



## Lot streaming Permutation Flow shop with energy awareness

F. D'Amico <sup>a</sup>, D. A. Rossit <sup>a,b</sup>, M. Frutos <sup>a,c</sup>

<sup>a</sup> Departamento de Ingeniería, Universidad Nacional del Sur, Bahía Blanca, Argentina;

<sup>b</sup> INMABB UNS-CONICET, Bahía Blanca, Argentina;

<sup>c</sup> IIESS UNS-CONICET, Bahía Blanca, Argentina;

### References

- [1] Bach, T. M., & Tortato, U (2018). Cross Country Evidence on the Cointegration and Causality Relationships Between Economic Growth and CO<sub>2</sub> Emissions in OECD Countries. *International Journal of Industrial Engineering and Management*, 9 (1), 31-42
- [2] Tonelli, F., Bruzzone, A. A. G., Paolucci, M., Carpanzano, E., Nicolò, G., Giret, A., Salido M. A., & Trentesaux, D. (2016). Assessment of mathematical programming and agent-based modelling for off-line scheduling: Application to energy aware manufacturing. *CIRP Annals*, 65(1), 405-408.
- [3] Briem, A., Betten, T., Held, M., Wehner, D. & Baumann, M. (2019). Environmental Sustainability in the Context of Mass Personalisation - Quantification of the Carbon Footprint with Life Cycle Assessment. *International Journal of Industrial Engineering and Management*, 10 (2), 171-180
- [4] Salman, S. & Alaswad, S. (2020) Mitigating the Impact of Congestion Minimization on Vehicles' Emissions in a Transportation Road Network. *International Journal of Industrial Engineering and Management*. 11 (1), 40 - 49
- [5] Dai, M., Tang, D., Giret, A., Salido, M. A., & Li, W. D. (2013). Energy-efficient scheduling for a flexible flow shop using an improved genetic-simulated annealing algorithm. *Robotics and Computer-Integrated Manufacturing*, 29(5), 418-429.
- [6] Paolucci, M., Anghinolfi, D., & Tonelli, F. (2017). Facing energy-aware scheduling: a multi-objective extension of a scheduling support system for improving energy efficiency in a moulding industry. *Soft Computing*, 21(13), 3687-3698.
- [7] Pinedo, M. (2012). *Scheduling*. New York: Springer.
- [8] Mouzon, G., & Yildirim, M. B. (2008). A framework to minimise total energy consumption and total tardiness on a single machine. *International Journal of Sustainable Engineering*, 1(2), 105-116.
- [9] Mouzon, G., Yildirim, M. B., & Twomey, J. (2007). Operational methods for minimization of energy consumption of manufacturing equipment. *International Journal of production research*, 45(18-19), 4247-4271.
- [10] Bruzzone, A. A., Anghinolfi, D., Paolucci, M., & Tonelli, F. (2012). Energy-aware scheduling for improving manufacturing process sustainability: A mathematical model for flexible flow-shops. *CIRP annals*, 61(1), 459-462.
- [11] Fang, K., Uhan, N., Zhao, F., & Sutherland, J. W. (2011). A new approach to scheduling in manufacturing for power consumption and carbon footprint reduction. *Journal of Manufacturing Systems*, 30(4), 234-240.
- [12] Fang, K., Uhan, N. A., Zhao, F., & Sutherland, J. W. (2013). Flow-shop scheduling with peak power consumption constraints. *Annals of Operations Research*, 206(1), 115-145.
- [13] Mansouri, S. A., Aktas, E., & Besikci, U. (2016). Green scheduling of a two-machine flow-shop: Trade-off between makespan and energy consumption. *European Journal of Operational Research*, 248(3), 772-788.
- [14] Sarin, S. C., & Jaiprakash, P. (2007). *Flow-shop lot streaming*. Springer Science & Business Media.
- [15] Şen, A., Topaloğlu, E., & Benli, Ö. S. (1998). Optimal streaming of a single job in a two-stage flow-shop. *European Journal of Operational Research*, 110(1), 42-62.
- [16] Han, Y., Gong, D., Jin, Y., & Pan, Q. (2017). Evolutionary multiobjective blocking lot-streaming flow shop scheduling with machine breakdowns. *IEEE transactions on cybernetics*, 49(1), 184-197.
- [17] Sang, H. Y., Pan, Q. K., Duan, P. Y., & Li, J. Q. (2018). An effective discrete invasive weed optimization algorithm for lot-streaming flowshop scheduling problems. *Journal of Intelligent Manufacturing*, 29(6), 1337-1349.
- [18] Rossit, D., Tohmé, F., Frutos, M., Bard, J., & Broz, D. (2016). A non-permutation flow-shop scheduling problem with lot streaming: A Mathematical model. *International Journal of Industrial Engineering Computations*, 7(3), 507-516.
- [19] Ferraro, A., Rossit, D., Toncovich, A., & Frutos, M. (2019). Lot-streaming flow-shop with a heterogeneous machine. *Engineering Management Journal*, 31(2), 113-126.

- [20] Rossit, Daniel Alejandro, Fernando Tohmé, and Mariano Frutos (2018). "The non-permutation flow-shop scheduling problem: a literature review." *Omega* 77, 143-153.
- [21] Trietsch, D., & Baker, K. R. (1993). Basic techniques for lot-streaming. *Operations Research*, 41(6), 1065-1076.
- [22] Hart, W. E., Laird, C. D., Watson, J. P., Woodruff, D. L., Hackebeil, G. A., Nicholson, B. L., & Siirola, J. D. (2017). Pyomo—optimization modeling in python (Vol. 67). Berlin: Springer.
- [23] Mason, A.J. (2013). SolverStudio: A new tool for better optimisation and simulation modelling in Excel. *INFORMS Transactions on Education*, 14(1), 45-52.