

- Ahammed, M., Bhattacharyya, S. and Ramgopal, M., 2014a. Thermodynamic analysis and optimization of a CO₂ based transcritical refrigeration system with an ejector. In *Applied Mechanics and Materials* (Vol. 592, pp. 1825-1831). Trans Tech Publications.
- Ahammed, M.E., Bhattacharyya, S. and Ramgopal, M., 2014b. Thermodynamic design and simulation of a CO₂ based transcritical vapour compression refrigeration system with an ejector. *International journal of refrigeration*, 45, pp.177-188.
- Aganda, A.A., Coney, J.E.R., Sheppard, C.G.W., 2000. Airflow maldistribution and the performance of a packaged air conditioning unit evaporator. *Appl. Therm. Eng.* 20, 515-528.
- Agrawal, N. and Bhattacharyya, S., 2008. Optimized transcritical CO₂ heat pumps: Performance comparison of capillary tubes against expansion valves. *International Journal of Refrigeration*, 31(3), pp.388-395.
- Apra, C., Greco, A., Maiorino, A., 2013. An experimental study on charge optimization of a trans-critical CO₂ cycle. *International Journal of Environmental Science and Technology* 12, 1097-1106.
- Apra, C., Maiorino, A., 2008. An experimental evaluation of the transcritical CO₂ refrigerator performances using an internal heat exchanger. *International Journal of Refrigeration* 31, 1006-1011.
- Apra, C., Maiorino, A., 2009. Heat rejection pressure optimization for a carbon dioxide split system: An experimental study. *Applied Energy* 86, 2373-2380.
- ARI Standard 550/590, 2003. *Performance Rating of Water Chilling Packages Using the Vapor Compression Cycle*. Air-Conditioning, Heating and Refrigeration Institute, Arlington, VA.
- ASHRAE, 2014. *ASHRAE Handbook—Refrigeration*.
- Baek, J., Groll, E., Lawless, P., 2005. Piston-cylinder work producing expansion device in a transcritical carbon dioxide cycle. Part I: experimental investigation. *International Journal of Refrigeration* 28, 141-151.
- Baek, C., Heo, J., Jung, J., Cho, H. and Kim, Y., 2013. Optimal control of the gas-cooler pressure of a CO₂ heat pump using EEV opening and outdoor fan speed in the cooling mode. *International Journal of Refrigeration*, 36(4), pp.1276-1284.

- Banasiak, K., Hafner, A. and Andresen, T., 2012. Experimental and numerical investigation of the influence of the two-phase ejector geometry on the performance of the R744 heat pump. *International Journal of Refrigeration*, 35(6), pp.1617-1625.
- Banasiak, K., Hafner, A., Kriezi, E.E., Madsen, K.B., Birkelund, M., Fredslund, K., Olsson, R., 2015. Development and performance mapping of a multi-ejector expansion work recovery pack for R744 vapour compression units. *International Journal of Refrigeration* 57, 265-276.
- Bell, I., 2004. Performance increase of carbon dioxide refrigeration cycle with the addition of parallel compression economization. *Proc. 6th IIR Gustav Lorenzen Nat. Work. Fluids.*
- Belman-Flores, J.M., Barroso-Maldonado, J.M., Ledesma, S., Pérez-García, V., Gallegos-Muñoz, A. and Alfaro-Ayala, J.A., 2018. Exergy assessment of a refrigeration plant using computational intelligence based on hybrid learning methods. *International Journal of Refrigeration*, 88, pp.35-44.
- Belman-Flores, J.M., Ledesma, S., Barroso-Maldonado, J.M. and Navarro-Esbri, J., 2015. A comparison between the modelling of a reciprocating compressor using artificial neural network and physical model. *International Journal of Refrigeration*, 59, pp.144-156.
- Beshr, M., Aute, V., Sharma, V., Abdelaziz, O., Fricke, B. and Radermacher, R., 2015. A comparative study on the environmental impact of supermarket refrigeration systems using low GWP refrigerants. *International Journal of Refrigeration*, 56, pp.154-164.
- Bingming, W., Huagen, W., Jianfeng, L., Ziwen, X., 2009. Experimental investigation on the performance of NH₃/CO₂ cascade refrigeration system with twin-screw compressor. *International Journal of Refrigeration* 32, 1358-1365.
- Boccardi, G., Calabrese, N., Celata, G.P., Mastrullo, R., Mauro, A.W., Perrone, A., Trinchieri, R., 2013. Experimental performance evaluation for a carbon dioxide light commercial cooling application under transcritical and subcritical conditions. *Applied Thermal Engineering* 54, 528-535.
- Bodinus, W. S., 1999. The rise and fall of carbon dioxide systems: The first century of air conditioning, *ASHRAE Journal*. 41, 37.
- Boewe, D.E., Bullard, C.W., Yin, J.M., Hrnjak, P.S., 2001. Contribution of Internal Heat Exchanger to Transcritical R-744 Cycle Performance. *HVAC&R Research* 7, 37-41.
- Bush, J., Beshr, M., Aute, V. and Radermacher, R., 2017. Experimental evaluation of transcritical CO₂ refrigeration with mechanical subcooling. *Science and Technology for the Built Environment*, 23(6), pp.1013-1025.

- Cabello, R., Sanchez, D., Llopis, R., Torrella, E., 2008. Experimental evaluation of the energy efficiency of a CO₂ refrigerating plant working in transcritical conditions. *Applied Thermal Engineering* 28, 1596–1604.
- Cabello, R., Sánchez, D., Patiño, J., Llopis, R., Torrella, E., 2012. Experimental analysis of energy performance of modified single-stage CO₂ transcritical vapour compression cycles based on vapour injection in the suction line. *Applied Thermal Engineering* 47, 86-94.
- Cabrejas, C.P., 2006. Parametric evaluation of a NH₃/CO₂ cascade system for supermarket refrigeration in laboratory environment. Dep. Energy Technol. R. Inst. Technol. (KTH), Stock.
- Casson, V., Cecchinato, L., Corradi, M., Fornasieri, E., Giroto, S., Minetto, S., Zamboni, L. and Zilio, C., 2003. Optimisation of the throttling system in a CO₂ refrigerating machine. *International Journal of Refrigeration*, 26(8), pp.926-935.
- Cavallini, A., Cecchinato, L., Corradi, M., Fornasieri, E., Zilio, C., 2005. Two-stage transcritical carbon dioxide cycle optimisation: A theoretical and experimental analysis. *International Journal of Refrigeration* 28, 1274-1283.
- Cecchinato, L., Chiarello, M., Corradi, M., 2010. Design and experimental analysis of a carbon dioxide transcritical chiller for commercial refrigeration. *Applied Energy* 87, 2095-2101.
- Cecchinato, L., Corradi, M. and Minetto, S., 2012. Energy performance of supermarket refrigeration and air conditioning integrated systems working with natural refrigerants. *Applied Thermal Engineering*, 48, pp.378-391.
- Cecchinato, L., Corradi, M., 2011. Transcritical carbon dioxide small commercial cooling applications analysis. *International Journal of Refrigeration* 34, 50-62.
- Cecchinato, L., Corradi, M., Fornasieri, E., Schiochet, G., Zilio, C., 2009. Assessment on the use of common correlations to predict the mass-flow rate of carbon dioxide through capillary tubes in transcritical cycles. *International Journal of Refrigeration* 32, 1041-1048.
- Chesi, A., Esposito, F., Ferrara, G., Ferrari, L., 2014. Experimental analysis of R744 parallel compression cycle. *Applied Energy* 135, 274-285.
- Chesi, A., Ferrara, G., Ferrari, L., Tarani, F., 2012. Setup and characterisation of a multi-purpose test rig for R744 refrigerating cycles and equipment. *International Journal of Refrigeration* 35, 1848-1859.

