TT GASKETS

Cutting Edge: Material Need Prediction with AI in Gasket Manufacturing

FIIF MEETING

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SMART PRODUCT SPECIALIST

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TT Gaskets briefly in numbers

MANAGEMENT SYSTEM CERTIFICATION
DNV
ISO 9001 • ISO 14001
ISO 45001

Est.
1943

Annual Revenue
20,000,000€ ↗

Employees
100 ↗

Gaskets and shims supplied
25,000,000 *(pcs / year *estimate)*

Factory floor space
11 000 m²

Presence
in **4** *countries*

Certified
ISO 9001, ISO 14001, ISO 45001

Solar power
511 kWp ↗

We have *100 000* different products that are made from *3 000* materials

Our challenge with the materials

Predicting is difficult

- someone has once said that especially predicting the **future**

- our order backlog is **3-4 weeks**, but the lead time for materials is **2-6 months**

We must stock

- **JIT** philosophy with the current method is **impossible**

- we have a lot of **capital binded** in the materials (M€s)

- **shortages** and **surpluses** happen regularly

Our production stalls

- delivery **delays** are **unacceptable**

- **resources** are used **inefficiently**

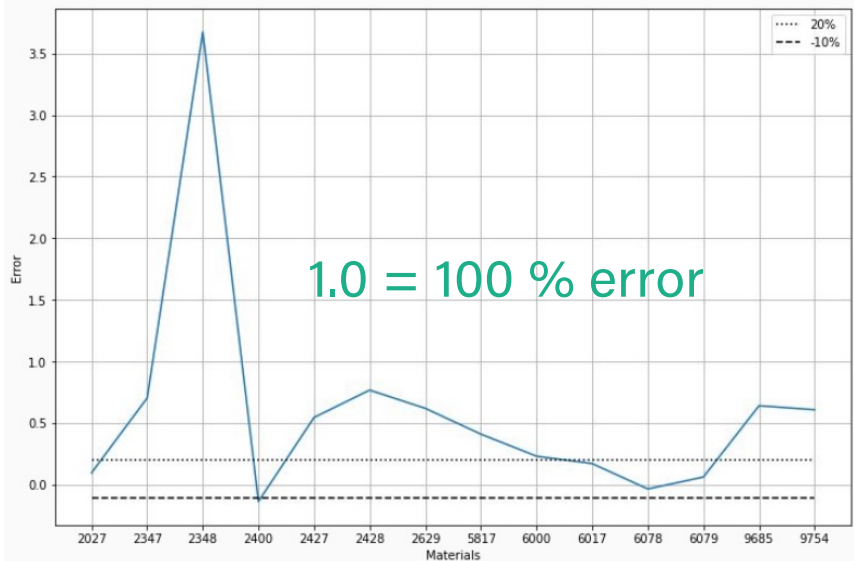- **profitability** decreases

What did we do?

- We **chose** the focus **material** and customer **scope**
  - **14** raw **materials** (out of 3 000) that represent the majority of consumption
  - **Top 40** customerships including dozens of customers
  - **4 161** products (out of 60 672 produced)

- **Data** we used
  - Monthly (approx.) material **consumption**
  - Yearly **order log** from the years **2013-2018**

- We tried to **achieve**
  - Material consumption **forecast** per **material** for **2019**
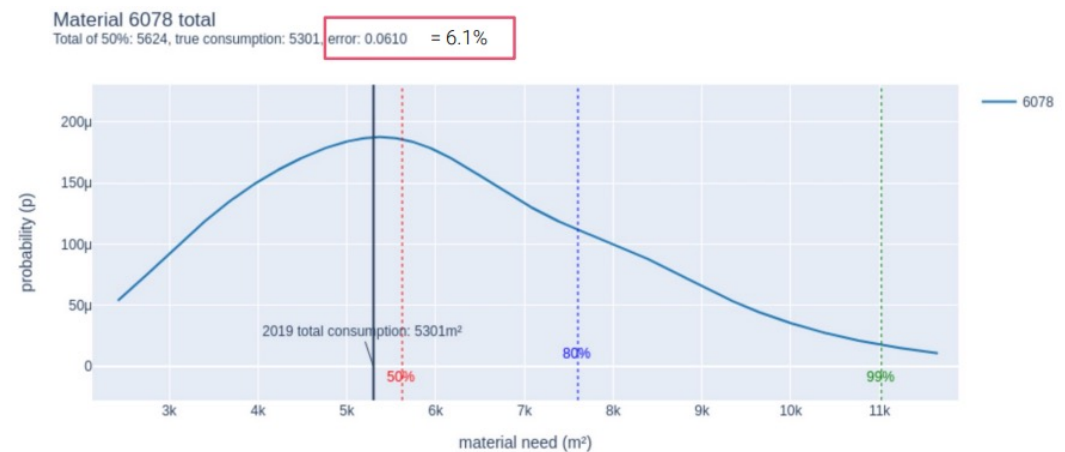 - Material consumption **forecast** per **customership** for **2019**
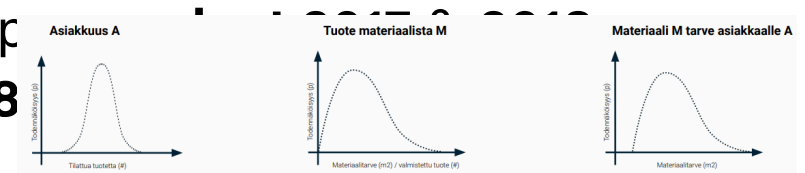
How did we succeed?

- **5/14** forecasts **deviated** less than **20 %** of the actual consumption
  - **13/14** forecasts would have **fulfilled** the need for **2019** (3,5 fold at worst)

1.0 = 100 % error

5/14 in −10− +20 % region

Material 6078 total
Total of 50%: 5624, true consumption: 5301, error: 0.0610   = 6.1%

Example forecast

What did we learn?

- **Getting started** with data analytics with the right partner is **easy**(ish)
  - **Motivating** the **key** persons took the most time (I'm not omnipotent)
  - Don't rush, this is a **marathon,** not a sprint
  - Setting the **bar low** helps with the **wise** use of resources

- The **data** was **deficient** (as expected)
  - Production date was missing so it had to be **guesstimated**
  - The **net sizes** of the products were missing (**64/6 141** were known)
  - **Helps** us in the specification of the incoming **MES** & **ERP updates**

- **Data** doesn't lie (if it's not garbage)
  - We have a lot of **data** that is **garbage** without proper **enrichment**
  - There was a potential **treasure hidden** in the pile of dirt

The hidden treasure

- We created a relation **chart** of our **customerships**
  - The **closer** the dot is to other dot, the more **similar** the order **behavior** is

Clusters and remote islands

This will (hopefully) be **enhanced** and **utilized** in our customer **segmentation** regarding the system **update**

Don't hesitate to contact us

- In case you have any further questions or interest, feel free to contact us

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