Corona and the European EMS Industry

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When the outbreak of the Corona crisis in Wuhan started, drastic changes were predictable for the international industry, but it was not possible to quantify the size of the problem. Accordingly, the company managers in the European EMS industry looked at the development with concern and reached out for any information that could be used to assess the influence on their own company.
It was only natural that in4ma in Europe as a professional and qualified market research company was approached by several EMS companies to develop this information. At the beginning of March, a group of 27 EMS companies in German-speaking countries were selected to serve as the basis for the investigation. The selection criterion was that the companies had already participated in the in4ma EMS annual statistics for several years, i.e. that the company already had key company figures and that the order structure by market was known. In addition, both small, medium-sized and large companies were deliberately selected because the companies behave differently according to turnover size. Of the 27 companies selected, 23 are from Germany, two from Austria and two from Switzerland. Five companies are located in the sales group XL (> 50 million euros), eight in the sales group L (20-50 million euros), 6 in the sales group M (10-20 million euros) and eight in the sales group S and . XS (<10 million euros). A summary of the reporting group can be seen in Table 1. This group generated sales of almost 2 billion euros in 2019 and employed 7,541 people.

Revenue group	Participating companies	revenue/Mil. €	% revenue share of all participants	employees
XL	5	1,642.0	83.2%	5,497
L	8	210.3	10.7%	1,278
M	6	70.3	3.5%	432
S/XS	8	50.6	2.6%	334
alle	**27**	**1,937.2**	**100%**	**7,541**

Table 1: revenue and headcount of the different revenue groups

The surveys were formulated as simple questions, without requiring a special form to answer them. Rather, it was suggested to communicate as much information as possible in order to get an accurate picture of the situation. A total of four queries were originally planned, three weeks apart. In the meantime, the large EMS companies have asked to continue these evaluations at least until August, as there is no more qualified evaluation of the effects of the Corona crisis. The first four queries have now taken place (27.3./17.4./8.5./29.5.), the fifth query follows on 19.6.

Sick leave

The general level of uncertainty among people was extremely high in March. In addition, schools and kindergartens were closed and many parents had a problem with childcare. As a result, many parents did not come to work, took vacation, reduced their overtime account or reported sick. Since nobody is familiar with the typical symptoms of a corona infection, fear added to the uncertainty. A company with 30% sick leave in production wrote:

“Total uncertainty among employees; If the neck scratches only slightly, the employees come and ask what they should do. As part of the duty of care, we have to inform employees that they should call the family doctor. This regularly means that the employees are then written off for 14 days after the telephone diagnosis. These are enormous costs that the company has to bear. If this continues to increase, the company can only be protected by 100% short-time work, since then only the fixed costs are incurred as a minus amount.”

This led to a rapid increase in the sickness rate among companies. A third of the companies had a sick leave rate of over 10%, the maximum value was 45%.

After the initial panic, the situation slowly calmed down in April. On the one hand, the first companies had already registered short-time work, others had introduced 6 hour shifts, some of which were worked without a break. This led to a reduction in the problem of childcare. In the employee area, the majority of employees worked in the home office. The production was segmented in such a way that the employees had as little contact as possible. Critical functions were divided in such a way that the corresponding employees worked in different shifts to prevent 100% failure. The company entrances were blocked in such a way that no people outside the company were given access, otherwise the doors in the company remained open so that nobody had to touch the door handles as potential sources of infection. Distance rules and additional hygiene measures were defined, communicated and monitored. It was and is all very professional and disciplined.

