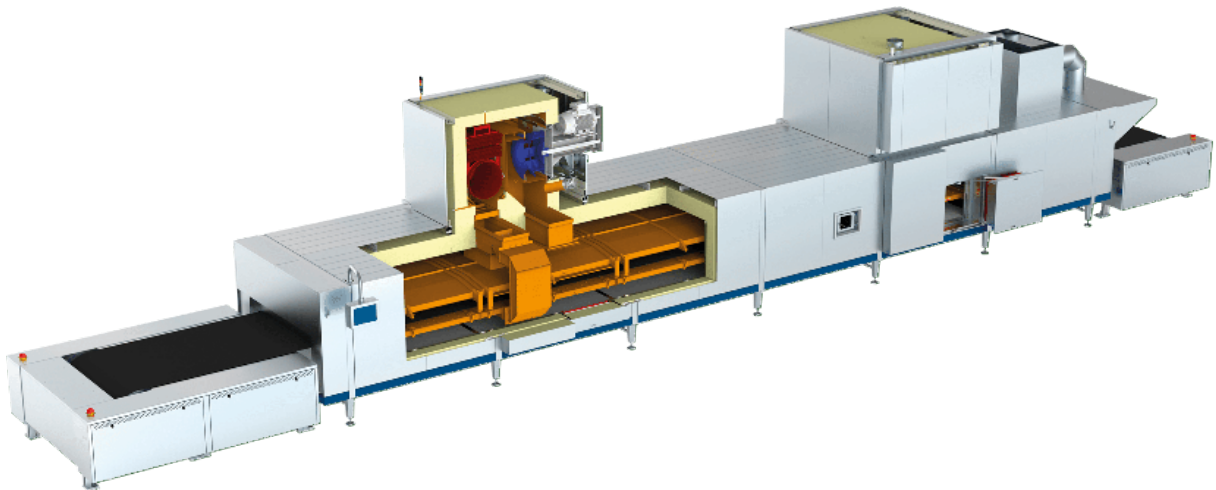
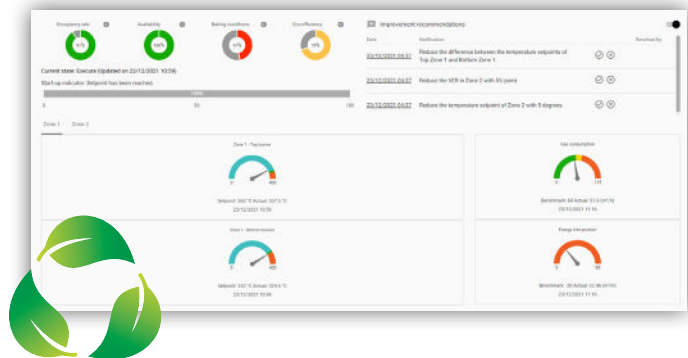


AMF DIGITAL - SUSTAINABLE OVEN SERVICE

A new AMF feature for production, belt, and continuous ovens, that helps bakers and operators improve efficiency and quality, and reduce energy usage. The Sustainable Oven Service continuously monitors how your ovens are used and how they perform. Through recommendations in our web portal, we help you achieve optimal baking conditions in an energy-efficient way.

Resulting in:

- ✓ Up to 20% savings on natural gas
- ✓ Reduced CO2 emissions up to 20%
- ✓ Reduced waste
- ✓ Improved product quality and consistency
- ✓ Valuable insights into your oven's baking behavior



DIGITALIZATION - INTELLIGENT & SMART AUTOMATION

Business Drivers lead to this vision

Your drivers to be successful, have challenged AMF Den Boer to develop new tools and products for you, to create value. Higher efficiency, optimal asset utilization, sustainability and digitalization have driven us to innovate in this Industry 4.0 era. Internet of Things, Cloud solutions and automation, are the components that will change the bakery and food processing industry as well. The route to an autonomous bakery, with fully automated processes, independent

smart working and learning machines and little operators or human handling, producing 24/7 is the dot on the horizon AMF Tromp foresees for the future.

