

## KEY MARKET TRENDS IN THE EUROPEAN ADDITIVE MANUFACTURING SECTOR

### Key remarks:

- ⇒ Strongly positive AM growth expectations on home and foreign markets over the next six months.
- ⇒ Composite & Metals deposits are expected to have the strongest demand in the next six months.
- ⇒ While the medical sector remains in first place, aerospace and automotive orders expectations are experiencing strong growth.
- ⇒ High investment expectations lead to the highest level of the AM Confidence Index.

## KEY MARKET TRENDS IN THE EUROPEAN ADDITIVE MANUFACTURING SECTOR

May 2022

Between March and May 2022, CECIMO, the European Association of the Machine Tool Industries and related Manufacturing Technologies, organized the fourth round of its European Additive Manufacturing Survey, which aims to assess key market trends in the Additive Manufacturing (AM) sector.

It is a six-month survey that will help the industry record trend indications for key business areas, such as domestic business, AM exports, orders by type of material, client industry demand and investment trend. 3D printing companies express their six-month indications in the key business areas compared to the situation over the past six months.

As CECIMO has established cooperation with VDMA\* to obtain a wider European figure in the AM sector including data for Germany, the report is now divided into two sections. The first part (marked as PART I) contains the results of the combined data of the CECIMO national associations' surveys and the VDMA survey. The second part (marked as PART II) of the report contains only data from countries using the CECIMO survey and shows a trend based on the results of previous surveys.

### Methodology:

The first part of this report contains data from countries that use the CECIMO survey combined with the VDMA survey which contains data for the German AM sector. Keep in mind that there is a slight difference in the approach used to ask questions of participants between the CECIMO and VDMA surveys. While the CECIMO survey asks questions about expectations concerning domestic/foreign orders, the VDMA survey asks questions about the development of the AM sector in the domestic/foreign market.

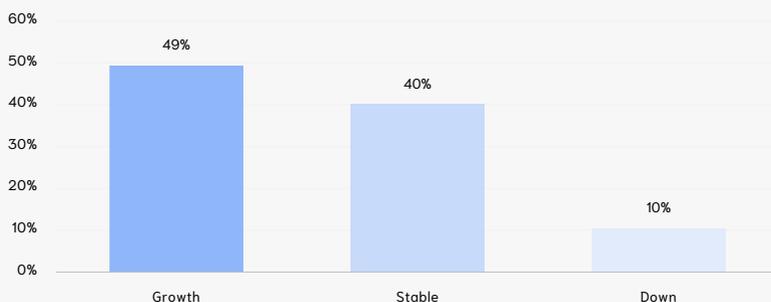
The second part of the report provides more detailed results on the AM trends based only on the results received from countries using the CECIMO survey. For each country, survey responses are analysed as the difference between the share of companies reporting growth and that of companies reporting a decrease in their trend indication. A positive balance provides a growth indication, and a negative balance reflects a decline.

National results are weighted with equal shares for the participating countries to have a European figure.

\* VDMA is the association of Germany's engineering industry which represents the AM industry in Germany and carries out an AM survey in Germany on a regular basis.

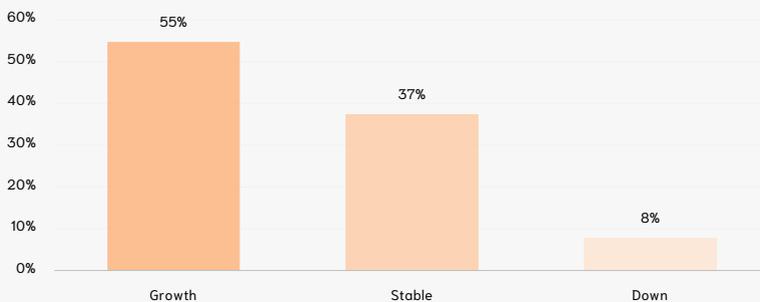
## AM TREND – HOME MARKET

Based on the results of the latest AM survey (CECIMO+VDMA), it is great to see a high level of business optimism in the domestic market over the next six months in the European AM community. With almost 50% of growth indications, and only 10% of respondents predicting decline, AM sector in Europe will for sure continue its growth path in domestic market. This is consistent with previous surveys and in line with our expectations for the use of AM technologies by European manufacturers.



