

Manufacturing Learnings Taken from Formula One's Industrial Optimization Model

Mercedes-AMG Petronas
Formula One Team

Manufacturing

Data Collection

99% virtualized factory

45 TB of data produced each
race week

50,000 data points collected
on the track from 300 sensors

Production machines generate
large volumes of data. For
example, at a CPG company,
production generates 5,000 data
samples every 33 milliseconds.

Data Analysis

Data collected from a digital
twin simulator, which tests car
performance

3 days → 1 for data collection
and computational fluid
dynamics processing

Every 20 minutes a new piece
of technology is developed

300 milliseconds to transmit
data analytics from the factory
to track

IoT data must be analyzed in
real-time to understand how a
process is performing and
detect any anomalies.

Manufacturers using digital
twins can reduce waste and
improve quality.
- Simulate, monitor, and
optimize the product lifecycle
- Seamless coordination of
product lifecycle activities
- Reduced waste from duplicate
data and siloed processes

A faulty product can lead to
increased cost, rework, and
unhappy customers, as well as
hefty fines and business
closures.

Optimization

2.1 to 2.2 seconds to change tires
during a pit stop

Unplanned outages = lower Overall
Equipment Effectiveness (OEE)

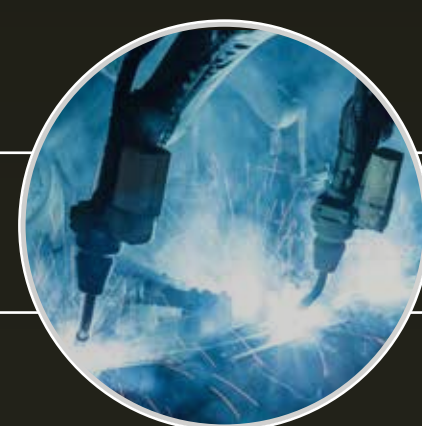
Optimized maintenance = increased
performance, high-quality products.

By 2021



20% of manufacturing companies will have started to treat their assets
as internal customers, leading to a 40% reduction in downtime.

By 2022



the need for greater operational resiliency will lead 60% of manufacturers to shift
their smart factory strategy from technology implementation to process-change management.

By 2023



65% of global manufacturers will realize 10% savings in operational expenses
using digital twins driven by IIoT and machine learning (ML).

By 2024



to reduce critical equipment failures and unplanned downtime by 25%, 40% of OEMs
will use data from IoT assets to autonomously diagnose and resolve pending issues.

By 2024



75% of all consumer-facing manufacturing companies will have transformed their
supply chains to manage customization at scale, resulting in share gains of 2-3%.