The employees were very aware of the special situation and feedback came in particular from the smaller companies that nobody really wanted to be sick so as not to endanger the existence of the company and thus their own workplace. Accordingly, the third evaluation in May also showed a further decrease in the sickness rate and in the forth evalution it went even down further (Table 2)

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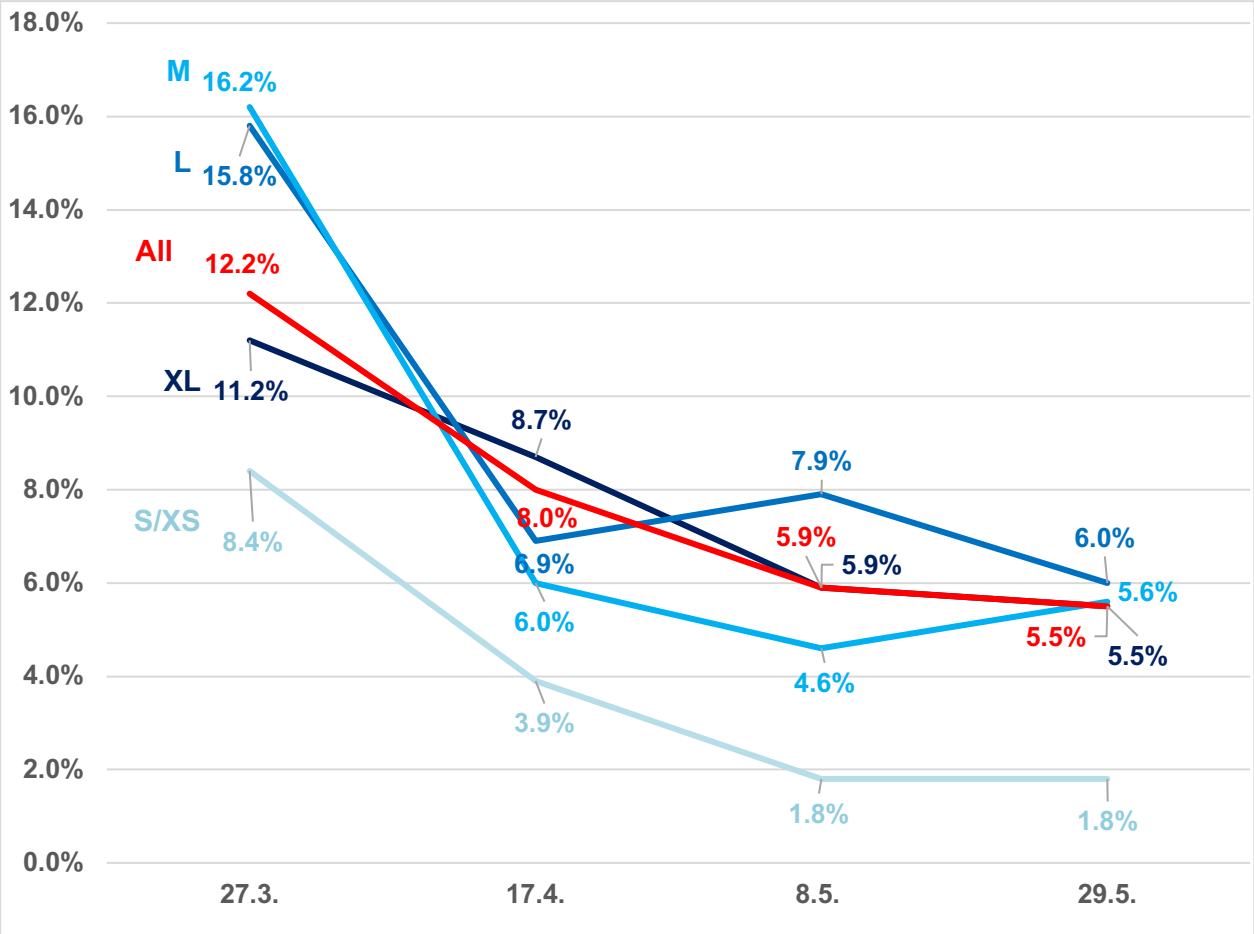
revenue group	sickness 27.3.	sick 27.3.	sickness 17.4.	Sick 17.4.	sickness 8.5.	Sick 8.5.	sickness 29.5.	Sick 29.5.
XL	618 of 5.497	11,2%	466 of 5.363	8,7%	314 of 5.363	5,9%	305 of 5.497	5,5%
L	202 of 1.278	15,8%	88 of 1.271	6,9%	101 of 1.271	7,9%	76 of 1.271	6,0%
M	70 of 432	16,2%	26 of 432	6,0%	20 of 432	4,6%	24 of 432	5,6%
S/XS	28 of 334	8,4%	13 of 334	3,9%	6 of 334	1,8%	6 of 334	1,8%
All 27	**917 of 7.541**	**12,2%**	**593 of 7.400**	**8,0%**	**441 of 7.400**	**5,9%**	**411 of 7.534**	**5,5%**

