



POINT OF VIEW

PRECISION, PASSION, PATIENCE

THE LESSONS THAT NURTURING A
PERFECT ROSE GARDEN CAN TEACH
ABOUT **PREDICTIVE MAINTENANCE**

The positive impacts of predictive maintenance

The positive impacts of Predictive Maintenance are broad and should be considered holistically, argue **EFESO Consulting's Erik Weytjens & Sebastian Grundstein**. Adopting these 'rose garden rules' will ensure that success is visible right across your business.

No one ever said that nurturing a perfect rose garden was simple, but the results can be dramatic. So what are the 'rose garden rules' for Predictive Maintenance (PdM) in the Chemical Industry and how can they deliver a beautiful outcome?

1

PATIENCE

Prize winning roses do not grow quickly and there are not many quick wins in PdM. Hard work is required upfront, results don't come immediately, so patience is required and expectations must be managed.

2

PRECISION

In your garden you would not put the same (expensive) flowers everywhere. In the same way it's imperative to get the right balance between the business case and model complexity. Don't shoot in all directions. Know how deep to go into modelling your equipment and how much is needed to show Proof of Value. That's the key to choosing the right PdM strategy.

3

PASSION

To make your garden flourish you will have to invest yourself and be open to learn new things around soil etc. Also in the case of PdM there will be a need to develop new skills, so look for staff who are capable of bridging maintenance, data and human dynamics.

4

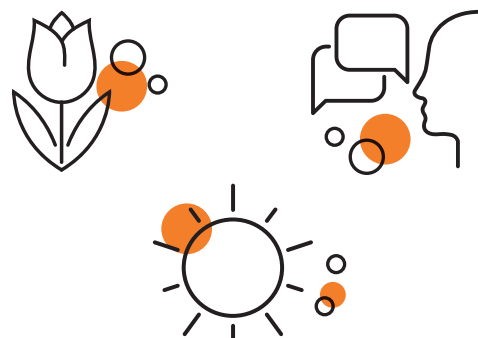
HIRE A GARDENER

You might not want to do everything in the garden yourself because of skill/cost and effect. So you should consciously choose which skills you want to have in-house for PdM and use open-source for Proof of Value before selecting partners.

5

TALK TO THE FLOWERS

This is about leveraging domain knowledge and empowering the people who possess that knowledge. Explore data availability, estimate business value and make sure everything is process driven and technology enabled. It's people first, IT second.



Follow these rules and the strong business case you'll develop **will convince everyone to move forward to higher productivity**, lower costs and lower capital employed.

The costs of Predictive Maintenance have dropped dramatically since it was first introduced into the Chemical industry more than 20 years ago. **Sensors and data storage are now far cheaper**, data is far more widely available, and **connectivity and processing power** are far

greater. It all adds up to a powerful case that PdM will deliver real benefits for your production, maintenance and management teams. These include higher productivity through fewer unplanned breakdowns and interventions and an increase of OEE. **Lower costs through better scheduling of planned activity**, an increase in wrench time and less need for spare parts. And less capital employed through longer equipment lifetime and a reduced inventory of spare parts.

So why aren't chemical companies making the most of this opportunity?

At our recent ManuChem Workshop we asked the representatives of 40 major Chemical companies what were the biggest challenges they faced on their Predictive Maintenance journey? Perhaps unsurprisingly, the results were a mix of people and process concerns that the 'rose garden rules' are specifically designed to overcome.

The challenges that senior executives in the Chemical industry believe they face in implementing PdM.

One of the biggest challenges is that unlike many industries, the chemical industry is not built on standard equipment. Each plant is designed for a particular chemical process, so it involves a lot of custom design. Scaling up is also more difficult because there aren't identical machines at every site. That's why Proof of Value is so vital because the business case can go in many different directions depending on the equipment involved - from highly standardised to completely custom-made and everywhere in between.



