

## Fact Sheet

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# Increasing cost pressure on medical device manufacturing

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Since late 2020, Swiss companies in the medical technology sector have been facing an increasing scarcity of components and raw materials, an unprecedented rise in material and transport costs, and longer and more unpredictable delivery times. The effects of the COVID-19 pandemic and the energy crisis are being felt along the entire supply chain.

This fact sheet provides an overview of the cost development for those parameters critical in the manufacturing of medical devices. The influencing factors of the last two years are presented.

For selected important metals, plastics and raw materials for packaging, the prices at the end of July 2020, July 2021 and July 2022 were determined using publicly accessible information. A comparison of the prices between July 2022 and July 2021 shows the cost increase over the last year. The comparison with July 2020 shows the full extent of the increases over the last two years, revealing the effect of both the COVID-19 pandemic and the war in Ukraine.

## Rising prices for raw materials and electronic components

The prices for the raw materials are shown in Table 1. The prices for **metals and plastics** have increased in the last two years by at least 50% and in some cases have even more than doubled. The increase now seems to be slowing somewhat. Nevertheless, manufacturers of medical devices made from metals or plastics are facing considerable additional costs.

The prices of **paper, paperboard and corrugated cardboard** are directly related to the costs of purchasing, delivery and processing of the raw materials. The costs for these raw materials obtained predominantly from wood have increased in the last two years by 64% and 37% respectively. The main reason for this is the increasing cost of natural gas that has very negative effects on paper mills in Europe. Along with the petroleum industry and mining, pulp and paper production is one of the most energy intensive manufacturing sectors. Globally, China is the largest producer of corrugated board, ahead of the USA, Japan and Germany. Almost 75% of wood imports in the EU come from Russia, Belarus and the Ukraine.

Table 1: Price development of raw materials

Material	Unit	Price July 2020	Price July 2021	Price July 2022	Development over the last 2 years	Development over the last year	Source
<b>Metals</b>							
Stainless steel (inox)	\$/t	2312	3544	4177	81%	18%	1
Aluminium	€/t	1470	2133	2395	63%	12%	2
Titanium (99.60%)	\$/kg	7.95	8.00	11.98	51%	50%	3
Cobalt	\$/kg	29	46	60	107%	30%	4
<b>Plastics (granules)</b>							
Polyamide (PA6)	€/kg	1.82	2.42	2.99	64%	24%	5
Polyethylene (PE-HD)	€/kg	0.69	0.93	1.25	81%	34%	5
Polypropylene (PP)	€/kg	0.67	0.91	1.53	128%	68%	5
<b>Paper and packaging materials</b>							
Paper (wood pulp)	Producer Price Index	146	208	240	64%	15%	6
Cardboard (corrugated paperboard)	Producer Price Index	267	312	367	37%	18%	6

Sources (last accessed 2022-08-05):

- 1) [www.journaldunet.fr/patrimoine/guide-des-finances-personnelles/1146972-prix-des-metaux-les-tarifs-des-metaux-en-fevrier-2022](http://www.journaldunet.fr/patrimoine/guide-des-finances-personnelles/1146972-prix-des-metaux-les-tarifs-des-metaux-en-fevrier-2022)
- 2) [www.boerse-online.de/rohstoffe/aluminiumpreis/euro](http://www.boerse-online.de/rohstoffe/aluminiumpreis/euro)
- 3) [investir.lesechos.fr](http://investir.lesechos.fr)
- 4) [www.dailymetalprice.com/metalpricecharts.php?c=co&u=lb&d=0](http://www.dailymetalprice.com/metalpricecharts.php?c=co&u=lb&d=0)
- 5) [www.plasticker.de](http://www.plasticker.de)
- 6) [fred.stlouisfed.org](http://fred.stlouisfed.org); Index 1982=100

The prices for **electronic components** have also increased significantly. This stands in dramatic contrast to the historical trends, which, thanks to advances in manufacturing technology, showed a steady decline in prices up to 2020. The rising costs of raw materials and energy also play a role here. Manufacturers are charging a premium in light of the ongoing shortage of semiconductor chips and continued high demand. Microcontroller chips (MCU) are the key semiconductor component for electronic medical technology and are not being delivered on time. The price of Korean MCU chips for medical technology, for example, has risen more than six-fold from \$8 in 2020 to \$50 in 2021.