- Dopazo, J.A., Fernández-Seara, J., 2011. Experimental evaluation of a cascade refrigeration system prototype with CO₂ and NH₃ for freezing process applications. *International Journal of Refrigeration* 34, 257-267.
- Drescher, M., Hafner, A., Jakobsen, A., Neksa, P., Zha, S., 2007. Experimental investigation of ejector for R-744 transcritical systems. Proceedings ICR07-B1-742, The 22nd ICR, Beijing, China.
- Elbel, S., Hrnjak, P., 2004. Flash gas bypass for improving the performance of transcritical R744 systems that use microchannel evaporators. *International Journal of Refrigeration* 27, 724-735.
- Elbel, S., Hrnjak, P., 2008. Experimental validation of a prototype ejector designed to reduce throttling losses encountered in transcritical R744 system operation. *International Journal of Refrigeration* 31, 411-422.
- Elbel, S., Padilla Fuentes, Y., Bowers, C.D., Hrnjak, P.S., 2014. Successful Design, Implementation, And Validation Of Transcritical R744 Technology For Beverage Display Coolers. *International Refrigeration and Air Conditioning Conference*. Paper 1392.
- Energy Use Calculator, 2016. Global Electricity Prices. *Glob. Electr. Prices*. URL http://energyusecalculator.com/global_electricity_prices.htm (accessed 8.1.16).
- European Commission, 2014, Regulation (EU) No 517/2014 of the European Parliament and of the Council of 16th April 2014 on fluorinated greenhouse gases and repealing Regulation (EC) No 842/2006.
- Fazelpour, F., Morosuk, T., 2014. Exergoeconomic analysis of carbon dioxide transcritical refrigeration machines. *Int. J. Refrig.* 38, 128–139.
- Fang, X., Zhou, Z. and Li, D., 2013. Review of correlations of flow boiling heat transfer coefficients for carbon dioxide. *International Journal of Refrigeration*, 36(8), pp.2017-2039.
- Fernández-Seara, J., Dopazo, J.A., Uhiá, F.J., Diz, R., 2012. Experimental Analysis of the Freezing Process in a Horizontal Plate Freezer With CO₂ as Refrigerant in a Cascade Refrigeration System. *Heat Transfer Engineering* 33, 1170-1176.
- Försterling, S., Tegethoff, W., Köhler, J., 2002. Theoretical and experimental investigations on carbon dioxide compressors for mobile air conditioning systems and transport refrigeration. *International Refrigeration and Air Conditioning Conference*. Paper 398.

- Fricke, B.A., Zha, S., Sharma, V., and Newel, J., 2016. Laboratory Evaluation of a Commercial CO₂ Booster Refrigeration System. International Refrigeration and Air Conditioning Conference. Paper 1691.
- Fritschi, H., Tillenkamp, F., Lohrer, R., Brugger, M., 2016. Efficiency increase in carbon dioxide refrigeration technology with parallel compression. International Journal of Low-Carbon Technologies 0, 1-10.
- Fronk, B.M. and Garimella, S., 2010, January. Measurement of heat transfer and pressure drop during condensation of carbon dioxide in microscale geometries. 14th International Heat Transfer Conference (pp. 235-243). American Society of Mechanical Engineers.
- Fukuta, M., Anzai, F., Motozawa, M., Terawaki, H., Yanagisawa, T., 2014. Performance of radial piston type reciprocating expander for CO₂ refrigeration cycle. International Journal of Refrigeration 42, 48-56.
- Fukuta, M., Higasiyama, M., Yanagisawa, T., Ogi, Y., 2008. Observation of CO₂ transcritical expansion process. International Refrigeration and Air Conditioning Conference. Paper 883.
- Fukuta, M., Nakamura, Y., Yanagisawa, T., 2013. Characteristics of CO₂ transcritical expansion process. HVAC&R Research 19, 767-778.
- Fukuta, M., Yanagisawa, T., Higashiyama, M., Ogi, Y., 2009. Performance of Vane-Type CO₂ Expander and Characteristics of Transcritical Expansion Process. HVAC&R Research 15, 711-727.
- Fukuta, M., Yanagisawa, T., Kosuda, O., Ogi, Y., 2006a. Performance of scroll expander for CO₂ refrigeration cycle.
- Fukuta, M., Yanagisawa, T., Nakaya, S., Ogi, Y., 2006b. Performance and characteristics of compressor/expander combination for CO₂ cycle, 7th IIR Gustav Lorentzen Conference on Natural Working Fluids, Trondheim, Norway, p. 052.
- Funder-Kristensen, T., Fösel, G., Bjerg, P., 2013. Supermarket refrigeration with heat recovery using CO₂ as refrigerant, Presented at; the International Conference on Cryogenics and Refrigeration (ICCR), Hangzhou, China.
- Ge, Y.T. and Cropper, R.T., 2009. Simulation and performance evaluation of finned-tube CO₂ gas coolers for refrigeration systems. Applied Thermal Engineering, 29(5-6), pp.957-965.
- Ge, Y.T., Tassou, S.A., 2011. Thermodynamic analysis of transcritical CO₂ booster refrigeration systems in supermarket. Energy Convers. Manag. 52, 1868-1875.

