عنوان مقاله:

"Transforming The Plastic Industry : Harnessing Machine Learning for Enhanced Efficiency"

محل انتشار:

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نویسندگان:

Arifa Khan - SRM, Kattankulathur, Kanchipuram - ۶۰۳۲۰۳, Tamil Nadu, India

saravanan P - SRM, Kattankulathur, Kanchipuram - ۶۰۳۲۰۳, Tamil Nadu, India

خلاصه مقاله:

Optimizing production in the plastic extrusion industry is a pivotal task for small scale industries. To enhance the efficiency in today's competitive market being a small-scale manufacturer over their peers is challenging. With the limited resources, having constraints on manpower, capital, space, often facing fluctuations in demand and production, simultaneously maintaining high quality became very important for the success. Among the plethora of KPIS used in manufacturing, Overall Equipment Effectiveness (OEE) stands out as corner stone. In this study, we collected real-world data from a plastic extrusion company. i.e., an HDPE Pipe manufacturing company. It serves as the backdrop for our study, this is based on the plastic extrusion sector and set out a goal of enhancing OEE through a comparative investigation of various ML models. To forecast and estimate OEE values, we used various Machine Learning models and examine each algorithm's performance using metrics like Mean Squared Error (MSE) and model comparisons using the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC), creating a comprehensive picture of each algorithm's strength which enables the small businesses to make informed decisions and empowers them to stay agile and adapt to the changes in the manufacturing environment.

کلمات کلیدی:

Machine Learning, Overall Equipment Effectiveness, Deep Learning, Akaike Information Criterion, Bayesian Information Criterion.