Customer reference AICHELIN

From service assistant to digital product for plant & machine construction

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01 Starting point

Industry 4.0 is here! And with it, the digitalisation of all business processes to help turn factories smart – in every sense.

While resources are desperately needed right now to help implement new technologies and processes for smart factories – and operators are grappling with how to deal with big data, cloud connectivity and data security – skilled workers are faced with ever-increasing time- and cost demands.

Those responsible for daily service and maintenance of machinery are progressively in the firing-line of demands, and for them efficiency, flexibility and cost reduction is central to the provision of their services.

These goals are also a constant presence in the minds of the people at AICHELIN Services Ltd – the independent service and after-sales part of the AICHELIN Group. AICHELIN is an international manufacturer of high-quality industrial furnaces and systems for thermal and thermochemical heat treatment of metal components.

Within the framework of an Industry 4.0-project, the organisation made the decision to develop a digital service app which can be used on a standard smartphone or tablet to aid the service and maintenance work for AICHELIN pre-heating furnaces.

The goal was to create an app that bundles all available information about the furnace onto one device. What has thus been created is a service app for the thermal processing system that offers direct access to information about the different components, documentation and manuals, status information, replacement parts and availability, as well as all operational settings.

02 Challenge

Digitalisation is an all-pervasive trend which increasingly also engulfs the industries. Factories all have to be faster, more flexible, more efficient – and not least more digital. Regardless of technical possibilities, the focus has to remain on the business itself: on the customers – and on the producer.

In particular medium-sized businesses, whose core competencies lie in the area of constructing machines and industrial plants, are faced with major challenges where this is concerned.

There are many reasons for this:

- a lack of qualified personnel
- few digital experts in their particular area
- little or no focus on digital transformation
- mostly no digitally mature business models available

What further complicates things for a business like AICHELIN is that customers want to digitalise businesses that have been around for 20-30 years and therefore were not set up for the requirements of a smart factory. The concept of going digital was simply not an issue. Until now.

So when looking at the digital assistant project, this was the main challenge facing AICHELIN:

- The possibilities brought onto the playing field by the digital age are multi-faceted. It was of paramount importance to stay focused and move forward in increments (SCRUM) while not losing sight of the main goal.

- Systems that had been used so far, with sensors that were not compatible with new technologies and that were operating with only partly processed base data, had to be brought in line with ever increasing challenges. It was particularly important for older systems to take a pragmatic approach and apply good middleware.

- Finally, it was important that the necessary resources were made available for the successful implementation of the project as well as important personnel – without causing interruptions to daily business.

03 Requirements

We were to develop a comprehensive, mobile tool that was easy to use and could assist employees in their maintenance and repair work on furnaces and thermal processing components.

Drawing on the name of the founder of the company, Jakob Aichelin, the team decided to call the new tool #jakob. The idea was that anyone who was working on an AICHELIN product would in a sense be carrying the founder in his pocket.

The application was to link, evaluate and visualize a wide range of system data and information on a smartphone or tablet in order to subsequently reduce search times and the associated costs of the system operator and manufacturer.
The app was simultaneously to offer employees a direct connection to AICHELIN‘s digitised online spare-parts shop.

And so we created an app that digitised the already existing assets, but without requiring further IoT investments in things such as sensors.

The following aspects were kept central:

- integration of existing monitoring and data analytics of the sites
- access to general information about the machines, documentation and individual records
- simplified workflows through visual component and parts recognition
- integration of predictive maintenance technologies at different expansion levels

04 The solution

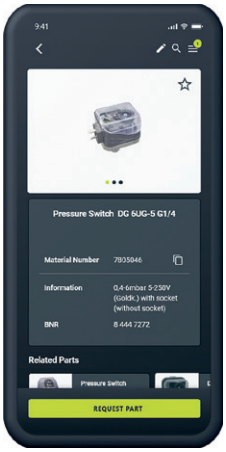
An integral part of the AICHELIN #jakob application is our Partium technology which recognises components and replacement parts. Conceptualised as a service app for maintenance- and service technicians, the app offers superb value in that it combines several functions in a smartphone/tablet app and gives access to:

- documentation/history through being connected to the digitized information files
- condition monitoring through being connected to AICHELIN's FOCOS 4.0 system
- predictive maintenance through matched integration
- AI supported component- and parts-recognition

The smartphone app #jakob recognises via a photo the correct family of components, labels each and connects each component with its corresponding replacement part. The service technician can from this image access all monitoring and analysis data, and also information from the ERP, documents, instructions, service- and inspection reports. AICHELIN's already existing processing system, FOCOS 4.0 (condition monitoring), has been integrated here.

If a part needs replacing this is also communicated by photo via the app and initiates a pro-active replacement recommendation based on available data analysis and historical data. An existing tool for parts ordering and follow-up (myAICHELIN) was also integrated here. From this point onwards it is possible for the maintenance technician to continue to an ordering and processing service.

Through improved sensor and monitoring data and the use of predictive maintenance, it is possible to avoid unplanned downtime and minimise service times and other interruptions: this in turn increases the run-time of the entire plant.



