Kriens, July 2019

Dear Readers

Two crashes of new aircraft of the same type within a very short time. Two very similar accidents. This is news to make you sit up and take notice. According to initial findings, however, neither human error nor a design flaw appears to be present in either accident. These two factors have long been regarded as the main culprits in aircraft accidents, and MAM has often been involved in preventing design flaws in contracts. At this point, the F/A-18 full scale fatigue test can be mentioned as one of the most complex projects on this topic. But our analyses on the subject of engine burst (as we reported in our newsletter 2/2010) also deal with this problem. The fact that another suspect has now turned up has caught our attention. On the basis of initial reports, it does not seem impossible that perfectly calculated and constructed machines were brought down from the sky by the software. Once again, this shows the extent of the change we are now undergoing. Whereas in the past there was mainly an interaction between man and aircraft, we now find ourselves in a triangular man-machine-computer relationship. It is no longer enough to simply design and produce safe machines and hope that the operator does not make a mistake. It must also be ensured that the interacting software is safe. The importance of is self-evident in these times when the talk is of autonomous vehicles and artificial intelligence. If one considers that the regulations on the safety of machines (e.g. standards) mainly concern the machine and largely disregard the software, it becomes clear how crucial the management of this interface is. It is of fundamental importance that the programmers and engineers understand each other's fields well enough to jointly create a safe product. In this sense, I regard this task as a meaningful, interesting and, above all, future-oriented area for young and aspiring engineers.

80 years separate these two cockpits

Disruption

The English word 'disruption' is enjoying something of a boom in German panel discussions and in the German business media. The English word disruption (or disruptive) derives from the Latin verb *disrumpere*, meaning to tear, break or smash into little pieces, or in its passive form, to burst.

To German ears, when one hears of disruption, the tendency is think of destruction because of the acoustic similarity of the two words. This association is not wrong, in as much as disruptive technologies in a rationalization process take the place of established procedures and thus de facto destroy them. While this view is more of a negative perspective, it shows that disruption also has a positive side, requiring innovation, optimization and progress.

In fact, disruption is by no means a new phenomenon, but the word has acquired a slightly threatening connotation in the context of digitalization, big data, 3D printing, cryptocurrencies, artificial intelligence, robots, and other terms that are not clearly defined.

The engineer may be the victim or the perpetrator of the disruption. As the creator of an innovation, he may shine and be responsible for the disruption of other procedures, whereas he can also fall victim to the disruption if he is too inflexible to jump on the bandwagon of a new technology. Is this a phenomenon that must inevitably occur due to the passage of time – and the associated developments? Individuals with a particularly crafty intellect appear to be spared, even if their work dates back centuries. Even 500 years after his death, the admiration for Leonardo da Vinci has not diminished; he is celebrated as an artist, engineer and genius. No wave of disruption has been able to erode his brilliance. Why is that? I have no conclusive answer, but venture to argue that ideas are more resistant to disruption than technologies.

With friendly greetings and all the best for a wonderful summer,

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