Table 2: sickness rate of EMS companies by revenue group

The reduced number of employees in the second and third survey was caused by the change of a company in the XL sales group, not by staff cuts. Many companies expect sickness levels to normalize further in the next few weeks or have already achieved this. The number of companies with a sick leave rate of >10% (3 out of 27) has remained constant since the last query, but some of them are other companies.
The spread of the numbers reported has also decreased significantly. The maximum is now 12.6% after 17% in the third survey, 35% in the second survey and 45% in the first survey. In general, border closure and the problem of cross-border commuters are no longer an issue; employees can easily cross the border with passports, but sometimes have to expect additional waiting times.
The following chart shows the development of sick leave graphically:



Graph 1: Development of sick leave

The market sectors

Since it was to be expected that the corona crisis would have a particular impact on both the automotive industry and medical electronics, the sales groups were examined with regard to their sales in these industries (see Table 3).
Compared to the normal share of sales per market sector, the reporting group in automotive electronics is slightly underrepresented, because the share of sales in the EMS industry in Germany is normally 22.9%. For this, medical technology is slightly overrepresented, which is usually 9.2%.

Revenue group	Automotive/Mil. €	Automotive%	Medical/Mil.€	Medical %
XL	337.9	20.6%	197.7	12.0%
L	21.8	10.4%	25.0	11.9%
M	0.0	0.0%	8.8	12.5%
S/XS	1.3	2.6%	2.7	5.3%
all	**361.0**	**18.6%**	**234.2**	**12.1%**

Tabelle 3: revenues by market sectors of different revenue groups

Due to the closings of many automotive plants, it was to be expected that companies with a high proportion of electronics for the automotive industry would be particularly affected by a drop in incoming orders. This already happened with the first evaluation. Delivery dates were pushed back massively and the corresponding EMS companies immediately went into short-time work. Already in April it could be said that companies with a share of more than 25% in automotive electronics had registered short-time work. On the other hand, medical electronics experienced an upswing, regardless of whether it was components for respirators or other medical products. Order doublings, advance delivery dates up to ten times the order volume were reported. So if you delivered not only to the automotive industry but also to medical technology, you could partially compensate for the minus in one sector with a plus in the other. On the other hand, companies with a share of more than 50% in the automotive industry were particularly hard hit.

