
Productive
Machines
Maximize productivity of machine tools
A new way to deliver productivity to the machining industry

The Challenge

* AMRC (Advanced Manufacturing Research Centre) case study, Rolls-Royce aero-engine discs, https://bit.ly/3fxAbDQ

Productive Machines

The Problem

Productivity

- Machine tools run with **a productivity loss** due to sub-optimal selection of operating conditions
- Many high value manufacturing processes have **low OEE** (Overall Equipment Effectiveness)
- **Waste and inefficient use of resources** result

Skills Gap

- Many businesses do not have the skills to optimize machining processes due to **the specialised knowledge gap**
- **Invaluable process data is wasted**

Productive Machines

Product

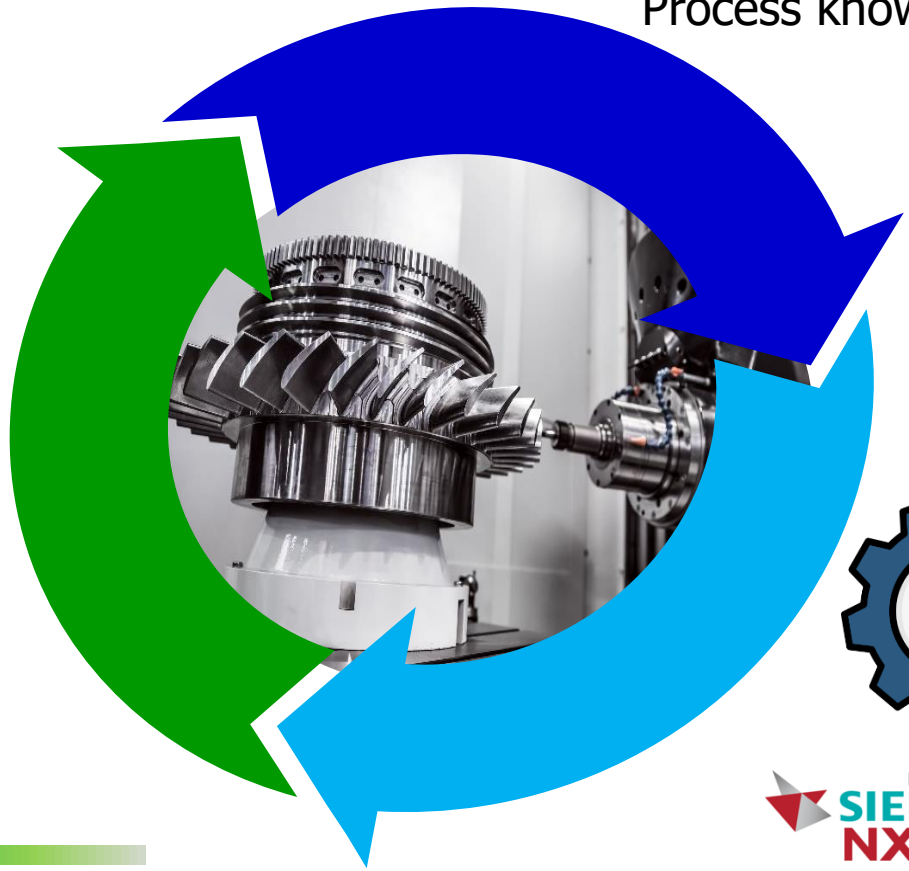
Digital Twin Based Learning Platform

Machine tools learn from each other

1. Learning System

Tool & Work piece data

Process knowledge data



2. CAM Plug-in

Offline Digital Twin

Optimisation

PLM Software SIEMENS NX

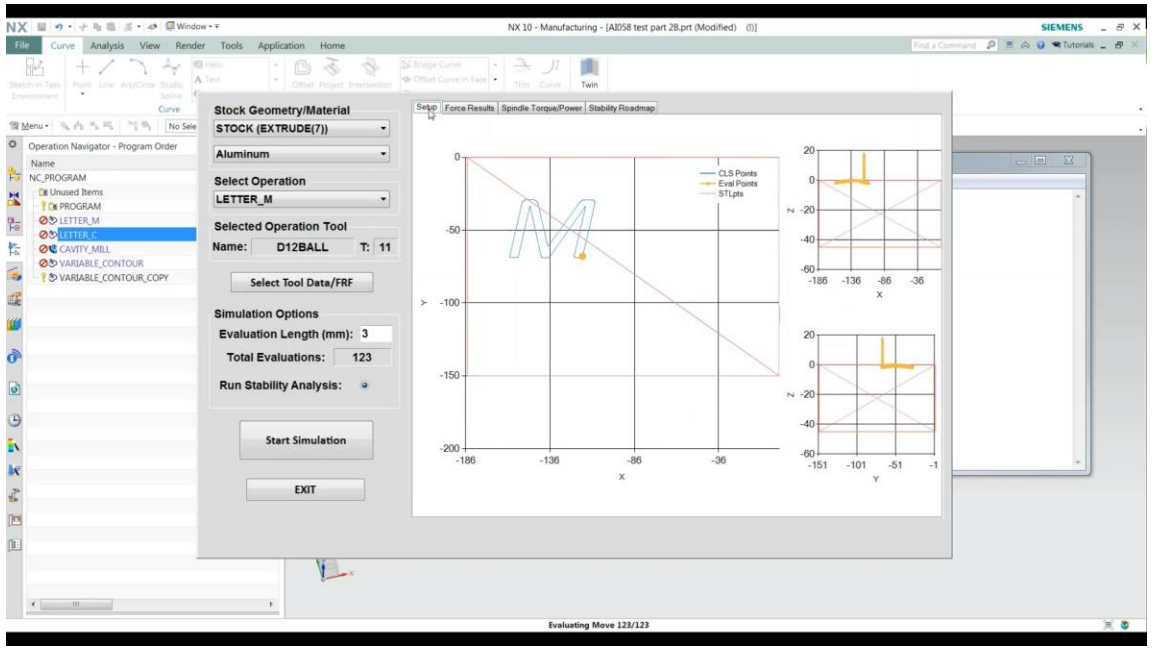
3. Edge Application

Online Digital Twin
Process Monitoring &
Control

Productive Machines

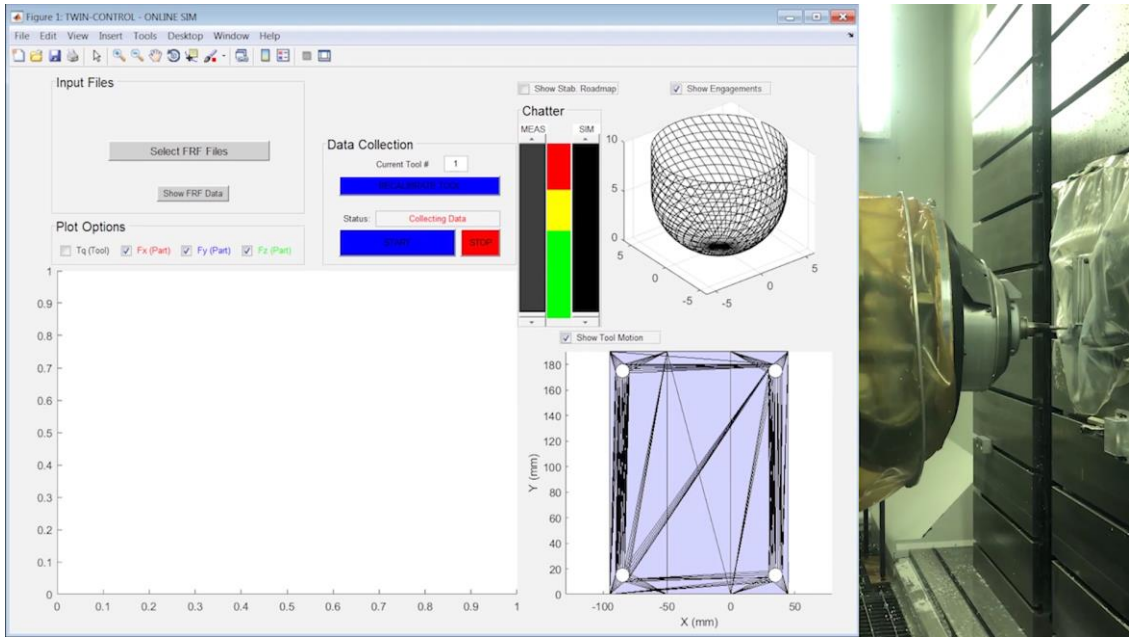