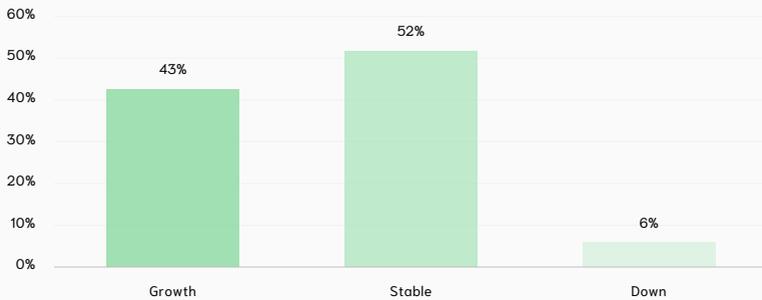
## AM TREND – FOREIGN MARKET

Regarding the AM trend in the foreign market and expectations about foreign exports/orders, the situation is even better, and participants have expressed higher expectations for growth compared to domestic market. 55% of participants indicated that exports/foreign orders will grow over the next six months. While another 37% expect at least the same level of business abroad, only 8% of the participants expect a decline on foreign market. These findings clearly indicate strong foreign demand and the fact that European AM technologies are increasingly being used globally.



## AM INVESTMENTS

On the question regarding AM Investments participants continues to express highly stable and positive expectations. While 43% of companies have expressed growth expectations, 52% of them expect that investments in the AM sector will remain at least at the same level. Only 6% of respondents indicated a negative trend. The positive investment path indicates the ongoing development of AM technologies and that we can expect new solutions to come to market soon. In addition to investments in technology development, it is expected that more and more industries in a variety of sectors will adopt AM technologies in their production lines. This is in line with the high orders expectations of sectors like medical, aerospace and the automotive, as shown in the second part of the report.

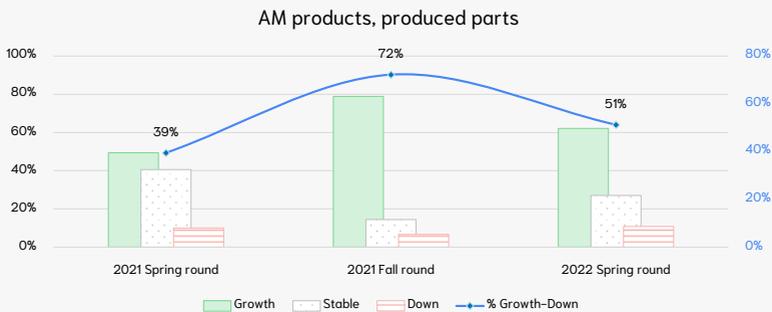


Note: The next part of the report presents the results of the CECIMO survey (Italy, Spain, Switzerland, the United Kingdom and Austria), though, where possible, some comparisons will also be made with the results of the German survey in last round.

## AM TREND INDICATION OF THE HOME MARKET

*Question: Please indicate the trend in new home market orders over the next 6 months compared to past 6 months based on value.*

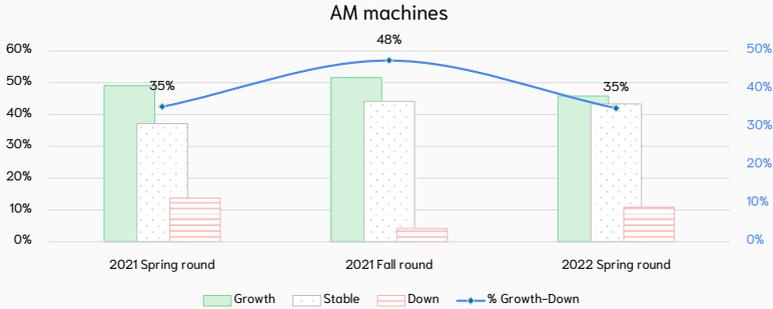
The latest survey results, shows a lower but still strongly positive percentage balance on the trend indication of the domestic business. New orders expectations are positive in all AM categories over the next six months (products/produced parts, machines, materials and services). To get a better overview of category trends, the following charts show more detailed trends and percentage balances for each category in the previous three rounds.



The latest results show that AM products & produced parts category is expected to experience the strongest growth path in the next six months (growth – decline = 51%). Although, as shown in the graph above, the percentage balance is lower than in the previous survey round, these results are still very positive and above the spring 2021 levels. Compared with the results of the previous survey which showed strong indications for the AM services sector, the AM services sector now reflects weaker growth expectations. With a significant increase in the share of those reporting stable and down expectations, the percentage balance is now near last spring's results and stands at +32%.



Whereas the percentage balance for AM services (+32%) reflects a significant decrease in the percentage balance compared to the previous survey round (+79%), the expectations for the AM machines segment are more stable and now accounts for about 35% of the positive percentage balance.