- Ge, Y.T., Tassou, S.A., Santosa, I.D. and Tsamos, K., 2015. Design optimisation of CO₂ gas cooler condenser in a refrigeration system. *Applied energy*, 160, pp.973-981.
- Getu, H.M., Bansal, P.K., 2008. Thermodynamic analysis of an R744 – R717 cascade refrigeration system. *International Journal of Refrigeration* 31, 45–54.
- Giroto, S., 2016. Direct space heating and cooling with CO₂ refrigerant, Presented at; the Atmosphere Europe, Barcelona, Spain
- Giroto, S., Minetto, S., Neksa, P., 2004. Commercial refrigeration system using CO₂ as the refrigerant. *Int. J. Refrig.* 27, 717–723.
- Gnielinski, V., 1976. New equations for heat and mass transfer in turbulent pipe and channel flow. *Int. Chem. Eng.*, 16(2), pp.359-368.
- Gosney, W.B., 1982. *Principles of Refrigeration*. Cambridge University Press, Cambridge
- Gullo, P., Elmegaard, B., Cortella, G., 2015. Energetic, Exergetic and Exergoeconomic Analysis of CO₂ Refrigeration Systems Operating in Hot Climates, in: 28th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems.
- Gullo, P., Elmegaard, B., Cortella, G., 2016a. Energy and environmental performance assessment of R744 booster supermarket refrigeration systems operating in warm climates. *Int. J. Refrig.* 64, 61–79.
- Gullo, P., Elmegaard, B., Cortella, G., 2016b. Advanced exergy analysis of a R744 booster refrigeration system with parallel compression. *Energy* 107, 562–571.
- Gullo, P., Hafner, A. and Cortella, G., 2017. Multi-ejector R744 booster refrigerating plant and air conditioning system integration—A theoretical evaluation of energy benefits for supermarket applications. *International Journal of Refrigeration*, 75, pp.164-176.
- Gupta, D.K., Dasgupta, M.S., 2014. Simulation and performance optimization of finned tube gas cooler for trans-critical CO₂ refrigeration system in Indian context. *Int. J. Refrig.* 38, 153–167.
- Gupta, D.K., Singh, D.K. and Dasgupta, M.S., 2010. Environmental effect on gas cooler design for trans-critical carbon dioxide refrigeration system in Indian context. *Journal of Advanced Research in Mechanical Engineering*, 1(3), pp.147-152.
- Hafner, A., Banasiak, K., Herdlitschka, T., Fredslund, K., Giroto, S., Haida, et al. 2016. R744 ejector system, case: Italian supermarket, Spiazzo, Presented at; the 12th IIR Gustav Lorentzen Conference on Natural Refrigerants, Edinburgh, Scotland.
- Hafner, A., Försterling, S., Banasiak, K., 2014. Multi-ejector concept for R-744 supermarket refrigeration. *International Journal of Refrigeration* 43, 1-13.

- Hazarika, M.M., Ramgopal, M. and Bhattacharyya, S., 2017. Entropy generation analysis of a gas cooler for transcritical CO₂ systems. 13th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics
- Hazarika, M.M., Ramgopal, M. and Bhattacharyya, S., 2018. Studies on a transcritical R744 based summer air-conditioning unit: Impact of refrigerant charge on system performance. *International Journal of Refrigeration*, 89, pp.22-39.
- Hesse, U., 1996. Secondary Refrigerant Systems for Supermarket Application with Brine or Carbon Dioxide, in: *International Refrigeration and Air Conditioning Conference*. Paper 351. pp. 369–376.
- Heyl, P., Quack, H., 1999. Free piston expander-compressor for CO₂-design, applications and results, *Proceedings of the 20th International Congress of Refrigeration*, Sydney.
- Hou, Y., Liu, C., Ma, J., Cao, J., Chen, S., 2014c. Design and Setup of the Micro-Turboexpander Transcritical CO₂ System. 15th International Refrigeration and Air Conditioning Conference at Purdue. Paper 1521.
- Hou, Y., Liu, C., Ma, J., Cao, J., Chen, S., 2014a. Mass flowrate characteristics of supercritical CO₂ flowing through an electronic expansion valve. *International Journal of Refrigeration* 47, 134-140.
- Hou, Y., Ma, J., Liu, C., Cao, J., Liu, X., 2014b. Experimental investigation on the influence of EEV opening on the performance of transcritical CO₂ refrigeration system. *Applied Thermal Engineering* 65, 51-56.
- Huang, D., Quack, H., Ding, G.-l., 2007. Experimental study of throttling of carbon dioxide refrigerant to atmospheric pressure. *Applied Thermal Engineering* 27, 1911-1922.
- Huff, H.-J., Radermacher, R., 2003. CO₂ compressor-expander analysis. *Air-Conditioning Refrig. Technol. Institute*, Arlington, VA.
- Hwang, Y., Jin, D.-H., Radermacher, R., Hutchins, J.W., 2005. Performance measurement of CO₂ heat exchangers. *ASHRAE transactions*, 306-316.
- Hwang, Y.H., Celik, A., Radermacher, R., 2004. Performance of CO₂ cycles with a two-stage compressor. *International Refrigeration and Air Conditioning Conference*. Paper 694.
- Incropera, F.P., DeWitt, D., P., 1996. *Introduction to Heat Transfer* (third ed.), John Wiley and Sons, New York.
- IIR, *The role of Refrigeration in the Global Economy*, 29th Informatory Note on Refrigeration Technologies, International Institute of refrigeration (IIR), Paris, France, 2015.
- Inlow, S.W., Groll, E.A., 1996a. Analysis of Secondary-Loop Refrigeration Systems Using Carbon Dioxide as a Volatile Secondary Refrigerant. *HVAC&R Research* 2(2), 107-120.

- Inlow, S.W., Groll, E.A., 1996b. A Performance Comparison of Secondary Refrigerants. In: Proceedings of the International Refrigeration and Air Conditioning Conference; Purdue, USA.
- Ituna-Yudonago, J.F., Belman-Flores, J.M., Elizalde-Blancas, F., García-Valladares, O., 2017. Numerical investigation of CO₂ behaviour in the internal heat exchanger under variable boundary conditions of the transcritical refrigeration system. *Applied Thermal Engineering* 115, 1063–1078.
- Jakobsen, A., Skaugen, G., Skiple, T., Nekså, P., Andresen, T., 2004. Development and Evaluation of a Reversible CO₂ Residential Air Conditioning System Compared to a State-of-the-Art R410A Unit, Proceedings 6th IIR Gustav Lorentzen Conference on Natural Working Fluids, Glasgow, UK.
- Jia, X., Zhang, B., Pu, L., Guo, B., Peng, X., 2011. Improved rotary vane expander for transcritical CO₂ cycle by introducing high-pressure gas into the vane slots. *International Journal of Refrigeration* 34, 732-741.
- Jin, J., Chen, J. and Chen, Z., 2011. Development and validation of a microchannel evaporator model for a CO₂ air-conditioning system. *Applied Thermal Engineering*, 31(2-3), pp.137-146.
- Jover, J., Jornet, M., Pons, J., Serra, J., Oliva, A., Pérez-Segarra, C., Rigola, J., Raush, G., 2007. Feasibility of CO₂ Compressors for Light Commercial Appliances. *HVAC&R Research* 13, 427-443.
- Karampour, M. and Sawalha, S., 2014. Performance and control strategies analysis of a CO₂ trans-critical booster system. 3rd IIR International Conference on Sustainability and the Cold Chain. IIF/IIR, London, UK.
- Karampour, M. and Sawalha, S., 2015, August. Theoretical analysis of CO₂ trans-critical system with parallel compression for heat recovery and air conditioning in supermarkets. In 24th IIR Refrigeration Congress of Refrigeration. IIF/IIR, Yokohama, Japan.
- Karampour, M. and Sawalha, S., 2017. Energy efficiency evaluation of integrated CO₂ trans-critical system in supermarkets: A field measurements and modelling analysis. *International Journal of Refrigeration*, 82, pp.470-486.
- Karampour, M. and Sawalha, S., 2018. State-of-the-art integrated CO₂ refrigeration system for supermarkets: A comparative analysis. *International Journal of Refrigeration*, 86, pp.239-257.
- Kauf, F., 1999. Determination of the optimum high pressure for transcritical CO₂-refrigeration cycles. *International Journal of Thermal Sciences*, 38(4), pp.325-330.