By introducing the Sustainable Oven Service (SOS), AMF realizes the next step in the digital transformation of your equipment. Combining advanced data analytics, rule engines, and artificial intelligence on your ovens to assist you in improving efficiency and sustainability.



Product margins under pressure due to increasing gas prices



Need to invest in efficiency due to increasing CO2 emission regulations



Increasing scarcity of expert bakers and factory operators



Improved focus on sustainability in customer partnerships

Your challenges - Our solutions

New technologies have the possibility to make machines smarter by use of artificial intelligence & machine learning. The AMF definition of a smart machine is:

- ✓ Intelligent
- ✓ Secure
- ✓ Managed
- ✓ Connected
- ✓ Sustainable



Our lead developers at AMF Den Boer had a vision developing new services for our customers today: "doing smart things with data, coming from machines, and creating value".

Software-as-a-service is something you know already from the larger software companies in the world, and subscription-based services are common good these days. AMF added the latest and a strong innovation to the oven market for your equipment and process to become Smart.

WHAT IS THE SUSTAINABLE OVEN SERVICE?

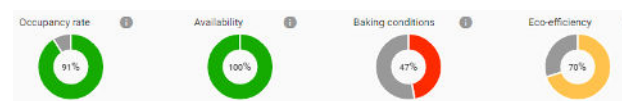
The Sustainable Oven Service is a new AMF feature for production, belt, and continuous ovens, that helps bakers and operators improve efficiency and quality, and reduce energy usage.

We make your oven 'connected' and use a secure encrypted connection to push specific selected oven data to the AMF cloud. There, knowledge-based algorithms are applied, and we combine data analytics, artificial intelligence, and personal advice from our AMF oven experts to analyze your oven data. This provides the operator with real-time insights into the oven's performance and expert recommendations on how to adjust the oven to its optimal configuration. The Sustainable Oven Service continuously monitors how your ovens are used and how they are performing. Through recommendations in our web portal, we help you achieve optimal baking conditions in an energy-efficient way, resulting in:

- ✓ Up to 20% savings on natural gas
- ✓ Reduced CO2 emissions up to 20%
- ✓ Valuable insights into your oven's baking behavior
- ✓ Reduced waste
- ✓ Improved product quality and consistency

Key performance indicators:

The Sustainable Oven Service provide you with KPIs which help you to improve the performance of the bakery. The baker can see the current oven performance, but also the trend over time. Since each KPI is normalized the baker can compare several types of ovens. Automatic reporting assists the baker in bottleneck analyses by benchmarking over shifts, days, or even weeks. The Sustainable Oven Service currently supports four types of KPIs:



- 1. Occupancy:** Shows average occupancy rate or product throughput in your oven.
- 2. Availability:** Shows actual time that the oven was ready for baking.
- 3. Baking condition:** Represents to what extent the desired baking conditions are realized in the oven.
- 4. Eco-efficiency:** Shows how many resources were used per produced product. The eco-efficiency is defined as the normalized amount of gas used per baked unit.



CONNECTIVITY

Make your oven connected and turn data into value



EXPERT KNOWLEDGE

Capturing 100 years of experience in the Sustainable Oven Service



ARTIFICIAL INTELLIGENCE

Turn operators into bakers by using expert knowledge and artificial intelligence

HOW DOES IT WORK?