The available capacity

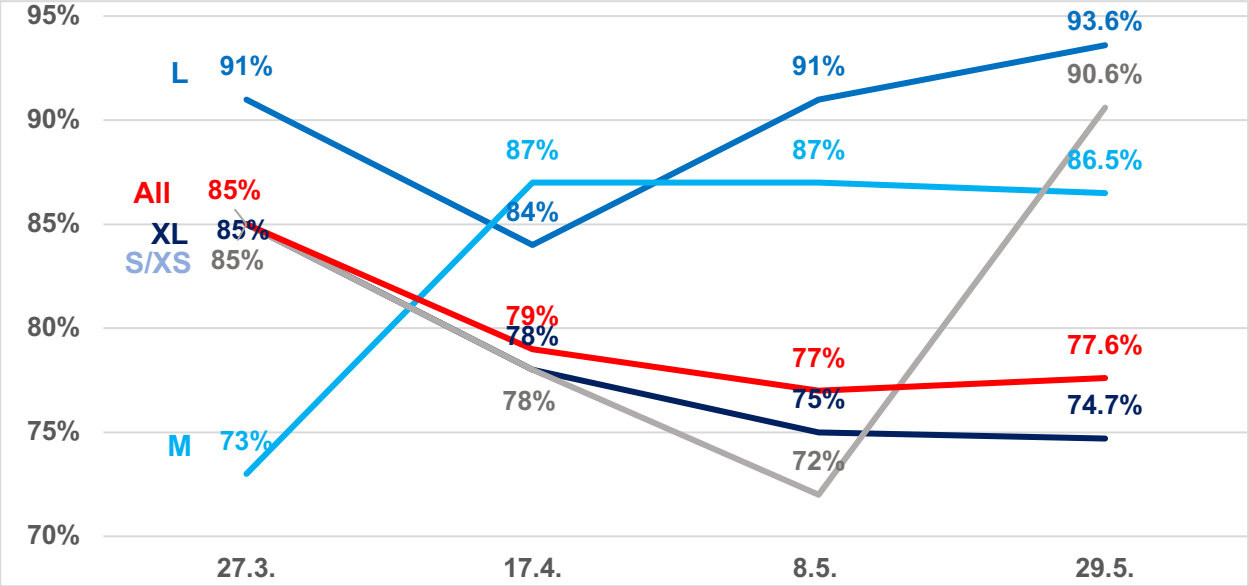
The available capacity decreased significantly in March, primarily due to the high level of sickness of the production employees. The subsequent short-time work and the introduction of 6 hour shift models further reduced the capacity. However, there were no capacity bottlenecks because many companies reported that their customers had postponed shipments and that the reduced capacity was sufficient for the scheduled orders.

Revenue group	**Share of revenue**	**Weighted capacity 27.3.**	**Weighted capacity 17.4.**	**Weighted capacity 8.5.**	**Weighted capacity 29.5.**
XL	83.1%	85%	78%	75%	74.7%
L	10.7%	91%	84%	91%	93.6%
M	3.6%	73%	87%	87%	86.5%
S/XS	2.6%	85%	78%	72%	90.6%
All 27	**100%.**	**85%**	**79%**	**77%**	**77.6%**

Table 4: available capacity by revenue group

In early May, 30% of the companies in the reporting group were working short-time, compared to 18.5% in the second survey. Weighting short-time work according to sales, it was 85% of the reported sales in which short-time work was performed. It was primarily the companies in the XL and L sales groups that were in short-time work. There was no short-time work in the sales group M, 25% in the sales group S / XS in early May.

Two companies (one from each of the XL and L groups) have ended short-time work end of May, but at the same time four companies (two each from groups M and S / XS) have started short-time work. According to the reporting companies which started short-time work, this is largely due to the fact that the customers of the smaller companies initially waited or were unsure of how the Corona Virus would affect the economy. More on that later.



Graph 2: development of available capacity

In the meantime, 37% of the companies in the reporting group do short-time work. However, if short-time work is weighted according to sales, there is a declining effect, because short-time work now only affects companies in the reporting group that generate 77.5% of sales in the reporting group, compared to 85% in the last survey. Previously it was primarily the companies of the sales groups XL and L that were in short-time work, now it is the sales groups M and S / XS.

