K. (2014). Ultra-thin minichannel LCP for EV battery thermal management. *APPLIED ENERGY*, *113*, 1786-1794. doi:[10.1016/j.apenergy.2013.07.013](https://doi.org/10.1016/j.apenergy.2013.07.013)
35. Vallinayagam, R., Vedharaj, S., Yang, W. M., Saravanan, C. G., Lee, P. S., Chua, K. J. E., & Chou, S. K. (2014). Impact of ignition promoting additives on the characteristics of a diesel engine powered by pine oil-diesel blend. *FUEL*, *117*, 278-285. doi:[10.1016/j.fuel.2013.09.076](https://doi.org/10.1016/j.fuel.2013.09.076)
36. Mohan, B., Yang, W., & Chou, S. K. (2014). Development of an accurate cavitation coupled spray model for diesel engine simulation. *ENERGY CONVERSION AND MANAGEMENT*, *77*, 269-277. doi:[10.1016/j.enconman.2013.09.035](https://doi.org/10.1016/j.enconman.2013.09.035)
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38. Yan, J., Chou, S. K., Desideri, U., Tu, S. T., & Jin, H. G. (2013). Research, development and innovations for sustainable future energy systems. *APPLIED ENERGY*, *112*, 393-395. doi:[10.1016/j.apenergy.2013.08.019](https://doi.org/10.1016/j.apenergy.2013.08.019)
39. Yan, J., Chou, S. K., & Dahlquist, E. (2013). Recent progress in sustainable energy systems. *INTERNATIONAL JOURNAL OF ENERGY RESEARCH*, *37*(15), 1937-1938. doi:[10.1002/er.3107](https://doi.org/10.1002/er.3107)
40. An, H., Yang, W. M., Maghbouli, A., Li, J., Chou, S. K., & Chua, K. J. (2013). Performance, combustion and emission characteristics of biodiesel derived from waste cooking oils. *APPLIED ENERGY*, *112*, 493-499. doi:[10.1016/j.apenergy.2012.12.044](https://doi.org/10.1016/j.apenergy.2012.12.044)
41. Yang, W. M., An, H., Chou, S. K., Chua, K. J., Mohan, B., Sivasankaralingam, V., . . . Li, J. (2013). Impact of emulsion fuel with nano-organic additives on the performance of diesel engine. *APPLIED ENERGY*, *112*, 1206-1212. doi:[10.1016/j.apenergy.2013.02.027](https://doi.org/10.1016/j.apenergy.2013.02.027)
42. Vallinayagam, R., Vedharaj, S., Yang, W. M., Saravanan, C. G., Lee, P. S., Chua, K. J. E., & Chou, S. K. (2013). Emission reduction from a diesel engine fueled by pine oil biofuel using SCR and catalytic converter. *ATMOSPHERIC ENVIRONMENT*, *80*, 190-197. doi:[10.1016/j.atmosenv.2013.07.069](https://doi.org/10.1016/j.atmosenv.2013.07.069)
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45. Nagarajan, S., Chou, S. K., Cao, S., Wu, C., & Zhou, Z. (2013). An updated comprehensive techno-economic analysis of algae biodiesel. *BIORESOURCE TECHNOLOGY*, *145*, 150-156. doi:[10.1016/j.biortech.2012.11.108](https://doi.org/10.1016/j.biortech.2012.11.108)

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55. Yang, W. M., An, H., Chou, S. K., Vedharaj, S., Vallinayagam, R., Balaji, M., . . . Chua, K. J. E. (2013). Emulsion fuel with novel nano-organic additives for diesel engine application. *FUEL*, 104, 726-731. doi:[10.1016/j.fuel.2012.04.051](https://doi.org/10.1016/j.fuel.2012.04.051)
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Selected Invited Lectures/Conference Presentations

"Intellectual property and climate change", Regional Conference on Intellectual Property and Economic Development: Challenges and Opportunities, World Intellectual Property Organization (WIPO) and the ASEAN Studies Centre, Institute of Southeast Asian Studies (ISEAS), Singapore, February 2011.

"Teaching energy efficiency – context, concepts and challenges", National Energy Efficiency Conference, National Energy Agency, Singapore, September 2012.

"Singapore's pathway to a low carbon future", Invited Plenary Lecture, 4th International Conference on Sustainable Energy and Environment (SEE 2012) – A Paradigm Shift to a Low Carbon Society, Bangkok, February 2012.

"Singapore's national strategy for low-emissions transport development", Invited Keynote, 2nd Annual Conference of Asian-European Energy Policy Research Network: Transition towards Low Carbon Transport: Asian and European Perspectives, Beijing University of Technology, Beijing, November 2013.

“Overview of ASEAN’s energy needs and challenges”, Invited Lecture, Energy Policy Roundtable 2012, Todai Policy Alternatives Research Institute, The University of Tokyo, Tokyo, April 2012.

“Myanmar Energy Development – an ASEAN Perspective”, Invited Lecture, Joint Conference on Energy Integration in Myanmar – A View from Abroad, Energy Research Institute (ERI), Chulalongkorn University and Todai Policy Alternative Research Institute (PARI), The University of Tokyo, Bangkok, June 2013.

“Non-traditional security challenges – energy security”, MFA Diplomatic Academy, Foreign Service Advanced Programme, Singapore, May 2014.

“Energy efficient and environmentally friendly transportation”, Invited Lecture, Applied Energy Expert Forum, Kunming, May 2014.

“Sustainable high performance façades for the tropics”, International Green Building Conference, Building and Construction Authority, Singapore, Sept 2014.

“System Modelling for Energy and Environmental Research”, Invited presentation, The 2nd Workshop on Frontier Modeling of Energy & Environment (FMEE), Energy & Resource Systems Engineering Chapter, Systems Engineering Society of China, Nanjing University of Aeronautics and Astronautics (NUAA), Nanjing, May 2016.

“Enhanced ETTV/RETV formulation for energy efficient building envelopes - a collaboration project of BCA, NUS, and Technoform”, International Green Building Conference, Building and Construction Authority, Singapore, 2016, September 2016.

“East Asia Energy Policy: Research & Outlook, Invited Keynote, 9th International Conference on Applied Energy (ICAE 2017) Cardiff, 21-25 August 2017

“Digital Transformation: Global Trends and Development in Smart Energy”, Invited Lecture, 2018 Technical Advisory Committee-Energy and Environmental Technology Meeting, ITRI, Taipei, 17 May 2018, Taipei.

“Sustainable City – People, Process and Policy”, Invited Keynote, UN Environment 2018 International Student Conference on Environment and Sustainability, Tongji University, Shanghai, 5 June 2018.

“Thermal Performance of Building Envelopes for Improved Energy Efficiency”, Invited Keynote, Applied Energy Symposium and Forum 2018: Low carbon cities and urban energy systems, Shanghai, June 5-7, 2018.

“Digital Transformation in Smart Energy – Are We Ready For It?”, Invited Talk, CAST Frontier Forum on Ecology & Energy: Challenges and Opportunities, China Association on Science and Technology, 12-13 June 2018, Beijing, China.