For each oven you will have access to the following components:

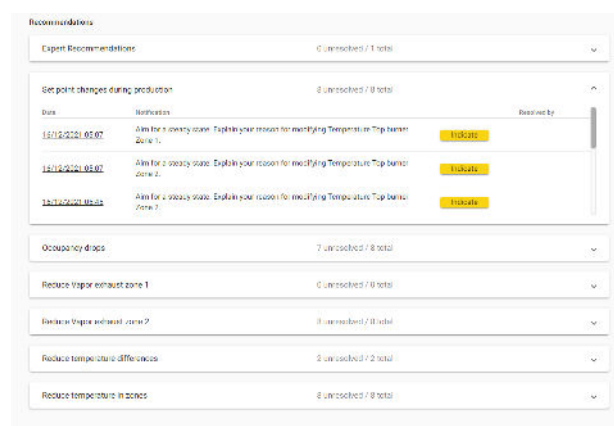
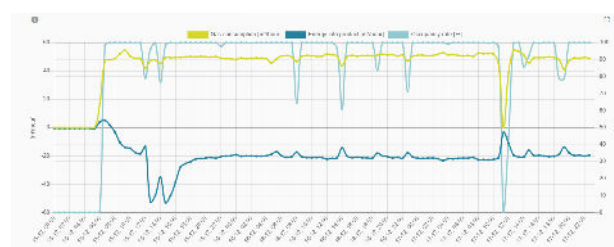
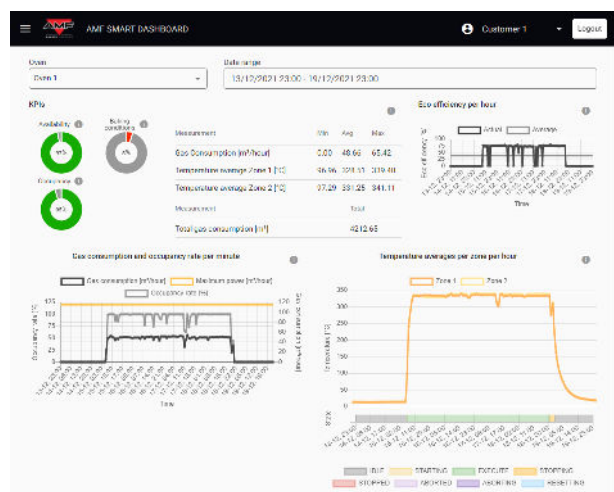
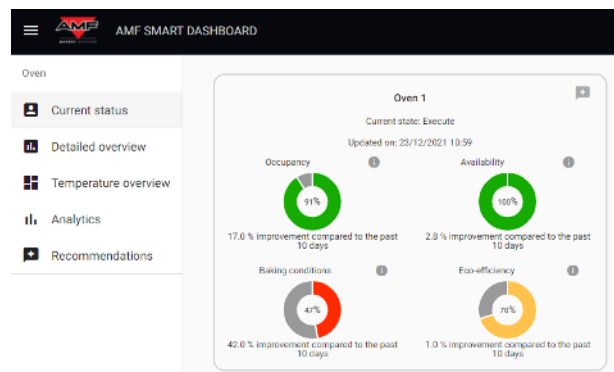
1. Edge device, industrial IXON router
2. Secure and encrypted connection
3. Web application



After onboarding your oven on to the service, you will be provided access to the AMF Connect web application.

The web application has five pages:

- 1. Current status** shows the KPIs of all ovens, based on the last three hours and is meant for the bakers on the factory floor. It features the new startup indicator that shows the predicted time to reach the baking setpoint temperatures and it visualizes the 'energy into product' KPI.
- 2. Detailed overview** provides the line manager with a complete overview of the oven's most important sensor information.
- 3. Temperature overview** shows the actual temperatures and setpoints based on the selected time window, including the controller output and active number of burners.
- 4. Analytics:** Since every oven is different, any cross-section in the oven data can be plotted in customizable graphs on the analytics page. These graphs are mostly used by our oven experts but can also be used by our customers.
- 5. Recommendations:** There are four types of recommendations: Temperature, Steady-state, Vapor exhaust and Expert recommendations. These can be generated automatically or with specific input from the AMF Oven Expert.