- Kim, M., Pettersen, J., Bullard, C.W., 2004. Fundamental process and system design issues in CO₂ vapor compression systems. *Methods* 30, 119–174.
- Kim, M.H. and Bullard, C.W., 2001. Development of a microchannel evaporator model for a CO₂ air-conditioning system. *Energy*, 26(10), pp.931-948.
- Kim, S.C., Park, J., Kim, M.S., 2010. Performance characteristics of a supplementary stack-cooling system for fuel-cell vehicles using a carbon dioxide air-conditioning unit. *International Journal of Automotive Technology* 11, 893-900.
- Kim, S.C., Won, J.P., Kim, M.S., 2009a. Effects of operating parameters on the performance of a CO₂ air conditioning system for vehicles. *Applied Thermal Engineering* 29, 2408-2416.
- Kim, S.C., Won, J.P., Park, Y.S., Lim, T.W., Kim, M.S., 2009b. Performance evaluation of a stack cooling system using CO₂ air conditioner in fuel cell vehicles. *International Journal of Refrigeration* 32, 70-77.
- Kohler, J., Sonnekalb, M., Kaiser, H., 1998. A transcritical refrigeration cycle with carbon dioxide for bus air conditioning and transport refrigeration. *International Refrigeration and Air Conditioning Conference*. Paper 398.
- Kurtulus, O., Yang, B., Lumpkin, D., Groll, E.A., Jestings, L., Conde, R., 2014. Performance and Operating Characteristics of a Novel Positive-Displacement Oil-Free CO₂ Compressor. *International Compressor Engineering Conference*. Paper 2375.
- Lambers, K., Kohler, J., 2006. Port Optimization of a Voorhees Modified CO₂ Compressor Using Indicator Diagram Analysis. *International Compressor Engineering Conference at Purdue*. Paper 1733.
- Lawrence, N., Elbel, S., 2014. Comparison of CO₂ and R134a Two-Phase Ejector Performance for Use in Automotive Air Conditioning Applications. *SAE Technical Paper*.
- Lee, C.K. and Lam, H.N., 2013. A comparison of different generalised modelling approaches for a scroll refrigerant compressor. *International Journal of Refrigeration*, 36(4), pp.1369-1375.
- Lee, J.S., Kim, M.S., Kim, M.S., 2011. Experimental study on the improvement of CO₂ air conditioning system performance using an ejector. *International Journal of Refrigeration* 34, 1614-1625.
- Lee, J.S., Kim, M.S., Kim, M.S., 2014. Studies on the performance of a CO₂ air conditioning system using an ejector as an expansion device. *International Journal of Refrigeration* 38, 140-152.

- Lemmon, E. W., McLinden, M.O., Huber, M.L., Refprop v.7.0 (2002), NIST Standard Reference Database 23, National Institute of Standards, Gaithersburg, MD, USA.
- Li, D., Groll, E.A., 2006. Analysis of an ejector expansion device in a transcritical CO₂ air conditioning system, Proc. 7th IIR Gustav Lorentzen Conference on Natural Working Fluids, Trondheim, Norway.
- Li, J., Jia, J., Huang, L. and Wang, S., 2017. Experimental and numerical study of an integrated fin and micro-channel gas cooler for a CO₂ automotive air-conditioning. *Applied Thermal Engineering*, 116, pp.636-647.
- Li, W., 2013. Optimal analysis of gas cooler and intercooler for two-stage CO₂ trans-critical refrigeration system. *Energy conversion and management*, 71, pp.1-11.
- Li, W., Xuan, S. and Sun, J., 2012. Entropy generation analysis of fan-supplied gas cooler within the framework of two-stage CO₂ transcritical refrigeration cycle. *Energy conversion and management*, 62, pp.93-101.
- Lindberg, V., 2000. Uncertainties and error propagation. *Manual on Uncertainties, Graphing and the Vernier Caliper, Part I*. Rochester Institute of Technology, New York, USA.
- Liu, F., Groll, E.A., 2008. Analysis of a two phase flow ejector for transcritical CO₂ cycle. *International Refrigeration and Air Conditioning Conference*. Paper 924.
- Liu, F., Groll, E.A., Ren, J., 2016. Comprehensive experimental performance analyses of an ejector expansion transcritical CO₂ system. *Applied Thermal Engineering* 98, 1061-1069.
- Liu, F., Li, Y., Groll, E.A., 2012. Performance enhancement of CO₂ air conditioner with a controllable ejector. *International Journal of Refrigeration* 35, 1604-1616.
- Liu, H., Chen, J., Chen, Z., 2005. Experimental investigation of a CO₂ automotive air conditioner. *International Journal of Refrigeration* 28, 1293-1301.
- Liu, C., Zhang, J., Gui, Y., Li, W., Shi, J., Chen, J., Wang, W. and Kang, Z., 2018. Mass flow characteristics and empirical modeling of R744 flow through electronic expansion device. *International Journal of Refrigeration*, 86, pp.82-88.
- Llopis, R., Cabello, R., Sánchez, D. and Torrella, E., 2015a. Energy improvements of CO₂ transcritical refrigeration cycles using dedicated mechanical subcooling. *International Journal of Refrigeration*, 55, pp.129-141.
- Llopis, R., Nebot-Andrés, L., Cabello, R., Sánchez, D. and Catalán-Gil, J., 2016. Experimental evaluation of a CO₂ transcritical refrigeration plant with dedicated mechanical subcooling. *International Journal of Refrigeration*, 69, pp.361-368.