05 Added value

The introduction of the application in the service and maintenance area at AICHELIN has for the maintenance experts added value in several areas.

The instant visual recognition of components and parts – providing immediate access to documentation, ordering history and the ERP-system – has noticeably reduced time spent and thus saved on cost in connection with system services.

The time spent doing online searches or going through old paperwork is noticeably shorter. Having access to all relevant information in one central tool saves time during maintenance visits and cuts down on possible communication problems between the different departments. The ordering of wrong parts is reduced to an absolute minimum, and procedures are simplified, something which gives the technician more confidence and helps the managers get a good night's sleep!

The likelihood of unplanned down-time and its detrimental consequences is effectively kept in check with conditional monitoring and predictive maintenance.

In addition it is possible to optimise the efficiency and reduce costs through direct access to information about when a furnace was first installed and all its configurations.

In short:

- maintenance experts are fully supported and save valuable time on each service
- user-friendly app provides access based on already existing technologies
- secures information about the condition of the plant
- reduces costs and simultaneously increases the plant's efficiency
- the likelihood of unexpected down-time is reduced
- simplified replacement part purchasing routines

06 #jakob – the digital product

The project of developing a mobile service app was originally intended for use internally within AICHELIN Services Ltd only, to help ease the workload on the employees who service the on-site facilities.

However, shortly after #jakob was introduced it became clear that its real potential lay on the customer side. Several of AICHELIN's customers who operated similar thermal processing units expressed interest and wanted their own version of the application for the maintenance of their furnaces.

The reason is simple: the challenges facing the plant operators are comparable with those facing AICHELIN. They too want to ease the workload for their employees and make the transfer to Industry 4.0. Meetings with the customers revealed the following requirements:

- necessary access to machine-relevant information from different systems
- simplified routines for production and service processes
- digital documentation that leave no information gaps
- conditional monitoring and predictive maintenance for each unit
- secure digital infrastructure – ideally on-site

With minimal adjustments it was possible for AICHELIN to develop #jakob into a comprehensive supplementary digital product that for each customer could be adapted and further developed for their specific thermal processing units.

07 The business case

The strong interest in #jakob expressed by the plant operators transformed what was originally intended as an internal supplemental tool into a comprehensive, digital tool.

For AICHELIN, this resulted in the following business case:

- fewer requests for help in manually identifying replacement parts by the user
- reduced overhead in own service organisation
- more direct orders from own replacement part shop
- an increase in sales of original parts with up to 20% per year

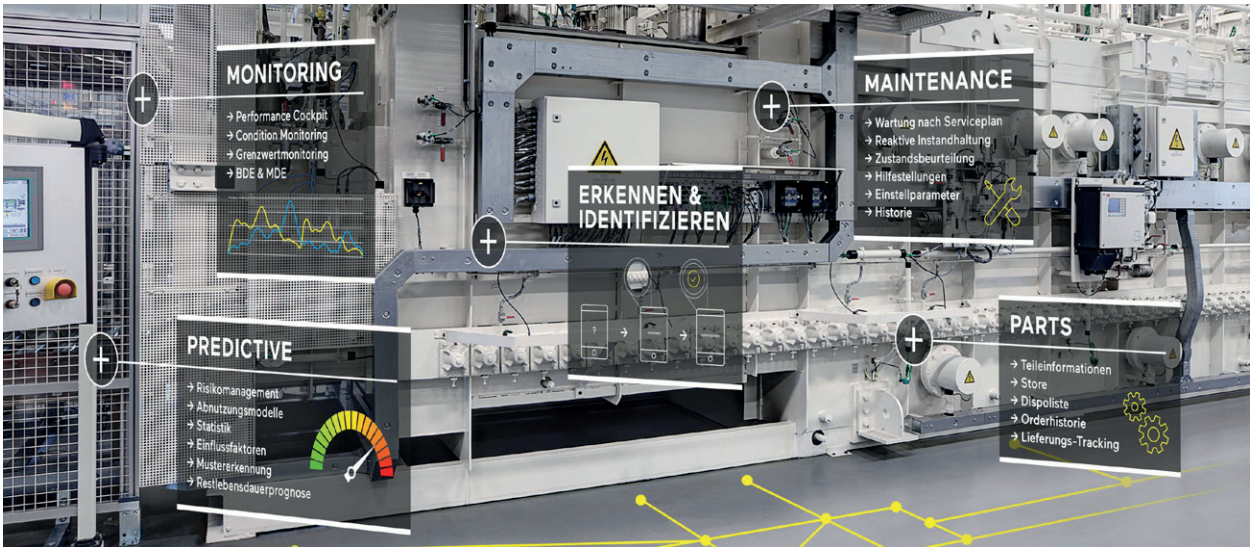
What's more, however, is that a new digital trading channel has come into being without major investments. This has led to additional income from licencing fees from the distribution of #jakob.