## Rising energy costs

The costs for important energy sources are shown in Table 2 and include the relevant prices in Europe for crude oil, natural gas and the Swiss spot market price for electricity.

Table 2: Price development for energy sources

Energy source	Unit	Price July 2020	Price July 2021	Price July 2022	Development over the last 2 years	Development over the last year	Source
Crude oil	Brent crude (\$/barrel)	43.5	73.5	104.0	139%	41%	7
Natural gas	Natural gas (\$/MMBtu)	3.53	4.17	7.37	109%	77%	8
Electricity	Spot market Switzerland 50-day base (€/MWh)	38	80	450	1084%	463%	9

Sources (last accessed 2022-08-30):

- 7) [oilprice.com/oil-price-charts/](https://oilprice.com/oil-price-charts/)
- 8) [tradingeconomics.com/commodity/natural-gas](https://tradingeconomics.com/commodity/natural-gas)
- 9) [www.bricklebit.com/strompreis\\_boerse\\_schweiz.html](https://www.bricklebit.com/strompreis_boerse_schweiz.html)

The prices for the important energy sources **crude oil and natural gas** have more than doubled in the last two years. This has resulted in rising production costs for practically all medical devices because the manufacturing process requires energy in all steps from the raw material to the finally packaged product.

The market prices for **electricity** have increased exorbitantly. Electricity in the Swiss market currently costs ten times more than it did two years ago. For many Swiss companies with high energy consumption, this is a problem that is threatening their very existence.

## Price hikes for logistics and transport

To illustrate the costs for sea and air freight, two representative indices for Europe were selected, the Freightos Baltic Index (FBX) for sea transport and the Baltic Exchange Air Freight Index (BAI) for air transport. The development of these two indices can be seen in Table 3.

Table 3: Cost development for logistics and transport

Means of transportation	Unit	Price July 2020	Price July 2021	Price July 2022	Development over the last 2 years	Development over the last year	Source
Freight costs (shipping)	Freightos Baltic Index (FBX, global container freight, \$)	1762	7629	6319	259%	-17%	10
Freight costs (plane)	Baltic Exchange Air Freight Index (BAI, Hongkong to Europe, \$/kg)	3.17	4.58	6.26	97%	37%	11

Sources (last accessed 2022-08-05):

10) [fbx.freightos.com](https://fbx.freightos.com)

11) [www.aircargonews.net/data-hub/airfreight-rates-tac-index](https://www.aircargonews.net/data-hub/airfreight-rates-tac-index)

The costs for **sea and air freight logistics** climbed rapidly in 2021. The increase slowed in 2022 and was even slightly corrected. Nevertheless, medical technology manufacturers have faced a doubling of air freight costs and a more than tripling of sea freight costs over the last two years. Due to the ongoing issues with sea transport, with frequent port congestion and reduced operating routes, many manufacturers have also decided to transport at least some of their goods by air. Although this improves their ability to deliver on time, transport costs are increased further.

## Rising costs for regulatory approvals

The sector is affected by a significant increase in certification and regulatory costs. The new EU Medical Device Regulation (MDR) has increased the legal requirements and requires recertification of all medical devices that are on the market. BVMed assumes that the costs for certification have doubled across all risk classes. Companies are facing costs of €300,000 to €500,000 for each certification file (source 12). This leads not only to higher costs but businesses will also remove certain product lines from the market because they are no longer profitable.

