Dynamic Balancing for Mixing Assembly Line Based on PSO - GA Cooperative Optimization

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Aiming at the evolution balance problem of hybrid assembly line (HAL), a dynamic (evolution) balancing model of assembly line is established, and a cooperative optimization algorithm (PSO-GA) is proposed in this paper. Firstly, HAL evolution in the market diversification and technology progress environment is studied, and assembly line evolution balance is mainly considered. In the PSO-GA, minimizing the number of stations, minimizing the load indexes of between stations and within each station, and adjusting costs are used as optimization objectives. For increasing population diversity and speeding up the searching speed, the individual information exchange and mutation are carried out in the populations. Finally, the effectiveness and feasibility of the method were proved by optimizing the HAL for an enterprise.

Keywords: Hybrid assembly line, Evolution, PSO-GA optimization, Evolution balancing

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