At the same time, both AICHELIN and its customers benefit from the following:

- reduced training costs for new employees
- the same service and production results with fewer qualifications
- low hiring costs
- service personnel can work faster and thus service more units
- replacement parts are identified within 10 seconds instead of 12 minutes
- a reduction in time spent looking through manuals with 150-300 hours per year
- reduced down-time for machines with a cost-reduction of €600 000 per year
- about 50% reduction in errors during service and maintenance

Stephan Müller, Head of Service & Product Management, AICHELIN Services Ltd, on the partnership with Partium.io:

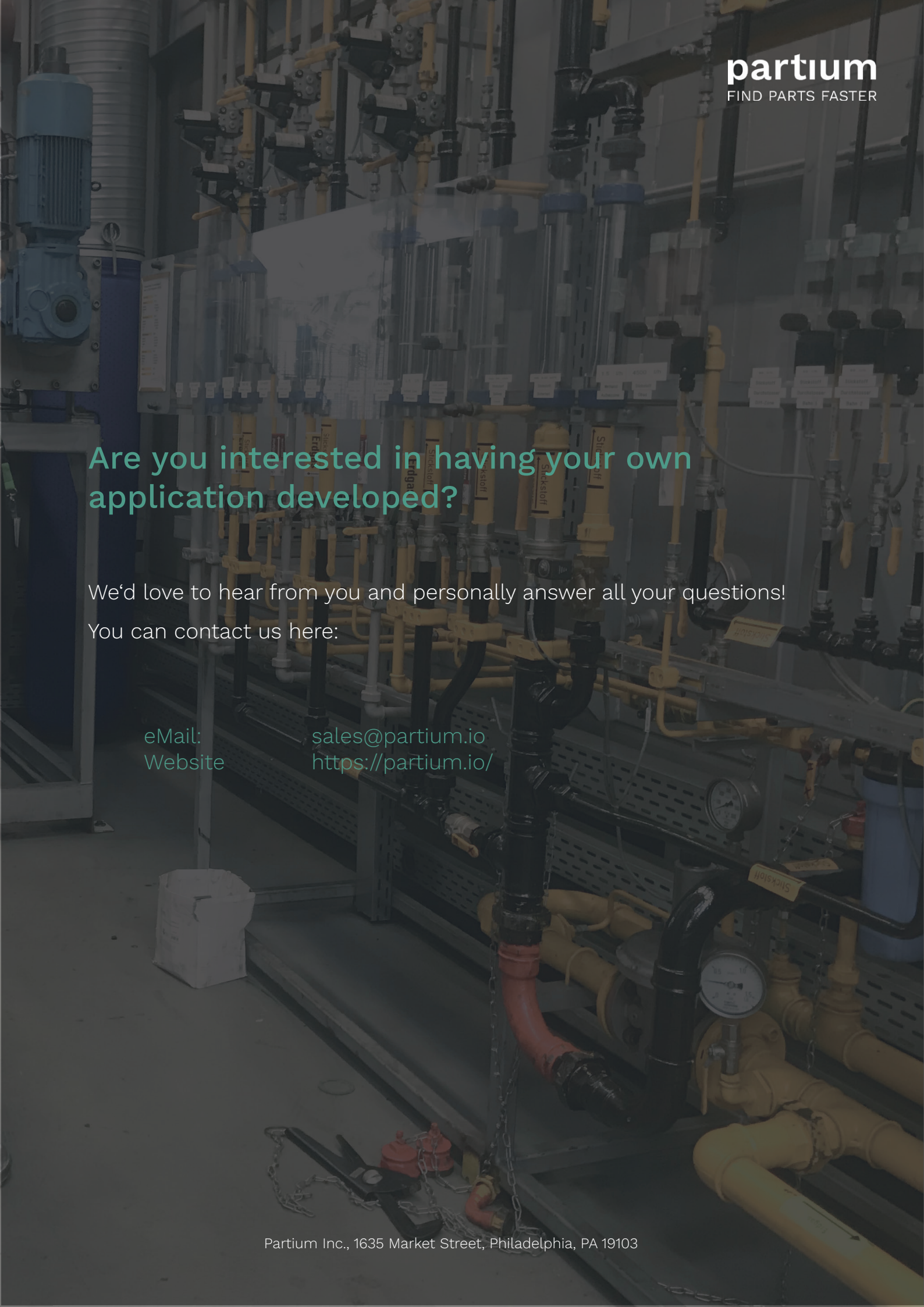
"Partium.io is exactly the kind of partner we need for our projects. They have the right industry-focus, high technical competency, a solid size and a solution which was developed, not in a lab, but on the ground together with a large industrial business. The solution brings us one step closer to our vision of being the leading service provider for the solidification industry. And we shall reach this vision through enabling our present service portfolio with digital services. A hybrid service – combining traditional with digital – is the future for us."



08 AICHELIN as digital pioneer

AICHELIN has successfully combined established approaches with new digital methods:

For the HeatTreatmentCongress 2018, AICHELIN developed a concept which introduced #jakob as an independent product at the trade fair. Appointments with regular customers were set up at a separate stand where the product was demonstrated on a tablet.



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