

## Unbalanced Mean-Time and Buffer Effects in Lines Suffering Breakdown

**Authors :** Sabry Shaaban, Tom McNamara, Sarah Hudson

**Abstract :** This article studies the performance of unpaced serial production lines that are subject to breakdown and are imbalanced in terms of both of their processing time means (MTs) and buffer storage capacities (BCs). Simulation results show that the best pattern in terms of throughput is a balanced line with respect to average buffer level; the best configuration is a monotone decreasing MT order, together with an ascending BC arrangement. Statistical analysis shows that BC, patterns of MT and BC imbalance, line length and degree of imbalance all contribute significantly to performance. Results show that unbalanced lines cope well with unreliability.

**Keywords :** unreliable unpaced serial lines, simulation, unequal mean operation times, uneven buffer capacities, patterns of imbalance, throughput, average buffer level

**Conference Title :** ICBEMM 2014 : International Conference on Business, Economics, Management and Marketing

**Conference Location :** Paris, France

**Conference Dates :** June 26-27, 2014