RECOMMENDATIONS

At this moment, the Sustainable Oven Service supports four types of recommendations:



Temperature
recommendations



Vapor exhaust
recommendations



Expert
recommendations



Steady state
recommendations

Temperature recommendations

The Sustainable Oven Service continuously collects temperature data from your ovens. It analyses temperature setpoints, absolute temperatures, and the balance in temperature gradient over the different baking zones. Based on the collected information, we generate automated temperature recommendations in our web portal. This way, we help the operator to achieve the most efficient way of heat transfer inside the oven leading to the optimal baking process.

Recommendations

Expert Recommendations

0 unresolved / 0 total

Set point changes during production

8 unresolved / 0 total

Date	Notification	Resolved By
12/12/2021 05:07	Alert for a steady state. Explain your reason for modifying Temperature Top burner Zone 1.	Evaluate
12/12/2021 05:07	Alert for a steady state. Explain your reason for modifying Temperature Top burner Zone 2.	Evaluate
12/12/2021 05:07	Alert for a steady state. Explain your reason for modifying Temperature Top burner Zone 3.	Evaluate

Occupancy drops

7 unresolved / 8 total

Reduce vapor exhaust zone 1

0 unresolved / 0 total

Balance vapor exhaust zone 2

0 unresolved / 0 total

Reduce temperature differences

2 unresolved / 2 total

Reduce temperature in zones

8 unresolved / 8 total

Steady-state recommendations

Steady-state recommendations focus on maintaining stable baking conditions and a steady product flow throughout your oven. You'll receive automated recommendations on the steady state if you change a setpoint during a stable baking run or if your oven occupancy suddenly drops. These recommendations are mainly focused on behavioral changes and understanding your baking process.

Vapor exhaust recommendations

Vapor exhaust is critical for the discharge of gases that are created during the baking process. However, a too high exhaust flow will lead to inefficiencies like heat loss. Through our web portal, we will automatically recommend how to accomplish the perfect balance between vapor exhaust and heat retainment in each zone of the oven so that the operators can set the optimal values and use energy in the most sustainable way possible.

Personal advice with expert knowledge

AMF Expert recommendations

As every bakery is special, you will receive tailor-made advice during the Sustainable Oven Service. The AMF oven experts and bakers are monitoring your oven data and will create personal custom recommendations which will be published regularly in our web portal. Because of the oven expert's specific knowledge of your bakery, equipment, and products, they can combine the collected data in our web portal with their in-depth knowledge and generate additional recommendations.

Improvement recommendations		
Date	Notification	Resolved by
23/12/2021 04:37	Reduce the difference between the temperature setpoints of Top Zone 1 and Bottom Zone 1.	✓ ⊗
23/12/2021 04:37	Reduce the VER in Zone 2 with 5%-point.	✓ ⊗
23/12/2021 04:37	Reduce the temperature setpoint of Zone 2 with 5 degrees.	✓ ⊗

SUBSCRIPTION

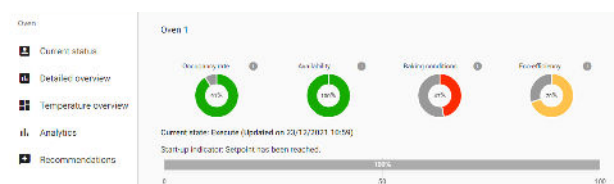
FULL SOS - PRICING	BASIC	ADVANCED	PREMIUM
Sustainable Oven Service SaaS license	✓	✓	✓
User accounts	1	2	3
Two-month pressure cooker tuning period	€ 2500	Included on start-up	Yearly*
Monthly report		✓	✓
Quarterly personal remote review with expert			✓
On-site scorpion run		Optional	Optional

If you would like to invest in sustainability, data-driven decision making, and immediate savings, contact your local AMF representative and sign up for the Sustainable Oven Service. The Sustainable Oven Service is a new standard on all AMF Den Boer ovens but can also be retrofitted to older or non-AMF production, tunnel, belt and continuous ovens. AMF offers three different subscriptions: a basic, advanced and premium option, all providing their own exclusive set of features.