Similar to AM services category, AM materials percentage balance trend shows worsening compared to previous survey round. As shown in chart below, there is large share of participants who responded that situation will remain stable. The decline in the share of those expecting more orders and the increase in the share of those with lower expectations led to a decline in the percentage balance. Although at a lower level, a positive balance means that companies can still expect growth in orders income of material that is used in AM machines on domestic market.

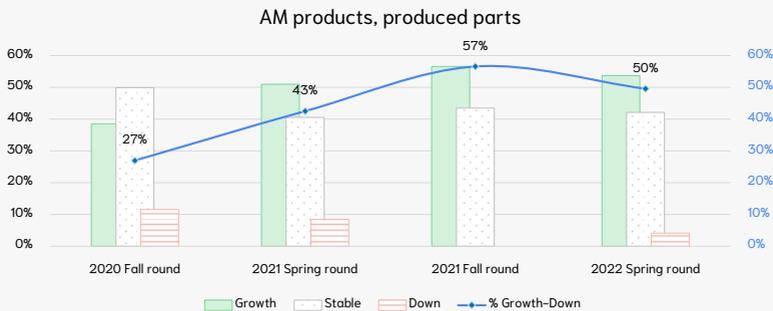


Overall, the previous charts show that order expectations are lower than they were in the fall of 2021 and are closer to the spring of last year. However, this still reflects high growth expectations for all AM segments in the domestic market. When we compare the average responses for all categories, in this round there is a significant shift from growth towards more stable expectations over the next six months. However, this is quite expected given the current geopolitical situation, slowdown in European/global growth, inflation, supply issues and rising energy prices.

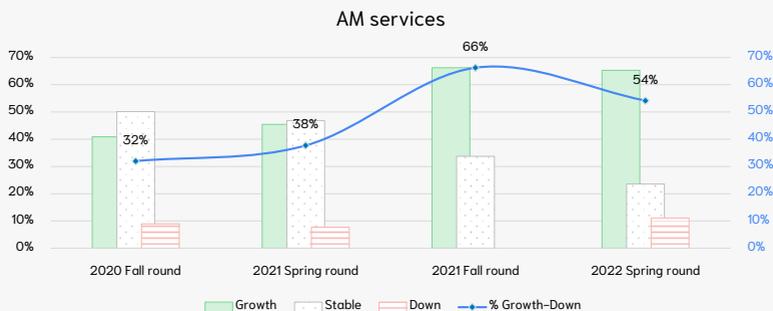
## AM TREND INDICATION OF THE EXPORTS

*Question: Please indicate the trend in new export orders over the next 6 months compared to past 6 months based on value.*

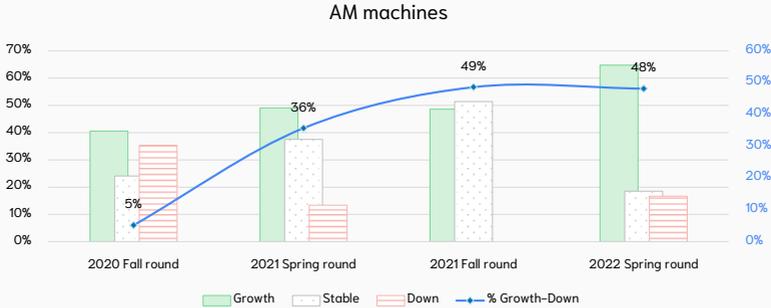
In analyzing responses to export trends, the participants expressed generally higher indications for foreign orders than for the domestic market. However, as the following charts show, the indications are slightly lower than the autumn round in all AM categories. The first chart below shows a slightly lower percentage balance compared to the previous survey cycle, but at 50% it is better than the spring cycle last year (and fall of 2020). While the share of those expecting stable orders (for parts or components product with and AM machine) has remained almost unchanged, there is now an increase among those with lower expectations. However, current expectations for foreign orders are below the average for the first two rounds.



The highest orders growth indications are like in the previous round in the AM services category, with a positive balance of 54%. While more than half of participants expect new orders growth in services that are directly linked to AM processes in foreign market, there is also a noticeable increase in those expecting a decline in orders, which has negatively impacted the trend line. Relative to the domestic market, AM service providers could expect slightly higher orders in the foreign market over the next six months.



