Aero Engines, Computational Chemistry and REACH

How does that match together?

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A lot of chemical processes like e.g. functional chrome plating and anti-corrosion coatings are used to build and repair parts for aero engines.

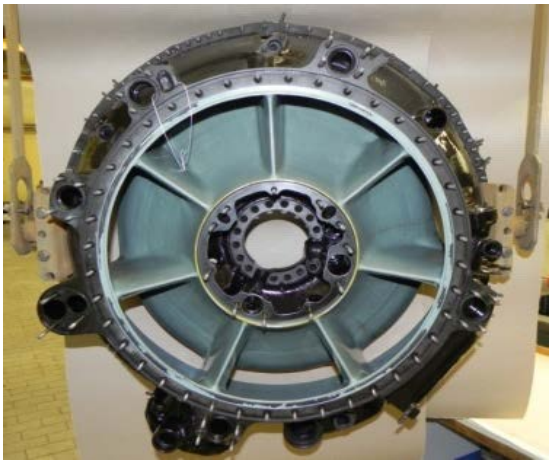
During the last 13 years European chemical legislation existing under the umbrella of REACH (Registration Evaluation Authorization of Chemicals) and its authority ECHA (European Chemical Agency) identifies chemical substances e.g. used for the production of aero engines as svhc (substances of very high concern) and restricts their further use.

Therefore it is necessary to find alternative substances and processes which are svhc free and fulfill the technical and safety requirements for aero engines parts.

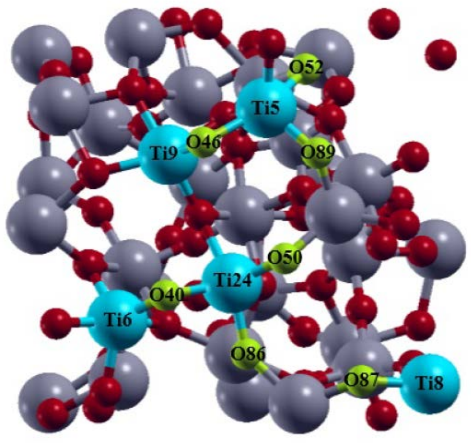
During this process of technological development the use of computational chemistry methods predicts us technical properties of alternative chemicals. We can understand the coating mechanism in detail and finally introduce svhc free coating systems in our production lines.

In the past years these methods helped use to develop chromium (VI) free anti corrosion coatings and chromium (VI) free passivation processes.

Aero engines: Overhauled and ready for assembly



Turbine intermediate casing with anti-corrosion coating



Adhesion simulation on TiO_2 surfaces