

The analytic brain of Additive Manufacturing

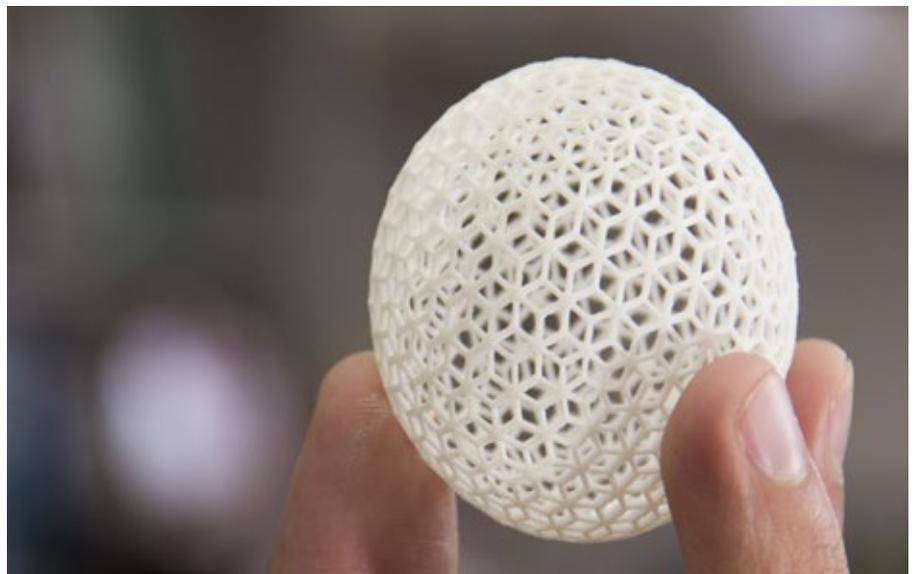
Additive Manufacturing (AM) opens many doors to new design concepts, with more complex and customized geometries. That is one of the reasons why more and more companies are considering adopting these technologies to their production. PMS will help you in the achievement of the first-time-right and certification, forecasting the appearance of anomalies with predictive analytics and providing a complete dossier of quality

Optimize Time to Market and Qualification of printed parts

Although Additive Manufacturing is related to new technologies, the reality is that it has been used for decades. The main actors of the different sectors have used it first for prototyping and later for small series.

Additive manufacturing technology is rapidly evolving to the point that it is ready for business use. This rapid advance, together with the benefits that it can bring to all companies, both large and small (e.g. lighter & cheaper spare parts, customized products, reduced lot sizes), will lead to a massive adoption of these technologies over the next few years.

On the other hand, the use of other new technologies such as predictive analytics and Machine Learning / Deep learning will allow to take additive manufacturing to the next level enabling first-time-right manufacturing and simplifying the additive manufacturing certification and qualification process, that nowadays is the only challenge left to take full advantage of all the potential offered by additive manufacturing.



PMS offers solutions for predictive monitoring of printing process and for qualification of printed parts

Our solution: Predictive Monitoring System

PMS is an advanced analytics software used to monitor the printing process and predict its process quality. It is focused on bridging two important challenges in the use of AM in high performance applications:

- Quality assurance.
- Standardization and qualification of printed parts.

PMS covers the following features:

Algorithm management

- Repository of monitoring and quality algorithms for different materials, machines and parts
- Deployment of algorithms across our machines network

In-process monitoring

- Monitoring of manufacturing process parameters to detect anomalies in real time.
- Detection of risk of anomaly that activates alerts according to a established threshold of size/percentage.
- Threshold adaptable to client's requirement.
- In case of exceeding the threshold, detailed visualization of position (x, y, layer) and time of anomalies.

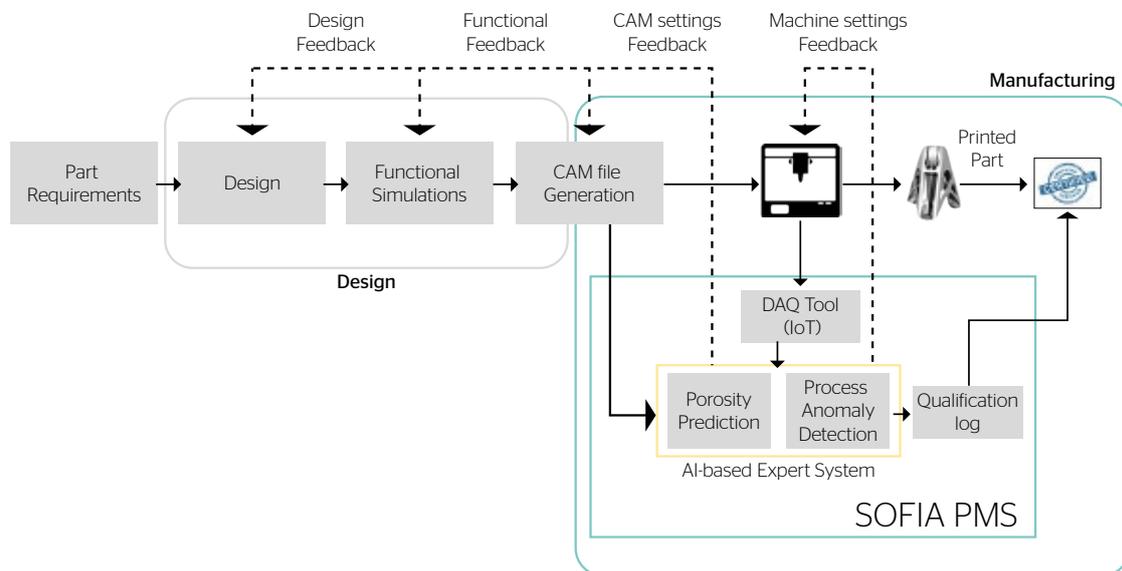
Porosity prediction

- Prediction of local porosity over a size given.
- In case of porosity, detailed visualization of position (x, y, layer) and time.
- Prediction can be launched before and / or during the manufacturing (almost real time).

PMS uses Machine Learning and Deep Learning models trained by Atos leveraging datasets from standard printing machines, so that there is no need to include extra sensors (e.g. artificial vision).

PMS can be used with Inconel 718 and is adaptable to other metals or alloys. Atos algorithms are designed to considerably reduce the number of tests necessary for the fine-tuning of the desired material.

PMS provides a historical dossier of evidences to support qualification or customer audits.



The benefits

PMS offers many advantages to the users:

- Improved productivity of additive manufacturing processes: lower scrap rates and increased machine utilization.
- Information on process repeatability and reliability to support new processes/systems qualification.
- Substantial reduction of number of tests and inspections required for process certification.
- Significant decrease of certification costs for 3D printed parts.

For more information: <https://atos.net/en/contact-us>

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