PREMIUM: The most popular and recommended subscription is the premium package. In addition to the standard portal features and recommendations, this service includes monthly e-mail reports on your oven performance and progress on improvements. The subscription offers a yearly two-month pressure cooker period where we start an intensive collaboration to tune

your oven to its optimal configuration. After this tuning period, you will have quarterly remote review sessions with one of our oven experts to keep up with the performance and discuss further improvements.

ADVANCED: The advanced subscription offers a Sustainable Oven Service SaaS license and two personal user accounts. Like the premium subscription, it includes monthly e-mail reports on your oven performance. This report contains KPIs for the last month and the number of recommendations that have been accepted and rejected. The advanced subscription offers a single pressure cooker period on startup, where we start an intensive two-month collaboration to tune your oven to its optimal configuration. It offers all the automated features of the Sustainable Oven Service.

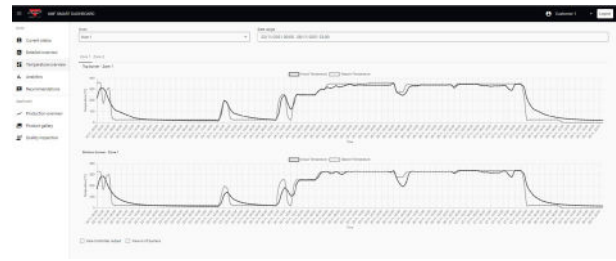


This subscription is mainly used by customers that have multiple ovens and already developed several years of extensive experience in the usage of the AMF Sustainable Oven Service.

BASIC: This subscription offers a single Sustainable Oven Service SaaS license and one personal user account as well as access to the standard automated features of the service. But it does not include the pressure cooker period or other options from the advanced and premium subscriptions.

SCORPION RUN: The Scorpion is an advanced data logger that is placed in between or probed into the products during a baking run. This additional service measures variables like baking time, temperature, and humidity, and provides a full 3D heat image and baking curve profile. This data is analyzed by an AMF expert and can be used to further improve your oven configuration. This service is optional in the premium subscription and is recommended for all new customers and can lead to up to 20% savings in natural gas usage.

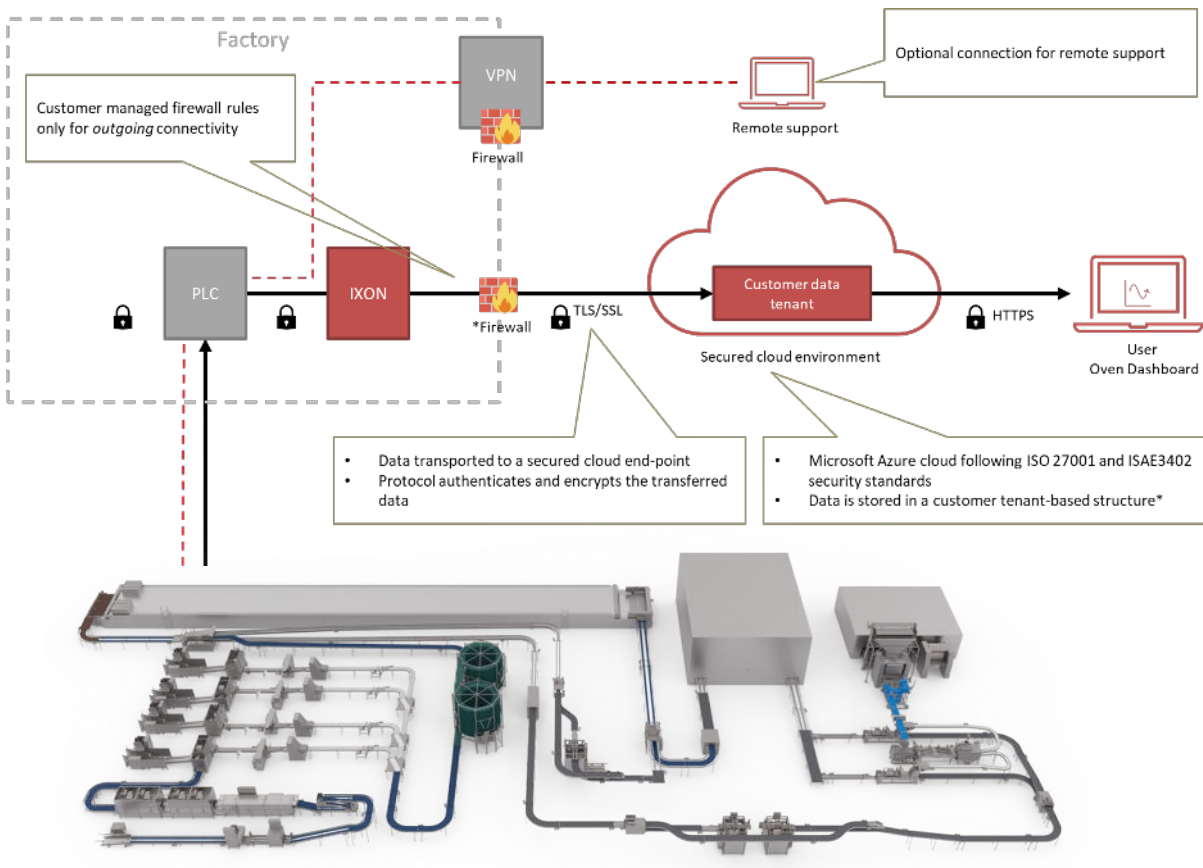
This option was developed as an alternative in situations where a customer has multiple ovens in the premium subscription, but one of them is only used a few days a week. In this case, the basic subscription can give the necessary insights but remains cost-effective.