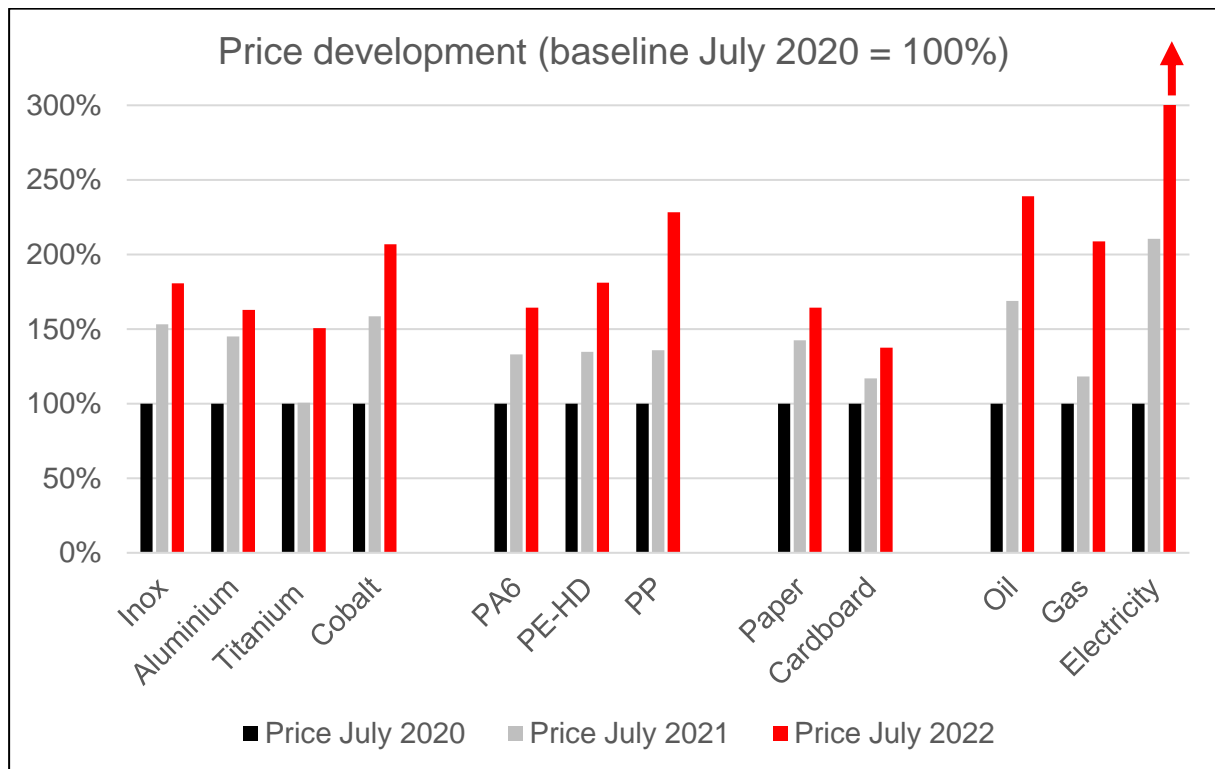
In addition, the Swiss medical technology sector has been downgraded to third-country status by the European Union (EU) since May 2021. The consequence of this is that mutual trade with medical devices is associated with additional expenses. The cost to establish and operate an authorised representative amounts to 2% of the turnover, both for Swiss manufacturers exporting into the EU and for Swiss distributors importing into Switzerland (source: Swiss Medtech survey).

12) [www.bvmed.de/de/branche/standort-deutschland/steigender-kostendruck-auf-die-herstellung-von-medizinprodukten](https://www.bvmed.de/de/branche/standort-deutschland/steigender-kostendruck-auf-die-herstellung-von-medizinprodukten)

## Summary

The costs for production and distribution of medical devices have increased over the last two years at an unprecedented rate. The figure shows the cost development for raw materials and energy sources over the last two years. The price at the end of July 2020 was taken as the baseline and indexed at 100%. The mark of 200% means that the price has doubled.

The figure shows clearly how much the prices of raw materials have increased. For energy sources the costs have almost exploded. Crude oil and natural gas prices have more than doubled while electricity has risen tenfold.



All these factors influencing the production make medical devices more expensive to varying degrees. While the cost increases will have only a minimal impact on medical software, products with high energy and raw material consumption (such as cast and forged implants for joint replacements) will experience a considerable impact.