It is great to see that growth path for new foreign orders income of machines that produce parts with technologies like SLM, SLS, FDM, LM, BJ, TPP and all other processes. While the percentage balance level remained 1% lower than in the previous survey round, these expectations are significantly higher than in the first two rounds. Compared to the previous survey, the concern is that the share of respondents expecting stable foreign AM machine orders has decreased significantly and the number of those expecting a negative trend is up to about 17%.



The indications for the AM materials category reflect a result close to fall 2020 and spring 2021, showing a positive balance of 32%. A similar situation is visible on the domestic market, where most participants expect stable new orders of materials that are used in AM machines.



In conclusion, all categories have experienced higher orders expectations on the foreign market than on the domestic market over the next six months. However, while the balance of the participants who expect growth on foreign market has increased, the increase is also recorded in share of participants who expect lower orders in following six months. Keeping in mind a lower level of participants who expect a constant level of orders, this has resulted in a lower level of percentage balance across all categories compared to the fall survey round.

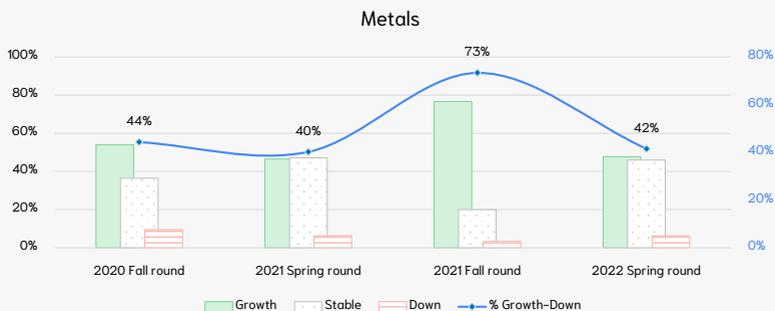
## AM MATERIAL TREND INDICATION

*Question: Please indicate the trend in total new orders by material over the next 6 months compared to past 6 months based on value.*

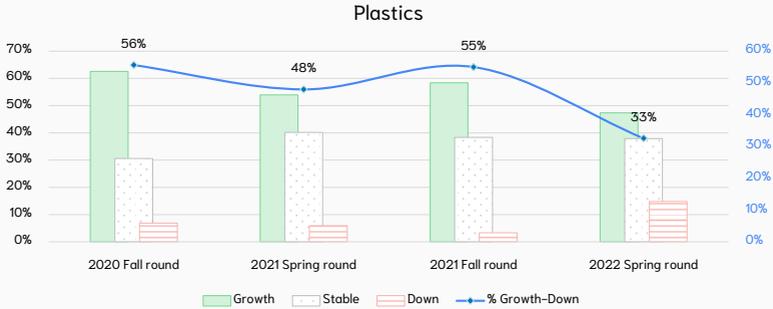
Materials' net balances show significant shift compared to the fall survey results. As shown in the chart below, following the decrease in orders growth indications over the previous three rounds, the highest growth over the next six months is now expected for composites. The percentage balance curve moves from 7% positive in the fall of 2021 to 63% in the final round. Moreover, in this cycle there are no expectations of a decrease in new orders for composites. This is consistent with the recovery in the aerospace industry and the expected growth in other sectors. As composites are widely used in the aerospace industry, the wind industry and becomes increasingly practical for smaller products, comes the replacement of metals, the demand for these materials is likely to increase in the future.



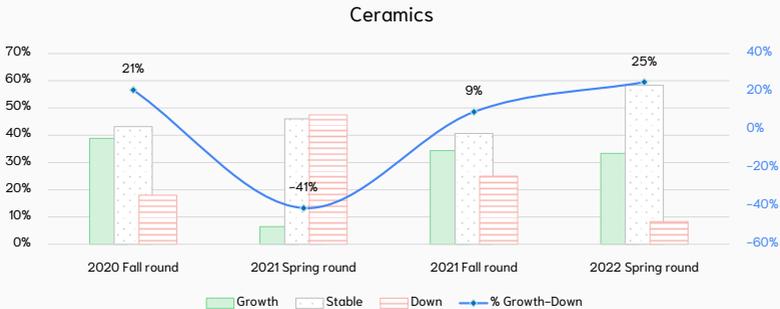
Metals category is on the second place reaching strong growth-down balance of 42%. Although this represents a significant decrease compared to the previous survey balance (73%), expectations regarding metal deposit orders are positive and correspond on average to the first two rounds of surveys.



A slightly lower percentage balance, while very positive, reflects strong indications for Plastics deposit orders. While the number of participants expecting a stable demand for plastics remains almost unchanged from the previous cycle, there is an increase in the share of participants who expect lower level of orders for this material.