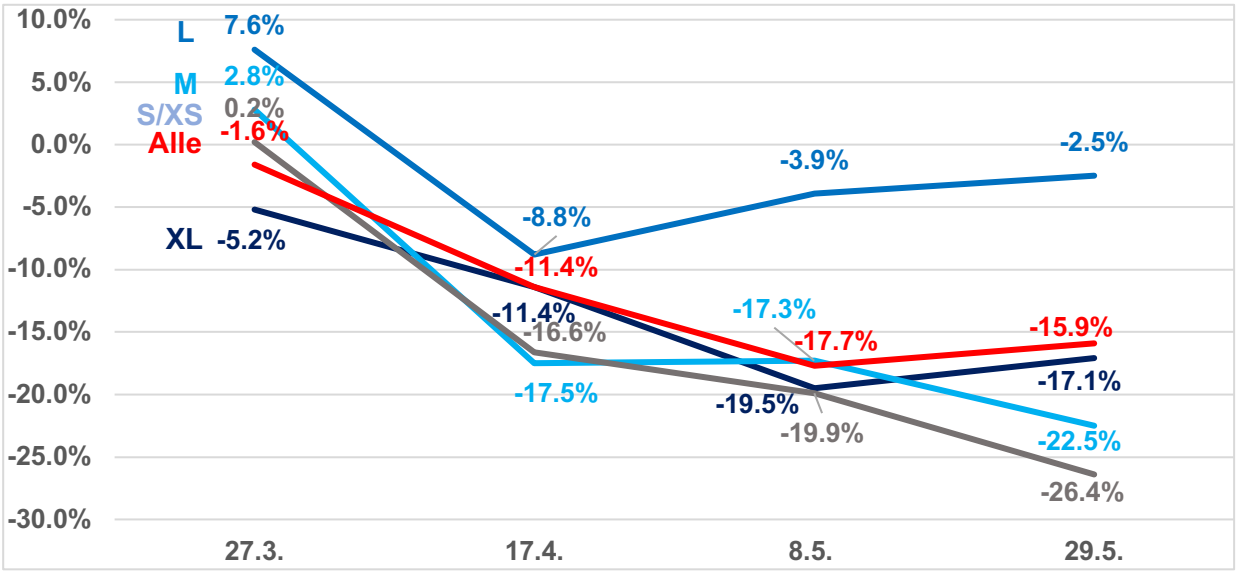
The order intake

When analyzing the effects on incoming orders, you can of course apply different standards. You can calculate the deviation from the same month of the previous year, the last month or the plan. Fortunately, most companies have left us the choice with their reports. As far as possible, the development was chosen for the same period last year, which also means that the decline to the plan, which mostly provides for growth, is even greater.
In the automotive division, there were order cancellations and postponements in April of between 45 and 75% compared to originally existing orders, which then also triggered short-time work. How did a reporting company express itself: "Automotive is a case for the intensive care unit". Only with companies that had an automotive share of less than 50% could this be partially offset by positive changes in the order situation in mechanical engineering and medical technology.
Individual companies reported slight improvements in early May, but it was a minority. Overall, the trend was still negative early May. In the order intake it can now be seen, that the companies in the reporting group split up. One company wrote: "We are probably still

on the island of the blissful" whereas others are badly suffering. Table 3 lists the current development of order intake for the same month of the previous year.
Many companies believe that May is now bottoming out.

Revenue group	B2B 2019	Order intake 27.3.	Order intake 17.4.	Order intake 8.5.	Order intake 29.5.
XL	0,99	-5.2%	-11.4%	-19.5%	-17.1%
L	1,26	+7.6%	-8.8%	-3.9%	-2.5%
M	0,84	+2.8%	-17.5%	-17.3%	-22.5%
S/XS	1,13	+0.2%	-16.6%	-19.9%	-26.4%
All 27	**1,01**	**-1.6%**	**-11.4%**	**-17.7%**	**-15.9%**

Table 5: Development of order intake



Graph 3: Development of order intake against same period previous year

The gap between larger and smaller companies is now widening. If the large companies, especially those with a share of> 25% in automotive, had already felt the effects of the Corona Virus in March, all other sales groups had seen an improvement in order intake. In return, the order intake rushes completely into the basement of the small companies in groups M and S / XS, while it is already recovering slightly for sales groups XL and L. The automotive supply industry hesitantly places its first orders.

