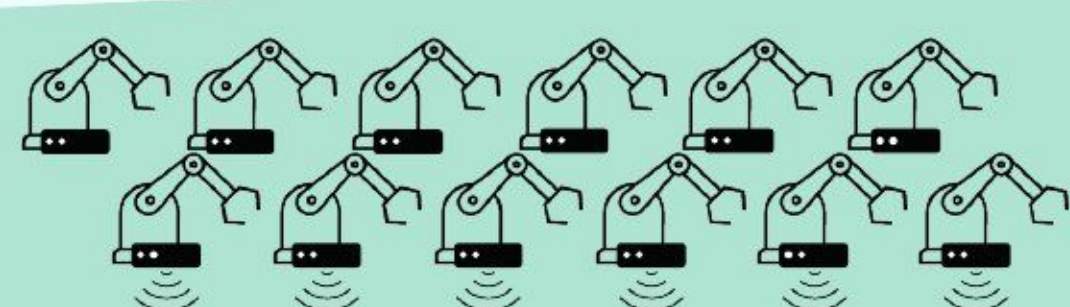
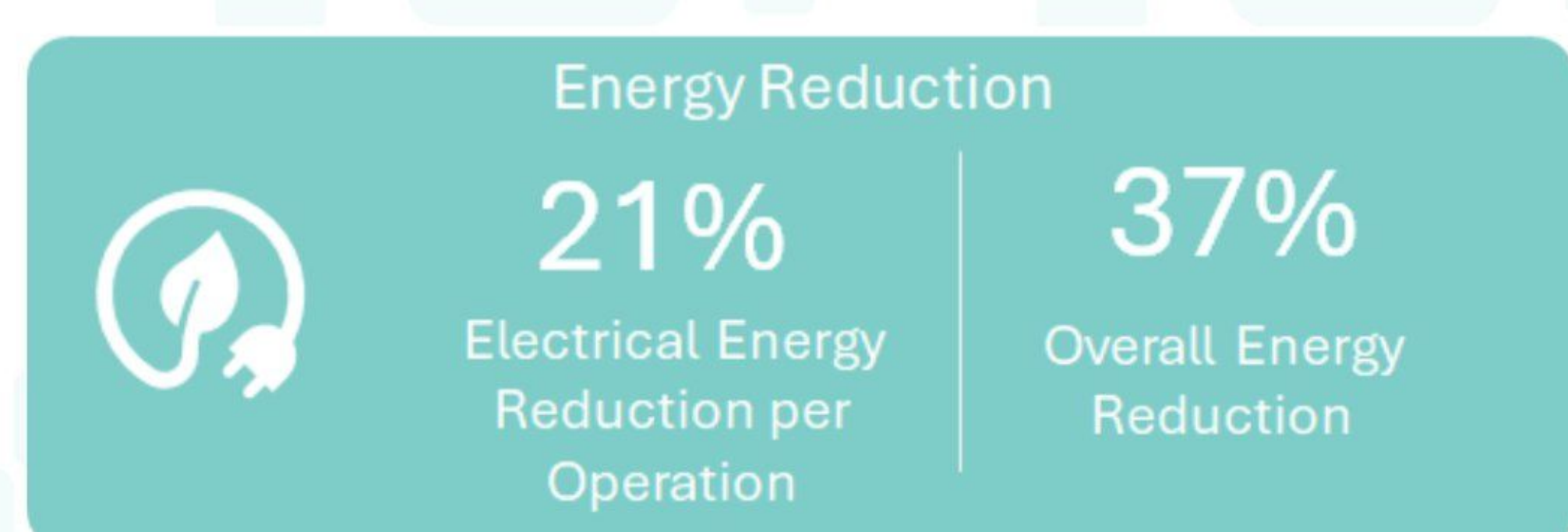
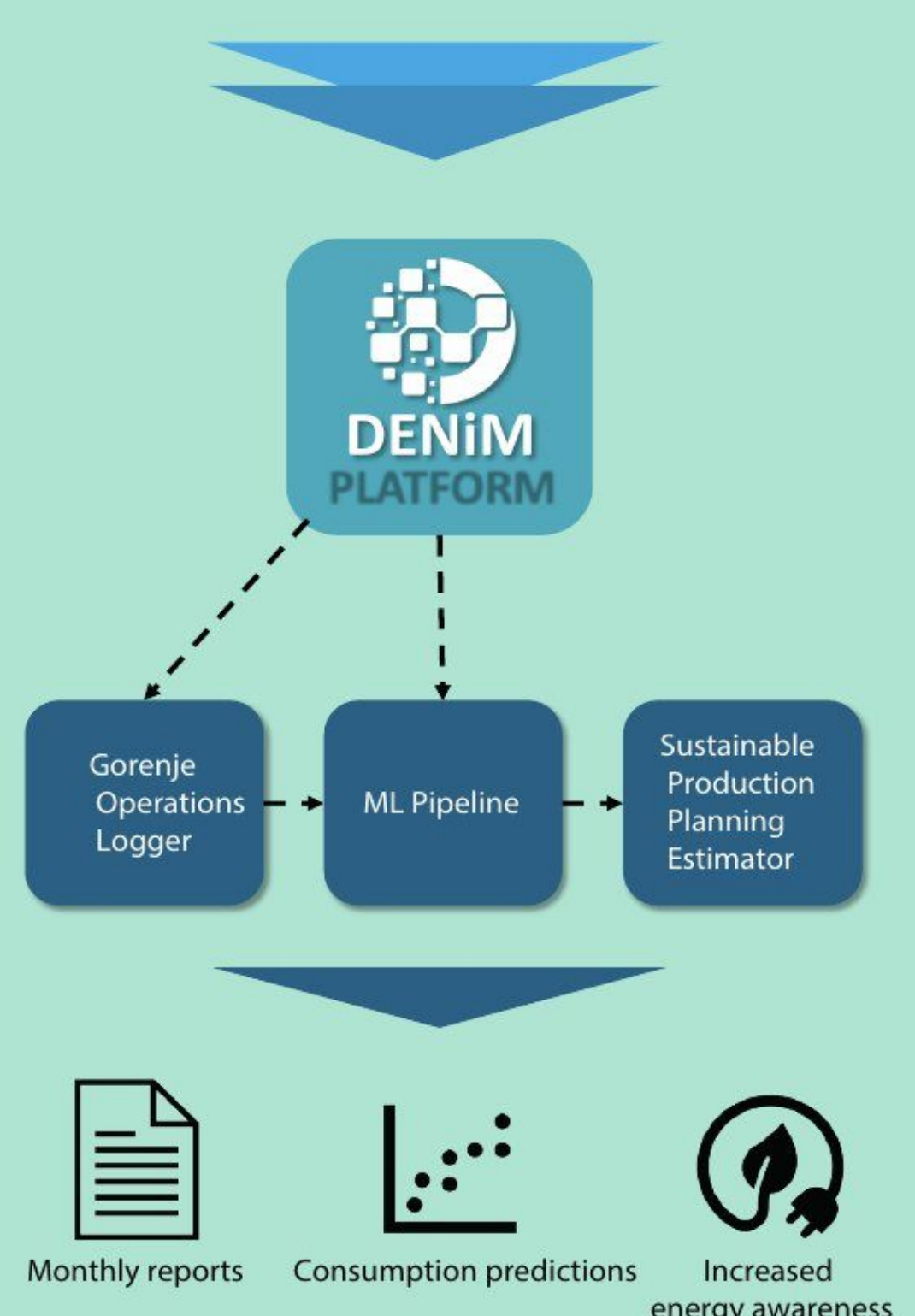