- Llopis, R., Nebot-Andrés, L., Sánchez, D., Catalán-Gil, J. and Cabello, R., 2018. Subcooling methods for CO₂ refrigeration cycles. A Review. *International Journal of Refrigeration* 93, pp.85-107.
- Llopis, R., Sánchez, D., Sanz-kock, C., Cabello, R., Torrella, E., 2015b. Energy and environmental comparison of two-stage solutions for commercial refrigeration at low temperature: Fluids and systems. *Applied Energy* 138, 133–142.
- Loh, H.P., Lyons, J., White, C.W., 2002. Process equipment cost estimation. Final Report, National Energy Technology Center.
- Lorentzen, G., 1994. Revival of carbon dioxide as a refrigerant. *Int. J. Refrig.* 17, 292–301.
- Lorentzen, G., Pettersen, J., 1993. A new, efficient and environmentally benign system for car air-conditioning. *International Journal of Refrigeration* 16, 4–12.
- Lucas, C., Koehler, J., 2012. Experimental investigation of the COP improvement of a refrigeration cycle by use of an ejector. *International Journal of Refrigeration* 35, 1595-1603.
- Madsen, K.B., Poulsen, C.S., Wiesenfarth, M., 2005. Study of capillary tubes in a transcritical CO₂ refrigeration system. *International Journal of Refrigeration* 28, 1212-1218.
- Marcinichen, J.B., Thome, J.R. and Pereira, R.H., 2016. Working fluid charge reduction. Part II: Supercritical CO₂ gas cooler designed for light commercial appliances. *International Journal of Refrigeration*, 65, pp.273-286.
- Masafumi, N., Ariel, M., Takanori, M., 2009. Performance of Non-Fluorocarbon-Based CO₂ Refrigeration Cycle Using Two-Phase Ejector. *Journal of Ecotechnology Research* 15, 17-21.
- McEnaney, R., Boewe, D., Yin, J., Park, Y., Bullard, C., Hrnjak, P., 1998. Experimental comparison of mobile A/C systems when operated with transcritical CO₂ versus conventional R134a. *International Refrigeration and Air Conditioning Conference*, Paper 402.
- Memory, S., Yin, J.-M., Collier, S., Gunter, M., Hrnjak, P., Peuker, S., Elber, S., Manzione, J., Schultz, N., Dolney, J., 2005. Using R744 (CO₂) to Cool an Up-Armored M1114 HMMWV. SAE Technical Paper.
- Midgley Jr, T., Henne, A. L., 1930. Organic Fluorides as Refrigerants¹, *Industrial & Engineering Chemistry*, 22, 542–545.

- Minetto, S., Brignoli, R., Zilio, C. and Marinetti, S., 2014. Experimental analysis of a new method for overfeeding multiple evaporators in refrigeration systems. *International Journal of Refrigeration*, 38, pp.1-9.
- Minetto, S., Cecchinato, L., Corradi, M., Fornasieri, E., Zilio, C., Schiavon, A., 2005. Theoretical and experimental analysis of a CO₂ refrigerating cycle with two-stage throttling and suction of the flash vapour by an auxiliary compressor, in: *Proceedings of IIR International Conferences—Thermophysical Properties and Transfer Processes of Refrigerants*.
- Moffat, R.J., 1985. Using uncertainty analysis in the planning of an experiment. *ASME, Transactions, Journal of Fluids Engineering*, 107, 173–178.
- Mosaffa, A.H., Farshi, L.G., Ferreira, C.A.I., Rosen, M.A., 2016. Exergoeconomic and environmental analyses of CO₂/NH₃ cascade refrigeration systems equipped with different types of flash tank intercoolers. *Energy Convers. Manag.* 117, 442–453.
- Mu, J., Chen, J., Chen, Z., 2003. System design and analysis of the trans-critical carbon-dioxide automotive air-conditioning system. *Journal of Zhejiang University SCIENCE A* 4, 4.
- Nakagawa, M., Marasigan, A.R., Matsukawa, T., Kurashina, A., 2011. Experimental investigation on the effect of mixing length on the performance of two-phase ejector for CO₂ refrigeration cycle with and without heat exchanger. *International Journal of Refrigeration* 34, 1604-1613.
- Neto, M.A.M., Barbosa, J.R., 2009. Phase and volumetric behaviour of mixtures of carbon dioxide (R-744) and synthetic lubricant oils. *The Journal of Supercritical Fluids* 50, 6-12.
- Nickl, J., Will, G., Kraus, W., Quack, H., 2002. Design considerations for a second generation CO₂-expander. *Proceedings natural working fluids 2*, 189-196.
- Nickl, J., Will, G., Kraus, W., Quack, H., 2003. Third generation CO₂ expander, *Proceedings of the 21th international congress of refrigeration Washington*.
- Nickl, J., Will, G., Quack, H., Kraus, W.E., 2005. Integration of a three-stage expander into a CO₂ refrigeration system. *International Journal of Refrigeration* 28, 1219-1224.
- Nordtvedt, T.S., Hafner, A., 2012. Integration of refrigeration and HVAC supermarkets, *Proceedings of the 10th IRR Gustav Lorentzen Conference on Natural Refrigerants*, Delft, The Netherlands. Paper 184.
- Onaka, Y., Miyara, A., Tsubaki, K., and Koyama, S., 2008. Analysis of Heat Pump Cycle Using CO₂/DME Mixture Refrigerant. *International Refrigeration and Air Conditioning Conference*. Paper 956.