DATA POLICY

The Sustainable Oven Service does not process product or privacy-sensitive data. All carefully selected data is sent through a secure industrial IXON router that is connected through your company network or a SIM card connection. Data transfer works on a one-way push principle. The Sustainable Oven Service uses a fully secure TLS/SSL encrypted data connection to our Microsoft Azure cloud environment following ISO 27001 and ISAE3402 security standards. All selected oven

data will be processed by our advanced data models and rule engines to generate automated recommendations which can be accessed through a secure HTTPS connection to our amfconnect.com web portal.



'Your data, our priority'

ONBOARDING

After signing-up the onboarding process will be started. Most AMF Den Boer ovens after 2015 are already fully equipped to support the Sustainable Oven Service. Older or non-AMF ovens might need retrofitting to make the oven SOS compatible. The onboarding process on to the Sustainable Oven Service contains seven steps.



AMF

BAKERY SYSTEMS

Interested in our
Sustainable Oven Service?
Contact your local AMF
representative or book a demo in
our innovation center!

1. Assessment

- Technical assessment
- CAPEX calculation

RESULT: Business case



2. Proposal

- Discuss business case
- Proposal

RESULT: Commercial agreement



3. Installation and configuration

- Hardware installation
- Software configuration

RESULT: Connected oven



4. One-month benchmark period

- Data collection
- Logging oven behaviour

RESULT: Baseline data set



5. Two-month pressure cooker period

- Intensive collaboration with AMF oven Experts
- Fine tune oven to optimal configuration

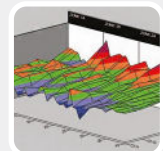
RESULT: Savings up to 20%



6. Scorpion run

- On site Scorpion run (optional)
- 3D heat image and report

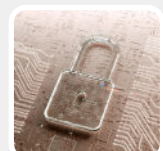
RESULT: Fine tuned oven -
Additional savings



7. Maintaining your savings

- Quarterly remote expert sessions
- Monthly SOS reports

RESULT: Keep improving on
your savings



CONNECTIVITY

Make your oven connected
and turn data into value



EXPERT KNOWLEDGE

Capturing 100 years of experience
in the Sustainable Oven Service



ARTIFICIAL INTELLIGENCE

Turn operators into bakers by using expert
knowledge and artificial intelligence