



Predicting the future of assets: The Global Ageing Framework

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Agenda

Why mastering ageing?

Ageing: what is it?

What digitization brings

The Global Ageing Framework

Influence factors and models

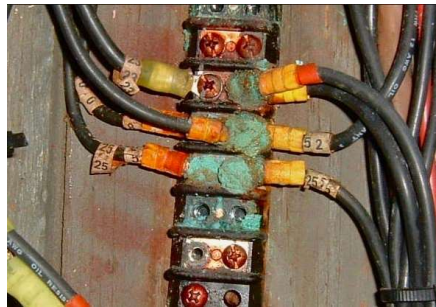
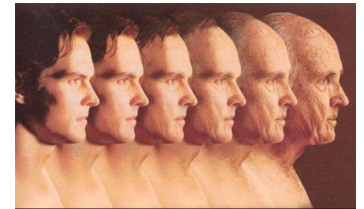
Principles, outcomes & architecture

The system aspects

Demo & conclusions

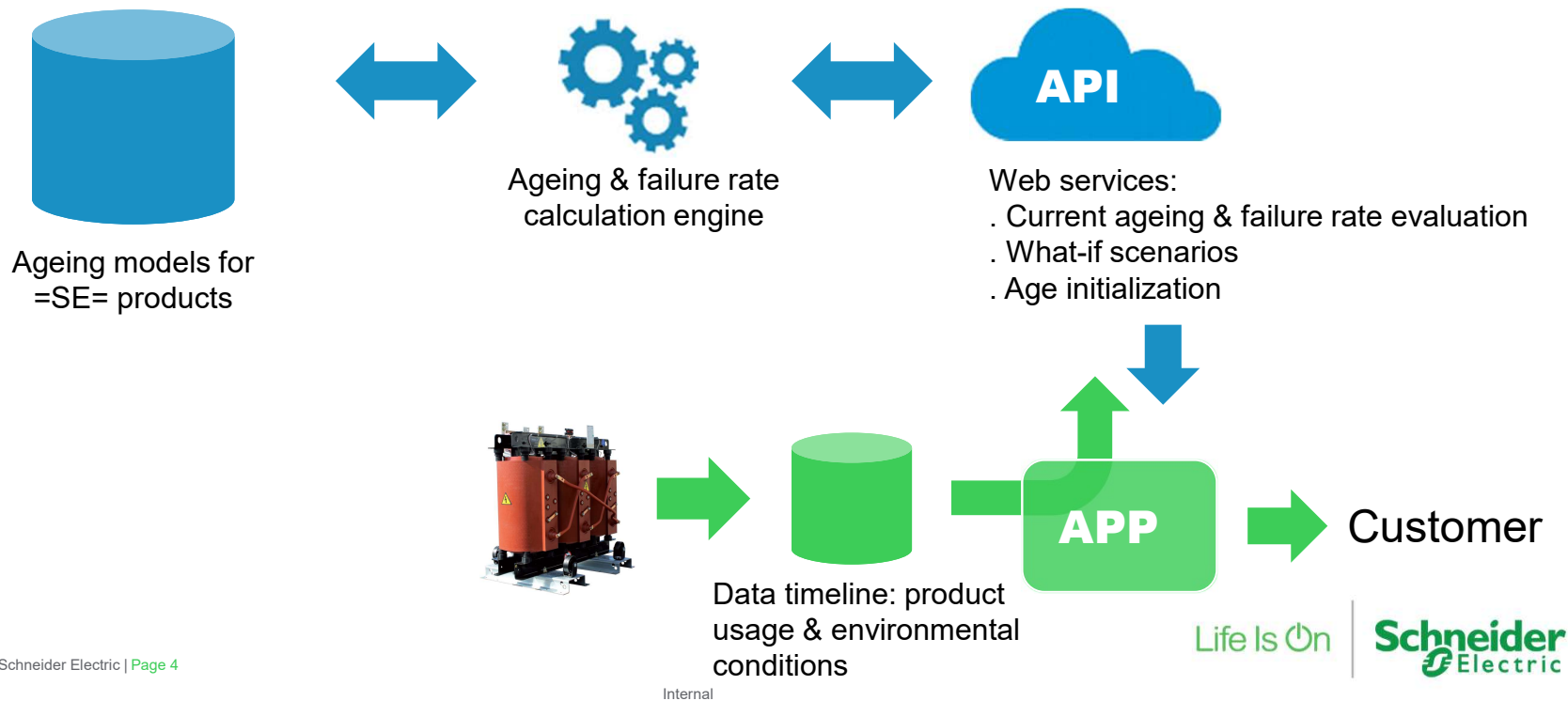
Ageing: what is that?

- Ageing for human beings proceeds as time goes by, but is also influenced by **environmental conditions** (life expectation varies with world regions) and by **usage conditions** (what we eat, what we drink, or how we manage our lives)
- Ageing for cars also proceeds as time goes by, and is also influenced by **environmental conditions** (car life expectations varies with world regions) and by **usage conditions** (how we drive, how often we drive, etc.)
- For electrical assets, it's the same story...



What is GAF (Global Ageing Framework)?