- Park, C.Y., Hrnjak, P., 2007. Effect of heat conduction through the fins of a microchannel serpentine gas cooler of transcritical CO₂ system. *International Journal of Refrigeration* 30, 389-397.
- Park, C.Y., Hrnjak, P.S., 2004. Effect of gas cooler size on its performance and entire R744 A/C system. *International Refrigeration and Air Conditioning Conference*. Paper 695.
- Patiño, J., Llopis, R., Sánchez, D., Sanz-Kock, C., Cabello, R. and Torrella, E., 2014. A comparative analysis of a CO₂ evaporator model using experimental heat transfer correlations and a flow pattern map. *International Journal of Heat and Mass Transfer*, 71, pp.361-375.
- Pearson, A., 2008. Refrigeration with ammonia. *International Journal of Refrigeration*, 31(4), pp.545-551.
- Peng, X., Zhang, B., Guo, B., Xing, Z., Shu, P., 2006. Development of the free piston expander for work recovery in transcritical CO₂ refrigeration cycle. *Proceedings of the Institution of Mechanical Engineers, Part A: Journal of Power and Energy* 220, 689-697.
- Pettersen, J., 1994. An efficient new automobile air-conditioning system based on CO₂ vapor compression. No. CONF-9406105-American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., Atlanta, GA (United States).
- Pettersen, J., Hafner, A., Skaugen, G., Rekstad, H., 1998. Development of compact heat exchangers for CO₂ air-conditioning systems. *International Journal of Refrigeration* 21, 180-193.
- Pitla, S.S., Groll, E.A., Ramadhyani, S., 2002. New correlation to predict the heat transfer coefficient during in-tube cooling of turbulent supercritical CO₂. *International Journal of Refrigeration* 25, 887-895.
- Polzot, A., D'Agaro, P. and Cortella, G., 2017. Energy analysis of a transcritical CO₂ supermarket refrigeration system with heat recovery. *Energy Procedia*, 111, pp.648-657.
- Protocol, K., 1997. United Nations framework convention on climate change. Kyoto Protocol, Kyoto, 19.
- Protocol, M., 1987. Montreal protocol on substances that deplete the ozone layer. Washington, DC: US Government Printing Office, 26, pp.128-136.
- Qi, Z., Yang, J., Chen, J., Zhang, H., Zhang, L., 2011. Experimental investigation on a two-stage CO₂ compressor with high back pressure. *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science* 226, 1811-1820.

- Rahmati, A.R. and Gheibi, A., 2017. Thermodynamic Analysis of a Modified Two-Stage Trans-Critical CO₂ Refrigeration Cycle with Multi Inter-Cooling System. *International Journal of Advanced Design and Manufacturing Technology*, 10(3).
- Reinholdt, L. and Madsen, C., 2010. Heat recovery on CO₂ systems in supermarkets, Proceedings of the 9th IIR Gustav Lorentzen Conference, Sydney, Australia.
- Rezayan, O., Behbahaninia, A., 2011. Thermoeconomic optimization and exergy analysis of CO₂/NH₃ cascade refrigeration systems. *Energy* 36, 888–895.
- Rigola, J., Ablanque, N., Pérez-Segarra, C.D., Oliva, A., 2010. Numerical simulation and experimental validation of internal heat exchanger influence on CO₂ trans-critical cycle performance. *International Journal of Refrigeration* 33, 664-674.
- Rigola, J., Raush, G., Perez-Segarra, C.D., Oliva, A., 2006. Numerical Study and Experimental Comparison of CO₂ Reciprocating Compressors for Small Cooling and/or Freezing Capacity Applications. *International Compressor Engineering Conference*. Paper 1729.
- Riha, J., Nickle, J., Quack, H., 2006. Integration of an expander/compressor into a supermarket CO₂ cooling system, Proceedings of the 7th IIR Gustav Lorentzen Conference on Natural Working Fluids, Trondheim, Norway, pp. 255-258.
- Rossetti, A., Marinetti, S. and Minetto, S., 2018. Multi-physics simulation of CO₂ gas coolers using equivalence modelling. *International Journal of Refrigeration*, 90, pp.99-107.
- Rozhentsev, A., Wang, C.-C., 2001. Some design features of a CO₂ air conditioner. *Applied Thermal Engineering* 21, 871–880.
- Sánchez, D., Cabello, R., Llopis, R. and Torrella, E., 2012. Development and validation of a finite element model for water–CO₂ coaxial gas-coolers. *Applied energy*, 93, pp.637-647.
- Sánchez, D., Llopis, R., Cabello, R., Catalán-Gil, J. and Nebot-Andrés, L., 2017. Conversion of a direct to an indirect commercial (HFC134a/CO₂) cascade refrigeration system: Energy impact analysis. *International Journal of Refrigeration*, 73, pp.183-199.
- Sánchez, D., Patiño, J., Llopis, R., Cabello, R., Torrella, E. and Fuentes, F.V., 2014. New positions for an internal heat exchanger in a CO₂ supercritical refrigeration plant. *Experimental analysis and energetic evaluation*. *Applied Thermal Engineering*, 63 (1), 129-139.
- Sánchez, D., Torrella, E., Cabello, R., Llopis, R., 2010. Influence of the superheat associated to a semihermetic compressor of a transcritical CO₂ refrigeration plant. *Applied Thermal Engineering* 30, 302–309.

- Sanz-Kock, C., Llopis, R., Sánchez, D., Cabello, R., Torrella, E., 2014. Experimental evaluation of a R134a/CO₂ cascade refrigeration plant. *Applied Thermal Engineering* 73, 41-50.
- Sarkar, J., 2013. Performance optimization of transcritical CO₂ refrigeration cycle with thermoelectric subcooler. *International Journal of Energy Research*, 37(2), pp.121-128.
- Sarkar, J., Agrawal, N., 2010a. Performance optimization of transcritical CO₂ cycle with parallel compression economization. *Int. J. Therm. Sci.* 49, 838-843.
- Sarkar, J., Bhattacharyya, S. and Ramgopal, M., 2010b. Performance of a transcritical CO₂ heat pump for simultaneous water cooling and heating. *International Journal of Applied Science, Engineering and Technology*, 6(1), pp.57-63.
- Sarkar, J., Bhattacharyya, S. and Gopal, M.R., 2004. Optimization of a transcritical CO₂ heat pump cycle for simultaneous cooling and heating applications. *International Journal of Refrigeration*, 27(8), pp.830-838.
- Sarkar, J., Joshi, D., 2016. Advanced exergy analysis of transcritical CO₂ heat pump system based on experimental data. *Sadhana* 41, 1349-1356.
- Sawalha, S., 2008a. Theoretical evaluation of trans-critical CO₂ systems in supermarket refrigeration. Part I: modeling, simulation and optimization of two system solutions. *Int. J. Refrig.* 31, 516-524.
- Sawalha, S., 2008b. Theoretical evaluation of trans-critical CO₂ systems in supermarket refrigeration. Part II: system modifications and comparisons of different solutions. *Int. J. Refrig.* 31, 525-534.
- Sawalha, S., 2008c. Carbon dioxide in supermarket refrigeration.
- Sawalha, S., 2013. Investigation of heat recovery in CO₂ trans-critical solution for supermarket refrigeration. *International Journal of Refrigeration*, 36(1), pp.145-156.
- Sawalha, S., Karampour, M., Rogstam, J., 2015. Field measurements of supermarket refrigeration systems. Part I: Analysis of CO₂ trans-critical refrigeration systems. *Appl. Therm. Eng.* 87, 633-647.
- Sawalha, S., Palm, B., 2003. Energy consumption evaluation of indirect systems with CO₂ as secondary refrigerant in supermarket refrigeration. *International Congress of Refrigeration*.
- Sawalha, S., Piscopiello, S., Karampour, M., Manickam, L. and Rogstam, J., 2017. Field measurements of supermarket refrigeration systems. Part II: Analysis of HFC refrigeration systems and comparison to CO₂ trans-critical. *Applied Thermal Engineering*, 111, pp.170-182.