After reaching a negative percentage balance during the Spring 2021 round, the latest results show a new growth path for Ceramics. While more than half of participants expect steady demand, there is a significant proportion of those who expect a growth scenario. As shown on the chart below, the red bar is at the lowest level if we compare the last three rounds.



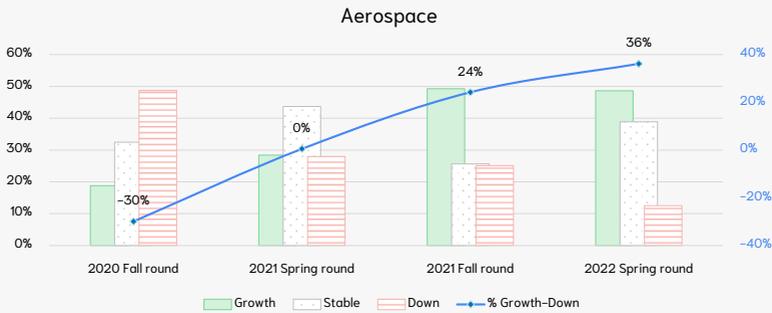
It is important to emphasise that if we compare the average for all materials, this round shows stronger positive indications compared to previous survey round. The strongest orders in the short term could expect AM companies that provide solutions aligned for the use of composites and metal as a material in following six months.

While not shown in previous charts, after negative expectations in the previous round, the Other materials category has now reached a positive percentage balance of 29%.

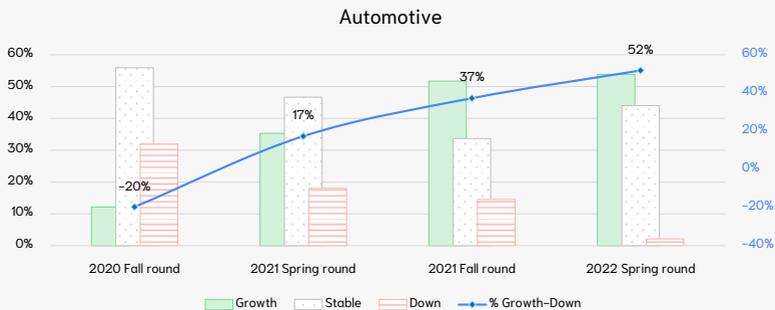
## BUSINESS TREND INDICATION: CLIENTS

*Question: Please indicate the trend in total new orders by customer sector over the next 6 months compared to past 6 months based on value.*

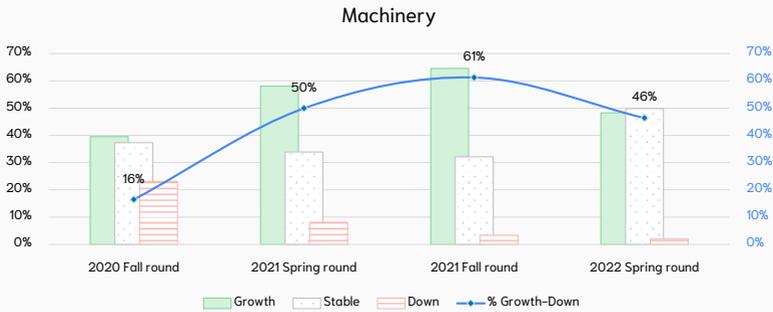
As far as the AM buying sectors are concerned, expectations for new orders are mainly positive in all sectors, apart from chemicals and pharmaceuticals. The aerospace and automotive sector trend continues to grow from negative indications in the fall 2020 round and very weak indications in the spring 2021 round. This growth in the automotive and aerospace sectors could be tied to the continued recovery in these sectors after the significant impact of the coronavirus pandemic.



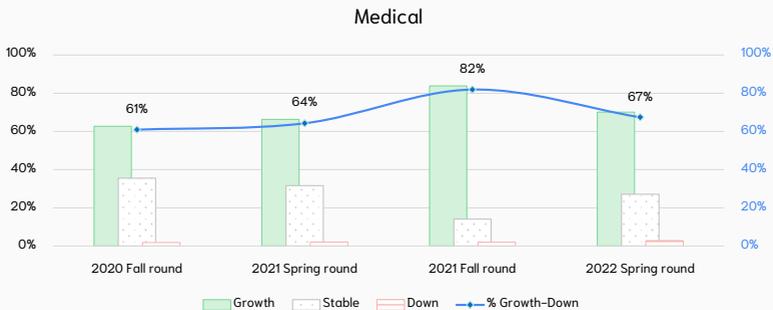
It is important to note that the world is still affected by travel restrictions due to COVID-19, delaying the recovery of commercial aircraft demand. On the other hand, the current geopolitical challenges and the announced increase in the defence budget, especially with respect to military aircrafts, could lead to higher demand for that sector and other defence-related sectors. Regarding future expectations, there is also significant shift in the automotive sector, which is now on second place if we do not count the “other” sectors. Each second participant shows the expectations of increasing orders from the automotive sector. This is consistent with studies that show that AM technology has proved very useful in the production lines of automakers.