The field of medical technology is still in demand and enjoys good order quantities, but medical technology is not just medical technology. Anything that is not directly related to the federal government's ventilators ordered is sluggish. Currently, the hospitals have poor occupancy rates because patients only go to the hospital when absolutely necessary and the doctors' offices do not have a high frequency of visits. If this was originally intended by the doctors, they are now complaining about poor occupancy and medical technology investments are now being pushed, even in the hospital sector.

Mechanical engineering also shows a downward trend (sometimes minus 15%), unless it is an investment in hygiene articles. There are various trends in railway technology. For example, one company reports orders declining, while another company reports orders for railway safety technology that are destined for China. Quote: "They think we have Corona in Europe and are afraid supplies to dry out". Of course, later this will have the effect that nothing is ordered because the excess inventory has to be reduced.

In many cases, companies are planning with low visibility and high security, because hardly anyone is able to precisely predict consumer behavior. In particular, people affected by short-time work or complete loss of income often drop out as consumers, on the other hand consumer behavior shifts in other directions. Anyone who does not take a vacation or does not go abroad due to the Corona crisis is investing increasingly in home and garden, including intelligent home technology, robot lawn mowers, etc.

On the other hand, there is still uncertainty in automotive technology, which car manufacturers are partly responsible for. The diesel scandal has contributed to consumer insecurity. New vehicle registrations in April slumped by over 50%, and not just because the registration offices were not open regularly. The hype about e-cars is only artificially driven. Testimonials from Dutch people who need two days to travel to the Alps in an e-car raise general questions about the means of transport.

What's next? A company has a plausible view: “The economy is preparing for a longer phase of decline. In general, we do not yet see the bottom been reached. ”Follow-up orders are no longer placed as usual, you have to constantly and intensively follow up on the customers. In addition first requests for the extension of the payment term by customers popped up.

Smaller EMS companies are not expected to bottom out until the end of the 2nd quarter or the beginning of the 3rd quarter. Further calculations on the sales development in the EMS industry are currently underway, but these are quite difficult because the industry will not develop as homogeneously in the next 24 months as in the past. Now collecting data and facts is more important than ever, otherwise there will be no sensible future planning.

The procurement situation

The major part of the reports on the procurement situation relates to transport logistics. As more and more distributors are now also charging for transportation and some have also sent official letters, the first companies are questioning the supply of circuit boards from Asia. The cost increases for some EMS account for about 3-5% of the material costs for individual orders, at the same time there is a delay of 1-5 days due to the transport. There are occasionally delays of 1-2 weeks for printed circuit boards. EMS companies in particular are increasingly buying time-critical circuit boards in Europe again. It is to be hoped that the companies now consider single sourcing in China to be too risky and to

send some of the orders to the local circuit board manufacturers in order to have local suppliers.

The plant closings in Malaysia, India and the Philippines for active components did hurt, ferrites and inductive components in North Africa as well until Mid of May. Massive increases in delivery times for connectors, shortages of inductors and coils, and delays for safety relays were causing headaches as well. End of May the situation has eased and the remaining problem is logistics and transportation.

Outlook

In parallel to the queries in the reporting group, other companies outside the reporting group were regularly called to find out about the situation and to compare it with the previous results of the reporting group and to check the representativeness of the evaluation. In general, it can be said that the results of the evaluation coincided with the telephone information for the German-speaking countries.

In other European countries outside of D-A-CH, however, the situation was sometimes considerably different. Here, many companies were forced to close the company and only system-relevant productions (medical technology) were allowed to produce under strict conditions. Ultimately, 8-12% of the capacity was lost this year, but this also affected customers. A double-digit decline in sales in the European EMS industry for 2020 must now be assumed. It could be up to minus 14% in the western countries, up to minus 8% in the eastern countries and around 8-10% in D-A-CH.

in4ma produces these evaluations as well as the EMS annual survey for the European EMS industry. The work is financed through crowd funding (sponsorship), which in4ma has launched beginning of this year. This work is currently supported financially by 19 EMS companies in Europe.