- Schoenfield, J., Hwang, Y., Radermacher, R., 2012. CO₂ transcritical vapor compression cycle with thermoelectric subcooler. HVAC&R Research 18, 297-311.
- Schonenberger, J., 2016. Experience with R744 refrigerating systems and implemented multi ejectors and liquid overfeed, in: In: Proceedings of the 12th IIR Gustav Lorentzen Natural Working Fluids Conference, 21s-24th August; Edinburgh, United Kingdom. ID: 1107.
- Shao, L.L., Zhang, Z.Y. and Zhang, C.L., 2018. Constrained optimal high pressure equation of CO₂ transcritical cycle. Applied Thermal Engineering, 128, pp.173-178.
- Sharma, V., Fricke, B. and Bansal, P., 2014a. Comparative analysis of various CO₂ configurations in supermarket refrigeration systems. International journal of Refrigeration, 46, pp.86-99.
- Sharma, V., Fricke, B. and Bansal, P., 2014b. Waste Heat Dehumidification in CO₂ Booster Supermarket. International Refrigeration and Air Conditioning Conference. Paper 1487.
- Shecco, 2016. F-Gas Regulation shaking up the HVAC&R industry. Available at <http://publication.shecco.com/publications/view/131> (2016), [accessed 14.08.2018].
- Singh, S. and Dasgupta, M.S., 2017. Performance evaluation of a CO₂ scroll expander for work recovery using artificial neural network. Science and Technology for the Built Environment, pp.1-8.
- Singh, S., Dasgupta, M.S., 2016. Evaluation of research on CO₂ trans-critical work recovery expander using multi attribute decision making methods. Renew. Sustain. Energy Rev. 59, 119–129.
- Son, S., Heo, J.Y. and Lee, J.I., 2018. Prediction of inner pinch for supercritical CO₂ heat exchanger using Artificial Neural Network and evaluation of its impact on cycle design. Energy Conversion and Management, 163, pp.66-73.
- Song, Y., Wang, J., Cao, F., Shu, P. and Wang, X., 2017. Experimental investigation on a capillary tube based transcritical CO₂ heat pump system. Applied Thermal Engineering, 112, pp.184-189.
- Stene, J., 2008, September. Design and application of ammonia heat pump systems for heating and cooling of non-residential buildings. In 8th IIR Gustav Lorentzen Conference on Natural Working Fluids, Copenhagen.
- Suamir, I., Tassou, S.A., 2013. Performance evaluation of integrated trigeneration and CO₂ refrigeration systems. Applied Thermal Engineering 50, 1487-1495.

- Subiantoro, A., Ooi, K.T., 2013. Economic analysis of the application of expanders in medium scale air-conditioners with conventional refrigerants, R1234yf and CO₂. *Int. J. Refrig.* 36, 1472–1482.
- Tao, Y.B., He, Y.L., Tao, W.Q., 2010a. Exergetic analysis of transcritical CO₂ residential air-conditioning system based on experimental data. *Applied Energy* 87, 3065–3072.
- Tao, Y.B., He, Y.L., Tao, W.Q., Wu, Z.G., 2010b. Experimental study on the performance of CO₂ residential air-conditioning system with an internal heat exchanger. *Energy Conversion and Management* 51, 64–70.
- Tian, H., Ma, Y., Li, M., Liu, S., Wang, K., 2012. Leakage research on supercritical carbon dioxide fluid in rolling piston expander. *Science China Technological Sciences* 55, 1711–1718.
- Torrella, E., Sánchez, D., Llopis, R. and Cabello, R., 2011. Energetic evaluation of an internal heat exchanger in a CO₂ transcritical refrigeration plant using experimental data. *International Journal of refrigeration*, 34(1), pp.40-49.
- Trinchieri, R., Boccardi, G., Calabrese, N., Celata, G., Zummo, G., 2014. Experimental sizing and assessment of two-phase pressure drop correlations for a capillary tube with transcritical and subcritical carbon dioxide flow, *Journal of Physics: Conference Series*. IOP Publishing, p. 012-018.
- TRNSYS 17, Transient System Simulation Program, University of Wisconsin, Madison (USA): Solar Energy Laboratory.
- Tsamos, K.M., Ge, Y.T., Santosa, I., Tassou, S.A., Bianchi, G. and Mylona, Z., 2017. Energy analysis of alternative CO₂ refrigeration system configurations for retail food applications in moderate and warm climates. *Energy Conversion and Management*, 150, pp.822-829.
- Wang, C.C., Jang, J.Y. and Chiou, N.F., 1999. A heat transfer and friction correlation for wavy fin-and-tube heat exchangers. *International Journal of Heat and Mass Transfer*, 10 (42), pp.1919-1924.
- Wang, H., Cai, W. and Wang, Y., 2016. Modelling of a hybrid ejector air conditioning system using artificial neural networks. *Energy Conversion and Management*, 127, pp.11-24.
- Wang, J., Cao, F., Wang, Z., Zhao, Y. and Li, L., 2012. Numerical simulation of coiled adiabatic capillary tubes in CO₂ transcritical systems with separated flow model including metastable flow. *International Journal of Refrigeration*, 35(8), pp.2188-2198.