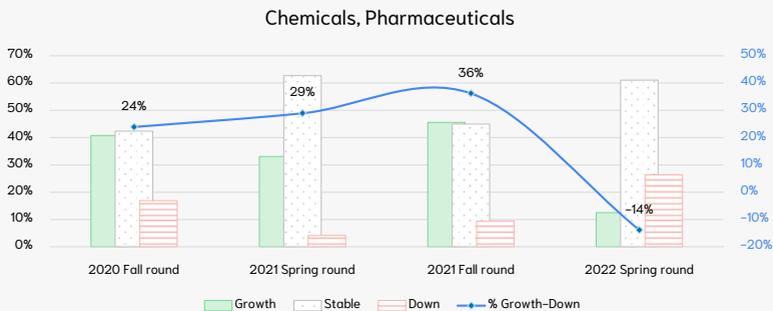
Compared to the results of the previous survey, the AM sector is now expected to see slower growth in orders for the machinery and medical industries. However, indications of new orders in the machinery sector are still at high levels with a net balance of 46%, keeping this sector in third place at the sectoral level. As the following table shows, very few participants expressed negative expectations. However, there is significant growth among those who expect only a stable level of machinery orders and a decrease in the proportion of those who expect growth expectations.



The medical sector recorded a net balance of 67%, retaining the highest trend indication score at sectoral level. As visible in chart below, if we compare with survey round before, there is increase of those who expects more stable orders from this sector. This could be the result of strong and steady orders from this sector and increased use of AM technologies in other industries such as automotive and aerospace. However, the European AM sector over the next six months can expect the strongest growth in new orders in the medical sector, closely followed by the automotive sector.



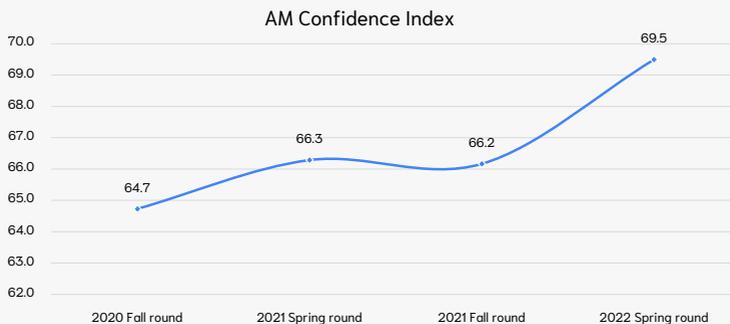
As noted previously, the chemicals and pharmaceuticals sector is the only sector in which participants expect lower total orders. As it can be seen in the chart below, there is a significant shift between growth indications from the previous round and more stable and downward expectations.



While not shown in previous charts, net orders from other sectors are expected to increase, with a positive balance of 75% in the most recent survey results. However, it is important to bear in mind that responses on Other sectors are only recorded in the Swiss AM network.

## AM CONFIDENCE INDEX

According to the responses concerning the AM Investments trend, managers have increased their expectations regarding investments and AM Confidence index reached the highest level since launch of the survey. The chart below shows that AM confidence Index reached level of 69.5 points in this survey round.





### **About CECIMO:**

CECIMO is the European Association of the Machine Tool Industries and related Manufacturing Technologies. We bring together 15 national associations of machine tool builders, which represent approximately 1500 industrial enterprises in Europe (EU + UK+ EFTA + Turkey), over 80% of which are SMEs. CECIMO covers 98% of the total machine tool production in Europe and about 34% worldwide. It accounts for approximately 150,000 employees and a turnover of around 22.5 billion euros in 2021. More than three quarters of CECIMO production is shipped abroad, whereas half of it is exported outside Europe. CECIMO will continue to represent the interest of AM sector, which we consider to be one of the most innovative and fast-growing industries in Europe. The next round of AM survey should take place in the fall of 2022, from September to October, with results expected in November.

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