

Batch Delivery Considerations in Additive Manufacturing Machine Scheduling Problem

Ibrahim Kucukkoc

Department of Industrial Engineering, Balikesir University, Balikesir, Turkey
ikucukkoc@balikesir.edu.tr

Abstract. Called as a disruptive technology, additive manufacturing (or 3D printing) is attracting both researchers and practitioners thanks to its manufacturing ability [1]. As an additive manufacturing technology, Selective Laser Melting (SLM) enables direct production of highly customized complex geometries in high quality lightweight metals [2,3]. This study focusses on the scheduling of multiple SLM machines to produce part orders received from geographically dispersed customers. Although there is limited research on this topic in the literature, none of them considered batch delivery of part orders received from the same customer to minimize delivery costs. The problem has been defined and a meta-heuristic algorithm has been proposed to solve the problem. The basic descriptions of the problem have also been illustrated through numerical examples.

Keywords: Additive manufacturing; 3D printing; scheduling; optimization; selective laser melting

References

- [1] Li, Q., Zhang, D.Z., Wang, S., Kucukkoc, I: A dynamic order acceptance and scheduling approach for additive manufacturing on-demand production, *The International Journal of Advanced Manufacturing Technology*, 105(9), 3711-3729 (2019), DOI: 10.1007/s00170-019-03796-x.
- [2] Kucukkoc, I.: MILP models to minimise makespan in additive manufacturing machine scheduling problems, *Computers & Operations Research*, 105C, 58-67 (2019), DOI: 10.1016/j.cor.2019.01.006.
- [3] Li, Q., Kucukkoc, I., Zhang, D. Z.: Production Planning in Additive Manufacturing and 3D Printing, *Computers & Operations Research*, 83C, 157-172 (2017), DOI: 10.1016/j.cor.2017.01.013.