A profitable Predictive Maintenance journey has three phases

1

EXPLORE YOUR OPTIONS

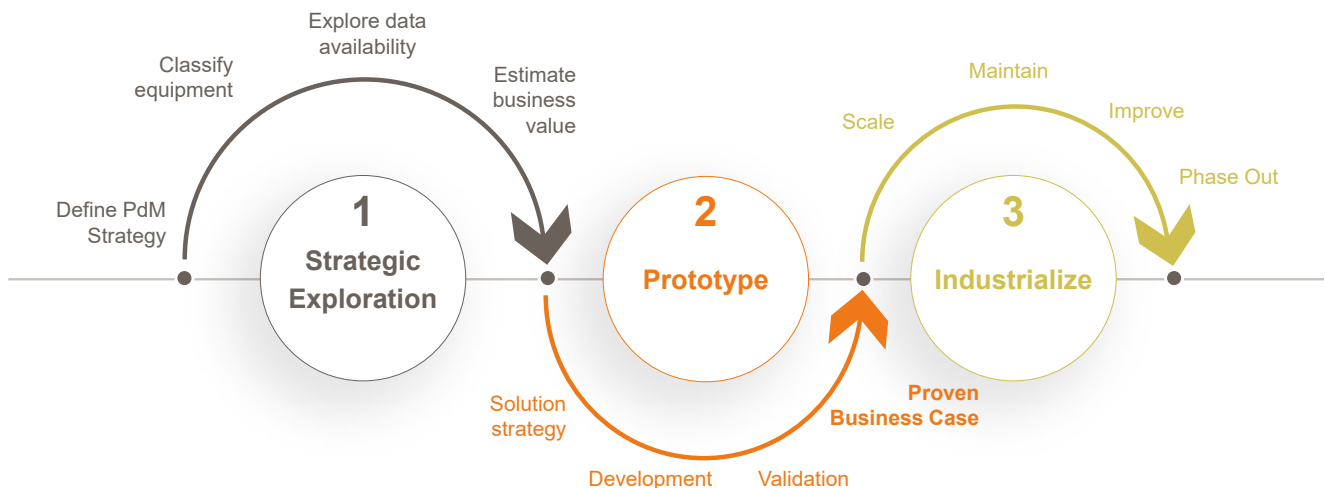
A typical dilemma that many companies face is that big Predictive Maintenance software platform providers will approach them and offer to solve their problems, but at a high cost. So in effect, they are being asked for a big upfront payment for the licence, while they are still uncertain that the business case is actually there.

What EFESO do with our focused, agile 'Proof of Value' approach is to start by exploring open-source formatting in a few areas, then build your company insights into this, so that you can then make a final decision as to whether or not you actually need a big external platform.

We call this Agile Acceleration. We will also create a proven business case in this first stage which will not be based on estimations. We can show you exactly what breakdowns we can prevent and how much this will save, so you'll have Proof of Value very early on.

There is not one single type of Predictive

Maintenance, there are different levels and that's why it's vital to classify your equipment first because this will help you identify whether it's best to spend more time on a complex approach or a simple approach. For some pieces of equipment for example, the question "Is it in good health, yes or no" may be enough. It depends on what you're trying to achieve. This will be what defines your PdM strategy and business case.



2

ANSWER THE QUESTION MAKE OR BUY?

Everyone will give you an offer, software providers, open-source, consultancies, it's a wide market and you have to select what's right for you, how much you want to retain inside and how much you will rely on outside help. That's why it is imperative to do a Proof of Value first which will help you decide the way to go.

A lot of chemical companies are better suited to building their own Predictive Maintenance program rather than buying one in. There can also be a third option which lies between the two and EFESO can help find you out if there is. Everything comes back to the business case. How much you will benefit by doing PdM, where is the best place to do it and for how long?



3

INDUSTRIALIZING YOUR PREDICTIVE MAINTENANCE

Upscaling it across the initial site and then across other sites. EFESO would recommend that you start with one site and just one area of that site. We believe the best and most long-lasting results come from a small, agile start which then grows into a powerful program. So when you classify your equipment select the machines that provide the most benefit to you if you scale it across the sites and will therefore benefit most from PdM. Start with one site and one type of equipment, but consider the scalability. Ideally this should be self-funding because the business case for this exercise is to gain the funding for the next project. Everything is custom specific.

Predictive Maintenance is not a project you set up and then it's complete. It is an ongoing program. You have to do maintenance every year, so you have to take care of your PdM system all the time because it's an essential part of your maintenance work. You can't simply buy a ready-made PdM solution and implement it. You can only start, learn, improve and grow and grow.

You should also avoid trying to optimize further and further. At first it can seem as though this is the obvious thing to do, but in fact, it's not. There is an optimal point beyond which the marginal benefit of further optimisation no longer outweighs the costs.