GAF is a repository of ageing models for =SE= products, a calculation engine leveraging these models, and several web-services to be used by applications



Degradation modes, influence factors, models and more

The MTZ example

Masterpact™ MTZ
FUTURE READY



Sub Assembly	Degradation mode
	Corrosion
Mechanism	Wear
	Grease ageing



Influent factors
Humidity
Temperature
Corrosive gases
Salt
Nb of operations
Temperature
Corrosive gases
Salt
Dust



Kinetic
Table of acceleration factors for each influent factor
Ratio nb of operations/Mechanical endurance
Table of acceleration factors for each influent factor



Ability to:

- know the current level of degradation
- anticipate its evolution under given assumptions

Compute instantaneous consumption of expected lifetime

New offers:

- compute the moment where 100% of lifetime will have been consumed
- compare the efficiency of several maintenance organizations regarding lifetime



Let's go for a demo!

The GAF demo

Three expectations from GAF



Improve, mutualize and secure the knowledge related to the ageing of our products

By collecting and sharing expert skills (knowledge management)

By improving the models themselves, thanks to the data collected by digitization



Enable new offers (connected, or via field services)

By leveraging information produced by GAF

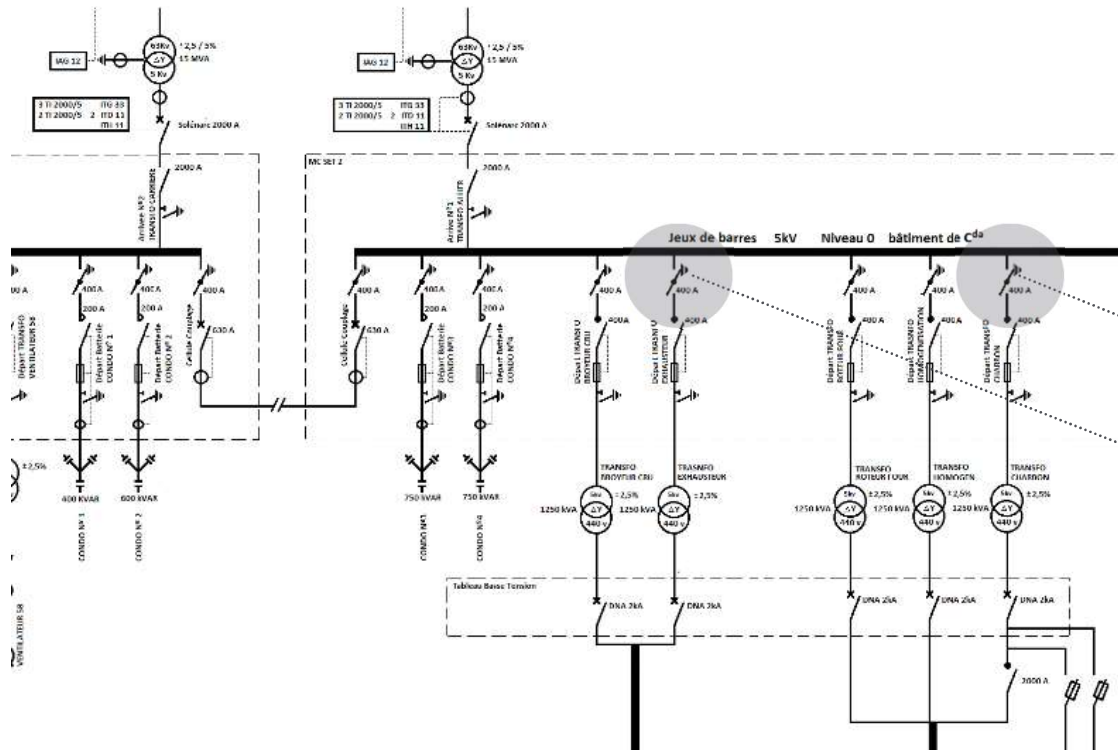
Example: we currently are working on a service which will regularly update the risk of energy unavailability on a critical electrical busbar



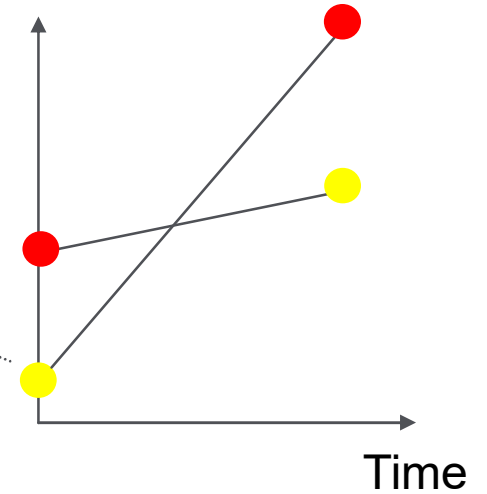
Enrich products

Ease capability for each product to predict a degradation level and a need for maintenance, taking into account real usage and environmental conditions

System aspects: Service business



Failure rate λ



Main take-aways

GAF computes instantaneous consumption of expected lifetime under given environment, usage and maintenance conditions (together with corresponding failure rate values), mainly for the sake of maintenance optimization

It is already available on the cloud for specific assets, and tomorrow for many other assets to come

With the data provided by digitization and field returns, we will be able to close the loop by improving the accuracy of models

Every Schneider Electric application needing an ageing engine can access the GAF, and system applications may need it as well

Life Is On

Schneider
Electric