

The Smart Factory and liability for losses

Due to automation and artificial intelligence in the Smart Factory, decisions will increasingly be taken autonomously by machines. As this shifts the responsibility from the human factor to machines liability for losses in case of failure incidents needs to be assessed. The insurance industry needs to closely follow this development and adapt its product portfolio accordingly.

Various components of additional risk exposure of the Smart Factory have already been described in the previous articles. This article shall address the effect of smart manufacturing on manufacturers and suppliers liability exposure.

The concept of the Smart Factory implies a sophisticated and fully harmonized production process. Quality of production, stock management, supply stability, downtime and overall efficiency managed by integration of the value chain and application of IoT technology. As a side effect the use of machine-to-machine communication will significantly lower the share of human workload in the Smart Factory. As one potential source for errors and uncertainties is reduced, the production process may reach a higher level of stability and even more important a higher level of safety. However, as production devices steer the manufacturing process by taking decisions anonymously, responsibility shifts from the human factor to machines and artificial intelligence. In case of a failure incident this does not only increase the expected level of financial impact due to the increased level of capital employed but also raises the question of liability for failure incidents whether hazardous or disruptive.

With an increasing degree of integration of involved parties, failure incidents easily spread across the value chain with negative consequences for further stages of the value creation. These

dynamics enhance the importance for clearly assigning responsibility to manufacturers and suppliers. However, the allocation of responsibility in an integrated value chain is important, but far from easy to achieve. An example may again be drawn from the highly integrated automotive industry. Imagine a supplier of a world-wide active OEM. Due to his high level of continuous innovation, the supplier managed to become strategically crucial for the OEMs overall production process. Parts of the supplier's production facilities have already been converted into Smart Factories with intelligent, sensor equipped robotics, autonomously producing parts for the automotive industry. Due to a malfunctioning of a single robot an entire work station is put out of service for almost a week. Production of parts is down and supply to the OEM temporarily suspended. It is obvious that the described incident not only effects the supplier but also the OEM, automotive dealerships, end-customers and potentially further suppliers delivering add-on components for the delayed parts. The overall financial impact for the value chain and specifically for the supplier is significant.

Liability insurers face the challenge to determine responsibility in a case as described above. In a situation where machines autonomously take decisions resulting in a failure incident the question is who is to be held liable and which liability insurer consequently is to settle the claim. In the given example



responsibility for losses may be with the manufacturer of the defect robot. Alternatively, the malfunction may have been caused by the IT provider writing the robot's exact operating code, by the technicians having installed the robot at the assembly line or even by the supplier of the robot's sensors. The determination of responsibility in smart manufacturing is even more complex in the transition phase to the Smart Factory. When machines operate semi-autonomously besides human operators there is always a residual possibility for a failure incident due to human error.

The example shows the level of integration and the concept of smart manufacturing in Industry 4.0 contains a potential for increased liability risk. The given explanations for the failure incident are based on products or services and may result in product liability claims. The claim settlement may also result in apportionments for determining which of the potential factors may have partly caused the failure incident. Apportionments usually go up and down the value chain.

With smart manufacturing emerging in any given industry liability insurers will need to re-design their products in order to meet the specific needs of their customers. With artificial intelligence taking over responsibility in manufacturing processes substituting human operators, the scope of liability cover may shift from human error to product liability. This may also be a question of standardisation for the new industry.

Just like in past events of industrial innovation the insurance industry is faced with the challenge to enable the manufacturing industry's transition to the Smart Factory and Industry 4.0. Similar to manufacturers the insurance industry will notice the enormous benefits of Industry 4.0 and adapt its products and services accordingly.