- Wang, H., Ma, Y., Tian, J., Li, M., 2011. Theoretical analysis and experimental research on transcritical CO₂ two stage compression cycle with two gas coolers (TSCC+TG) and the cycle with intercooler (TSCC+IC). *Energy Conversion and Management* 52, 2819-2828.
- Wang, H., Tian, J., Du, Y. and Hou, X., 2018. Numerical simulation of CO₂ scroll compressor in transcritical compression cycle. *Heat and Mass Transfer*, 54(5), pp.1395-1403.
- Wang, K., Eisele, M., Hwang, Y., Radermacher, R., 2010. Review of secondary loop refrigeration systems. *International Journal of Refrigeration* 33, 212–234.
- Wiedenmann, E., 2015. Transcritical CO₂-booster with ejector and liquid-overfeed, In: *Proceedings of the International HPP Workshop*; Muttenz, Switzerland.
- Wu, Z.G., Zhang, J.Z., Tao, Y.B., He, Y.L. and Tao, W.Q., 2008. Application of artificial neural network method for performance prediction of a gas cooler in a CO₂ heat pump. *International Journal of Heat and Mass Transfer*, 51(21-22), pp.5459-5464.
- Yamaguchi, H., Niu, X.-D., Sekimoto, K., Neksa, P., 2011. Investigation of dry ice blockage in an ultra-low temperature cascade refrigeration system using CO₂ as a working fluid. *International Journal of Refrigeration* 34, 466-475.
- Yamaguchi, H., Zhang, X.-R., 2009. A novel CO₂ refrigeration system achieved by CO₂ solid-gas two-phase fluid and its basic study on system performance. *International Journal of Refrigeration* 32, 1683-1693.
- Yamasaki, H., Yamaguchi, H., Hattori, K. and Neksa, P., 2017. Experimental Observation of CO₂ Dry-ice Behavior in an Evaporator/Sublimator. *Energy Procedia*, 143, pp.375-380.
- Yang, B., Peng, X., He, Z., Guo, B., Xing, Z., 2009a. Experimental investigation on the internal working process of a CO₂ rotary vane expander. *Applied Thermal Engineering* 29, 2289-2296.
- Yang, B., Peng, X., Sun, S., Guo, B., Xing, Z., 2009b. A study of the vane dynamics in a rotary vane expander for the transcritical CO₂ refrigeration cycle. *Proceedings of the Institution of Mechanical Engineers, Part A: Journal of Power and Energy* 223, 429-440.
- Yang, B., Sun, S., Peng, X., Guo, B., Xing, Z., 2008. Modeling and Experimental Investigation on the Internal Leakage in a CO₂ Rotary Vane Expander. *International Compressor Engineering Conference at Purdue*, Paper 1852.
- Yang, L., Li, H., Cai, S.W., Shao, L.L. and Zhang, C.L., 2015. Minimizing COP loss from optimal high-pressure correlation for transcritical CO₂ cycle. *Applied Thermal Engineering*, 89, pp.656-662.

- Yu, P.Y., Lin, K.H., Lin, W.K. and Wang, C.C., 2012. Performance of a tube-in-tube CO₂ gas cooler. *International journal of refrigeration*, 35(7), pp.2033-2038.
- Yu, P.Y., Lin, W.K. and Wang, C.C., 2014. Performance evaluation of a tube-in-tube CO₂ gas cooler used in a heat pump water heater. *Experimental Thermal and Fluid Science*, 54, pp.304-312.
- Zeiger, B., Gschrey, B., Kauffeld, M., 2016. Availability of Alternatives to HFCs in Commercial Refrigeration in the EU, retrieved from: https://ec.europa.eu/clima/sites/clima/files/20161201_briefing_supermarket_en.pdf.
- Zeng, X., Ma, Y., Liu, S., Wang, H., 2007. Testing and analyzing on P-V diagram of CO₂ rolling piston expander. *International Congress of Refrigeration*, 2007, Beijing.
- Zhang, L., Xu, S., Du, P., Liu, H., 2015. Experimental and theoretical investigation on the performance of CO₂/propane auto-cascade refrigerator with a fractionation heat exchanger. *Applied Thermal Engineering* 87, 669-677.
- Zhang, L., Yang, M., and Huang, X., 2016. Performance Comparison of Single-stage and Two-stage Hermetic Rotary CO₂ Compressor. *International Compressor Engineering Conference*. Paper 2473.
- Zhang, W., Wang, S., Li, C. and Xu, J., 2015. Mixed convective heat transfer of CO₂ at supercritical pressures flowing upward through a vertical helically coiled tube. *Applied Thermal Engineering*, 88, pp.61-70.
- Zhang, Z., Ma, Y., Li, M., Zhao, L., 2013. Recent advances of energy recovery expanders in the transcritical CO₂ refrigeration cycle. *HVAC&R Res.* 19, 376-384.
- Zheng, L. and Deng, J., 2017. Experimental investigation on a transcritical CO₂ ejector expansion refrigeration system with two-stage evaporation. *Applied Thermal Engineering*, 125, pp.919-927.

PUBLISHED

Journal Papers

1. **Nilesh Purohit**, Vishaldeep Sharma, Samer Sawalha, Brian Fricke, Rodrigo Llopis, Mani Sankar Dasgupta. "Integrated supermarket refrigeration for very high ambient: Multi-ejector CO₂ booster configuration vs NH₃/CO₂ cascaded configuration", **Energy** (2018) Vol. 165, Page No. 572-590. [SCI; Impact Factor: 5.582; H-Index: 146].
2. **Nilesh Purohit**, Dileep Kumar Gupta, Mani Sankar Dasgupta. "Experimental investigation of a CO₂ trans-critical cycle with IHX for chiller application and its energetic and exergetic evaluation in warm climate", **Applied Thermal Engineering**, (2018) Vol. 136, Page No. 617-632. [SCI; Impact Factor: 3.929; H-Index: 121]
3. **Nilesh Purohit**, Dileep Kumar Gupta, Mani Sankar Dasgupta. "Energy and economic analysis of trans-critical CO₂ booster system for refrigeration in warm climatic condition", **International Journal of Refrigeration**, (2017) Vol. 80, Page No. 182-196. [SCI; Impact Factor: 3.328; H-Index: 94]
4. **Nilesh Purohit**, Paride Gullo, Mani Sankar Dasgupta. "Comparative assessment of low-GWP based refrigerating plants operating in hot climates", **Energy Procedia**, (2017) Vol. 109, Page No. 138-145. [SCOPUS; H-Index: 56]
5. Simarpreet Singh, **Nilesh Purohit**, Mani Sankar Dasgupta. "Comparative study of cycle modification strategies for trans-critical CO₂ refrigeration cycle for warm climatic conditions", **Case Studies in Thermal Engineering**, (2016) Vol. 7, Page No. 78-91. [SCOPUS; H-Index: 16]

Book chapter

1. **Nilesh Purohit**, Dileep Kumar Gupta, Mani Sankar Dasgupta. "Year-round performance of twin-stage CO₂ refrigeration system", **Springer Proceedings in Energy** (2018) (ISSN: 2352-2534) (Accepted)

International conference papers

1. **Nilesh Purohit**, Dileep Kumar Gupta, Mani Sankar Dasgupta. "Experimental investigation of CO₂ trans. refrigeration system with and without internal heat exchanger for warm climate", **13th IIR Gustav Lorentz., Conf. on Natural Working Fluids**, Spain (2018).
2. **Nilesh Purohit**, Dileep Kumar Gupta, Mani Sankar Dasgupta. "Exergetic analysis of CO₂ trans-critical refrigeration system with and without internal heat exchanger using experimental data", **5th IIR Conf. on Sustainability and the Cold Chain**, China (2018).
3. Paride Gullo, **Nilesh Purohit**, Mani Sankar Dasgupta, Armin Hafner. "A comparative study on energetic and environmental performance of an integrated R744 multi-ejector enhanced parallel compression system in high ambient temperature locations", **5th IIR Conf. on Sustainability and the Cold Chain**, China (2018).