Bring together your best and brightest

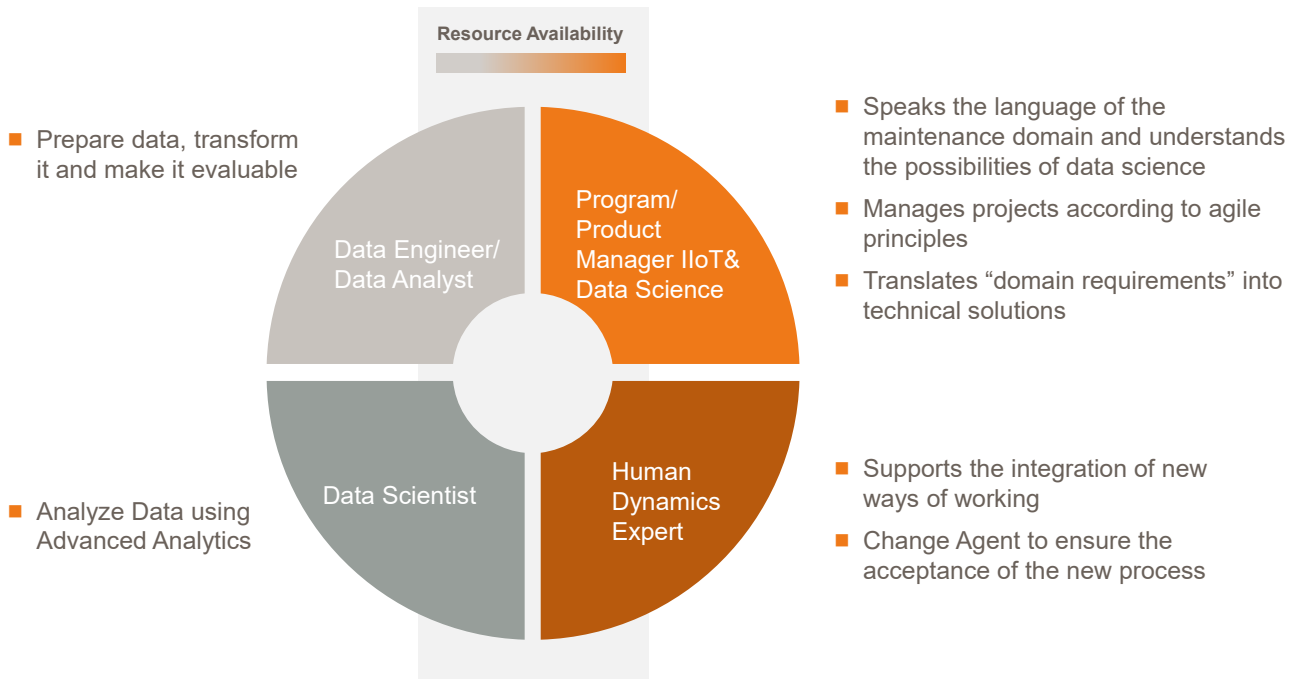
It's important to remember that Predictive Maintenance is not simply an IT project. You have to integrate your process and maintenance teams with your data science skill and ensure that the project is process driven, not IT driven. That's why EFESO can be such an effective partner because we can connect both the IT and maintenance world.

Your maintenance expertise is the most important factor and that needs to be translated into the IT solution. Your maintenance teams have a lot of knowledge that needs to be brought to your data scientists. If you just do a data analysis and take the results you will fail. A Predictive Maintenance project

is about enhancing human capabilities and not replacing them, so the human dynamics involved are critical. It starts with your maintenance people and how this will help them perform even better.

Leverage domain knowledge and empower the people who possess that knowledge.

You will also have to fight against the perception that Predictive Maintenance will make actual maintenance unnecessary, which is absolutely not the case. It's called PdM because it still involves actual maintenance - just done smarter. Exactly what you need, when you need it and in the best way.



EFESO can help make your Predictive Maintenance journey simple and rewarding.

Predictive Maintenance in the Chemical Industry is about keeping highly critical, complex, expensive equipment running safely and smoothly for the maximum amount of time. It is also about sustainability because it means you only change equipment when it really has to change, so you can utilise it to its full potential, without overconsuming.

EFESO believe that it is actually quite simple to begin the process of Predictive Maintenance. You are not committing to something huge, you are just testing the water, seeing what can be done and then together we can make it grow further.

Our focused, agile Proof of Value approach is the key to this successful partnership. It makes it easier for companies who are not quite sure where to begin and for companies where projects are getting

stuck because they didn't manage expectations. Unfortunately, many companies get stuck at the prototype phase. Reasons for this can e.g. be that they select the wrong equipment with which to begin their Predictive Maintenance journey. Or they do not provide the right resources. Or they underestimate what support is needed from both maintenance and IT. All of which mean that the project takes far longer than anticipated and does probably not fully meet expectations – leading sometimes to disappointment of the organization and stop of Predictive Maintenance overall.

Our Proof of Value approach will unblock all these situations. It is the key to a full blown Predictive Maintenance journey that will make your plants "blossom".



