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## **An investigation of the utilisation of different data sources in manufacturing with application in injection moulding**

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This work focuses on the effective utilisation of varying data sources in injection moulding for process improvement through a close collaboration with an industrial partner. The aim is to improve productivity in an injection moulding process consisting of more than 100 injection moulding machines. It has been identified that predicting quality through Machine Process Data is the key to increase productivity by reducing scrap. The scope of this work is to investigate whether a sufficient prediction accuracy (less than 10% of the specification spread) can be achieved by using readily available Machine Process Data or additional sensor signals obtained at a higher cost are needed. The latter comprises Machine Profile and Cavity Profile Data. One of the conclusions is that the available Machine Process Data does not capture the variation in the raw material that impacts element quality and therefore fails to meet the required prediction accuracy. Utilising Machine Profiles or Cavity Profiles have shown similar results in reducing the prediction error. Since the cost of implementing cavity sensors in the entire production is higher than utilising the Machine Profiles, further exploration around improving the utilisation of Machine Profile Data in a setting where process variation and labelled data are limited is proposed.

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