Parts Cleaning for the Cars of Tomorrow

In the automotive industry, film-type contamination is becoming an increasingly important consideration alongside the particle cleanliness requirements that have been the key factor until now. New manufacturing processes, innovative drive systems and autonomous driving all call for coordinated concepts for parts cleaning.

Gerhard Koblenzer

In many respects the automotive industry has been and still remains the driving force behind industrial parts cleaning. Demand has remained consistently high for almost 30 years and has led to the growth of a correspondingly large industrial sector consisting of vehicle manufacturers, automotive industry suppliers, machinery and equipment producers, manufacturers of automation systems and specialist logistics companies. This is accompanied by a wide-ranging service sector.

Modern, flexible parts cleaning machines can accommodate rapid product changes and can be scaled up and expanded during the product life cycle.

Three global markets

European companies have played a dominant role in this area from the early days because they have developed high-quality, powerful combustion engines and transmissions. The comprehensive technical cleanliness requirements, which are defined in terms of gravimetry and particle size, have led to the emergence of a wide-ranging, high-tech supply sector which includes manufacturers of cleaning machines, handling systems and analysis products.

In Asia the main sales market is China, together with the major car producing countries Japan and Korea. Over the last 20 years the Asian market has seen dramatic technological developments and a massive growth in sales. The demand from Asian manufacturers is now having a significant influence on development processes.

North America is a sales market for European and Asian car manufacturers, which now have major production sites on the continent and export all over the world. The US also has its own relatively independent automotive industry that produces vehicles specifically aimed at American consumers. Technical cleanliness as defined in Europe plays an important role in the first of these two segments, but the local cleaning machine industry largely covers the requirements of US end customers. European competitors have only made noticeable inroads in the transfer line industry.

Major upheaval unites the markets

All the global markets have been undergoing significant upheaval for some time and this has had a considerable impact on Europe and China. European manufacturers, who have led the way in producing diesel engines with low CO_2 emissions and high-tech gasoline engines, are currently facing a large number of problems. These include the particulate matter/nitrogen oxide debate, the gradual decline in individual mobility, the uncertainty

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The central issue of future powertrain concepts is dominating the investment decisions of suppliers.

and lack of direction regarding the powertrains of the future and the question of how to manage global trends, such as new production methods, digitisation and autonomous driving.

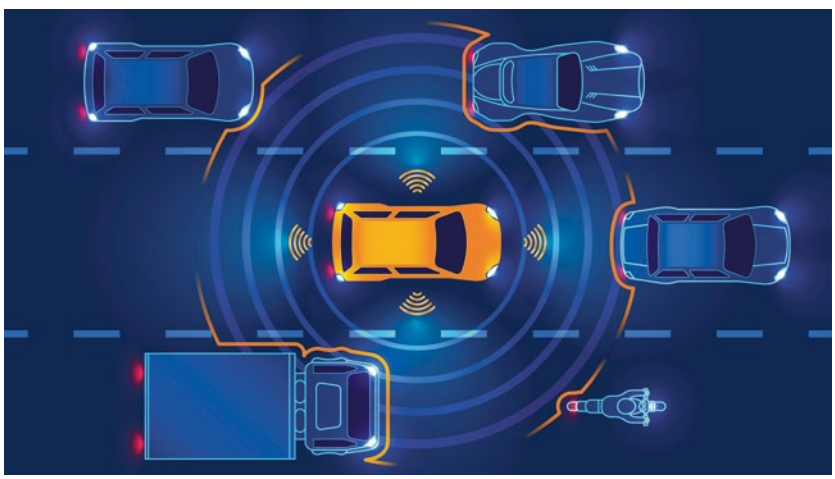
The number of cars and powertrain components produced in China by Chinese companies is continuing to grow. The Chinese state is also encouraging a rapid changeover to new drive technologies such as electric vehicles and to alternative mobility solutions following improvements in local and long-distance public transport. However, the market uncertainty is making itself felt here too. Trade disputes and the massive disruption experienced by global supply chains are having a serious impact on economic growth and internal demand within China.

Rising sales, full order books and high levels of productivity are making it possible for all the companies in the automotive industry to prepare for new and sometimes unknown future requirements.

Changes represent opportunities

In the industrial cleaning machine sector, the focus is currently on film-type contamination and the technical cleanliness of production processes. Other factors include new manufacturing methods and mobility concepts, together with other trends involving changes in the requirements profile.

But changes also open up new opportunities. They require a new approach to development processes and increased flexibility. However, they also open the door to new products and revenue streams, particularly in the case of water-based cleaning systems used for complex parts with film-type contamination or a combination of particles and films.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The technology relating to autonomous driving involves major opportunities for the industry.

High standards required of future machines

In the automotive supply industry in particular, existing and future cleaning machines have to meet high standards. Systems with improved processes are needed which are suitable for new materials and complex parts and which meet the requirements for the removal of particles and films. Other demands from users include machines that can accommodate rapid product changes and can be scaled up and expanded during the product life cycle. Cleaning, rinsing and drying processes must be made more efficient in order to fulfil the changing requirements for technical cleanliness and to complement the cleanliness standards of all the upstream and downstream processes. At the same time, the process must be carefully monitored and managed to ensure that the service life and cleaning quality comply with the required standards.

There is therefore significant potential for Germany to maintain and develop its leading role in the competitive global market for cleaning systems. //

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