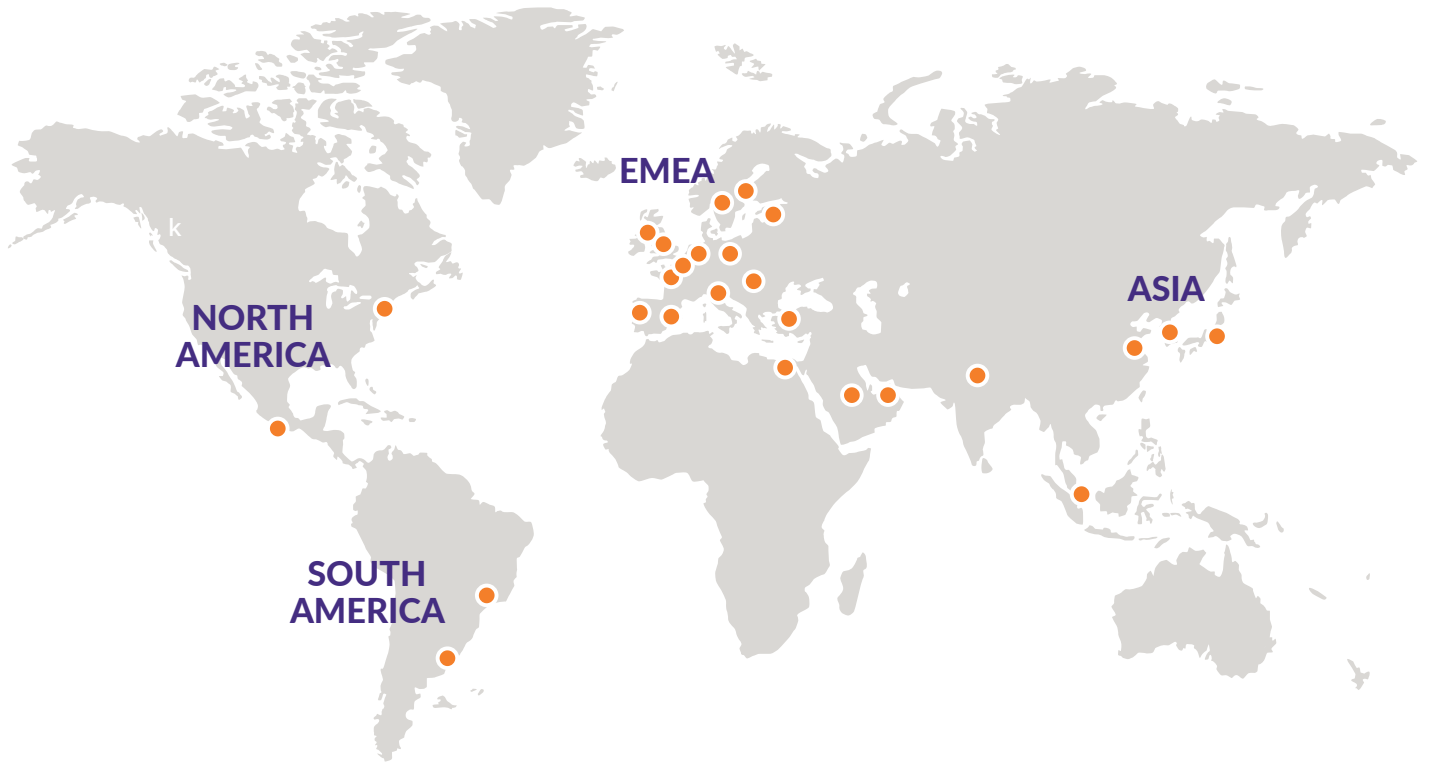
The author
ERIK WEYTJENS
Principal

Erik Weytjens is Principal at EFESO Consulting. He is strongly engaged in EFESO's Chemicals and Industrial Sustainability Practices. He joined EFESO in 2008 after a career of 16 years of senior management positions in industry. He is an expert in complex transformations, strategy setting, ecosystem development, operational excellence. Erik is particularly sensitive to creating positive Human Dynamics and Stakeholder engagement throughout his work.



The author
SEBASTIAN GRUNDSTEIN
Analytics practice

Sebastian Grundstein is head of the Analytics practice at ROI-EFESO, since 2017. He has been supporting companies in making data-driven decisions since 2012 and started his personal data journey developing simulation-based optimization algorithms for production planning and control. As a mechanical engineer with computer science background, Sebastian focuses on bringing Data Science together with Operational Excellence approaches.



LET'S START A CONVERSATION

 INFO.MARKETING@EFESO.COM

 +33 1 53 53 57 00

@ WWW.EFESO.COM

EFESO Consulting is a global consulting firm specialized in Operations Strategy and Performance Improvement. We bring over 40 years of experience and thought leadership, supporting multinationals, mid-market companies and private equities in both mature and emerging markets.

Our team of 500+ experienced consultants help organizations grow faster than the market by exploiting performance improvement opportunities and overcoming progression hurdles, in a sustainable way. We work in partnership with your people, from shopfloor to boardroom to achieve tangible and lasting results.