MANUFACTURER OF SHEET METAL FORMING TOOLS FOR THE AUTOMOTIVE AND HOUSEHOLD APPLIANCE INDUSTRY

Digital twin of machining processes for production planning



DENiM SOLUTIONS



Custom Data Connectors

Integrating information from MODBUS sensors (energy and air consumption) and production data from Gorenje's Enterprise Resource Planning (ERP)

DENiM Data Platform

Consolidated data processing, storage and distribution supporting the deployment of advanced data-driven services and decision support systems

Energy Modelling & Metrics

Custom energy monitoring dashboard to provide real-time energy flow monitoring as well as extraction & aggregation of performance metrics.

Energy Prediction Pipeline

Machine specific machine learning models managed via the platform, with automated retraining for updates and new data availability.

Gorenje Operations Logger

A custom user service to log detailed production configurations, enabling ML model training to predict machine energy consumption & energy reports by month, operation or time period.

Sustainable Production Planner

An ML-powered tool that optimises machine selection for production by simulating scenarios to predict and minimise energy consumption.

Challenges

Acquirement of per machine and process energy consumption data (need for structured machine and process-related data).

Reduction of energy consumption, scrap reduction and tool wear reduction for improvement of economic and environmental performance.

Increasing energy efficiency in toolmaking processes by introducing energy aware production planning.

Introducing energy aware investment planning for better future CAPEX expenditures in machines.

Adapt to future digitalisation and automating manufacturing processes.

Added Value

Digital transformation towards data-driven digital workplace

13 machine learning energy models developed

Energy-efficient workflows through decision support tool based on AI

Improved awareness and decision-making with a real-time energy monitoring tool

Employee training in energy saving and digital tools



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