Product: current status

CAM Plugin



Offline Process Simulation & Optimisation

Edge Application



Model Based Process Monitoring & Control

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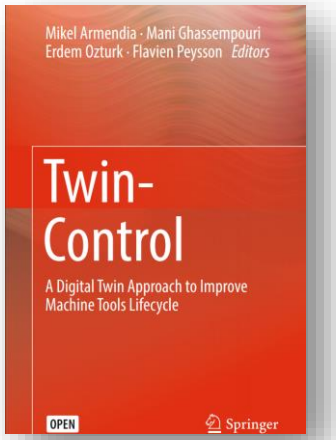
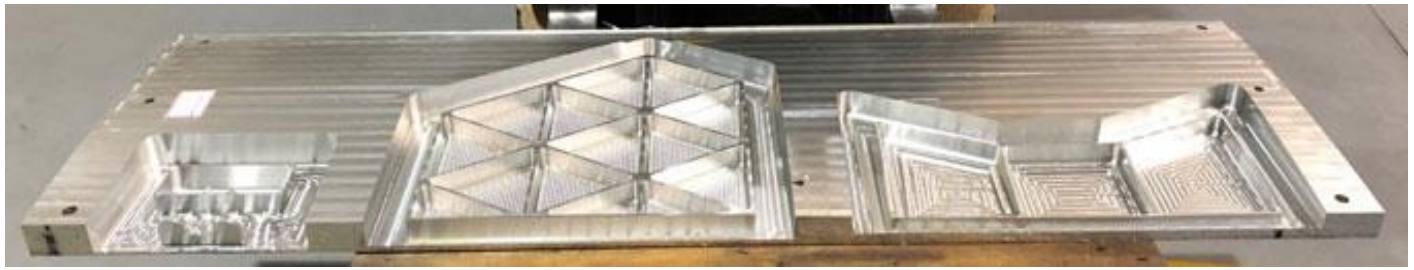
Impact: MASA Aerospace

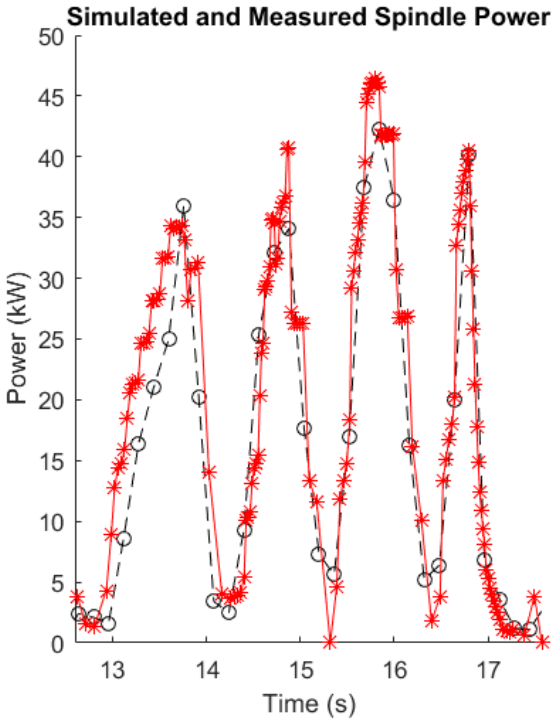
The following **benefits** were achieved:

1. Machining process design and set-up time reduced by **20%**
2. Scrap parts reduced by **10%**
3. Cycle time reduced by **10%**
4. Operation and maintenance costs reduced by **25%**





Roughing process of pockets



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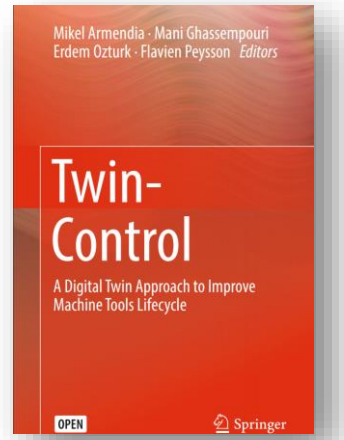
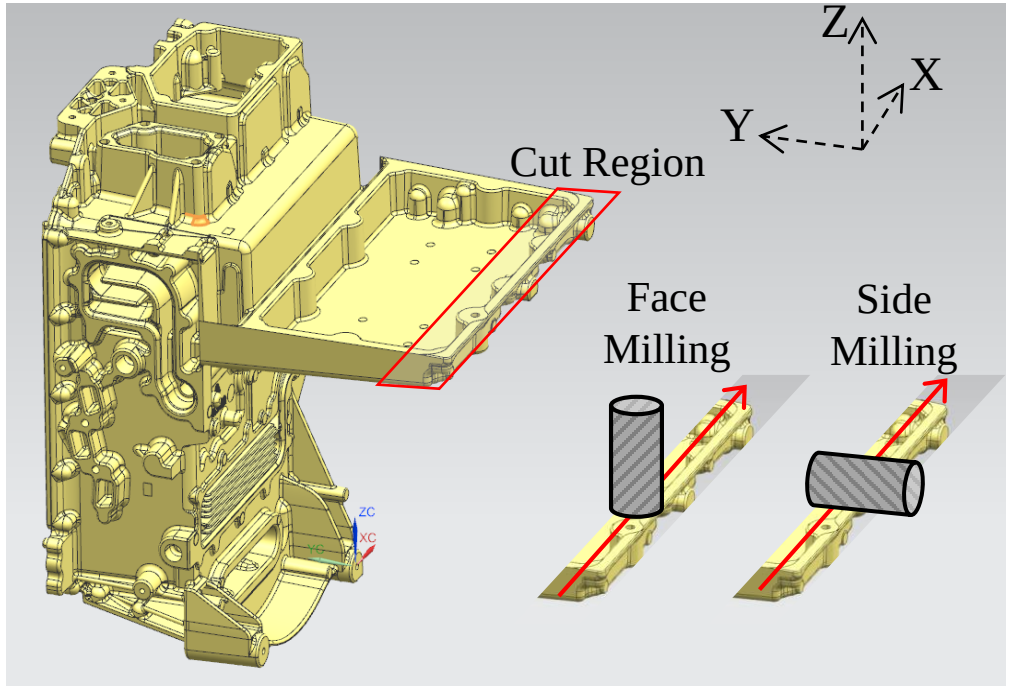
Impact: RENAULT

The following **benefits** were achieved:

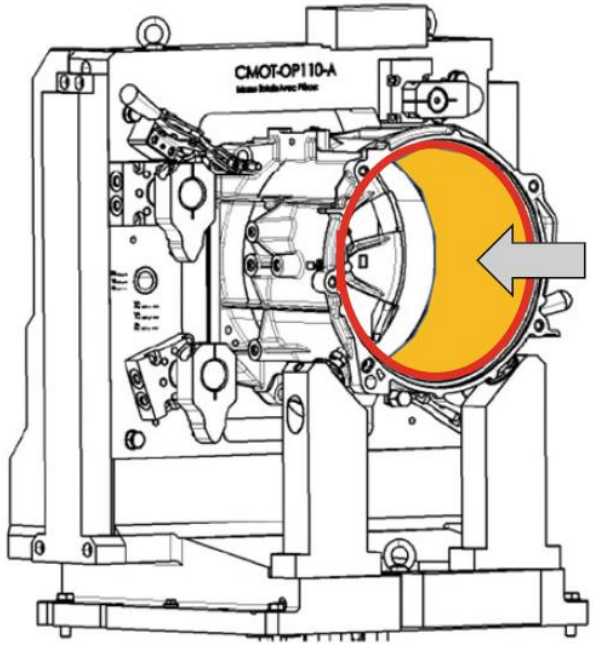
1. Machining process design and set-up time reduced by **11%**
2. Tooling cost reduced by **5-10%**(depending on the part)



Milling of Gearbox Housing



Boring of motor case



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Traction

2015 — **September**

2018 — **September**

Productive Machines **2021** — **January**

CATAPULT High Value Manufacturing

ATI Small Business Grant

NATEP

eit Manufacturing

POV(Proof of value) projects with 5 early adopters in 2021

First investment round in 2021

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Who we are

We are a spin out from AMRC (Advanced Manufacturing Research Centre)
20+ years of experience in machining process optimisation

Team

Dr Erdem Ozturk

MANAGING DIRECTOR

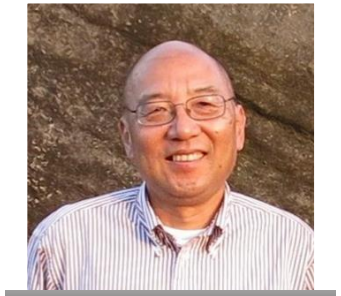
Dr Huseyin Celikag

TECHNICAL MANAGER

Nese Ozturk

BUSINESS DEVELOPMENT MANAGER

Advisory Board



Dr Leon Xu

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