Market evolution: Electric motors and generators (CN 8501) — 2015–2025

Introduction

Electric motors and generators (excluding generating sets) form a foundational category of the electrical machinery sector. This report examines the European Union’s external trade in CN 8501 from 2015 to 2025, using annual data for all non-EU partners. The period is marked by robust value expansion on both the export and import sides, yet a concurrent decline or moderate growth in traded quantities reveals that price dynamics, rather than pure volume growth, drove the headline numbers. The trade balance shrank dramatically, while the partner landscape was reshaped by geopolitical sanctions, the rise of Asian supply hubs, and shifting production patterns inside the EU.

1. The Great Divergence: Rising Values Amid Falling or Moderate Volumes

Export value growth is entirely driven by unit price increases, not by volume expansion

EU exports of electric motors and generators rose from €6.0 billion in 2015 to €9.6 billion in 2025, a gain of 60.7 %. However, export quantity fell from 510.7 thousand tonnes to 438.9 thousand tonnes (–14.1 %). The resulting unit value jumped by 87.0 %, from €11,741 to €21,954 per tonne. This decoupling indicates that the value of exported goods was amplified by higher prices, likely reflecting a shift towards more complex, higher-power products and broad-based price inflation in the electrical equipment sector.

Import demand surges, but the EU’s traditional surplus has virtually disappeared

On the import side, value grew even faster – from €5.0 billion to €9.5 billion (+89.0 %) – while quantity advanced by 30.0 % and import unit prices rose 45.4 %. The combined effect was a collapse of the EU’s trade surplus, which fell from €957 million in 2015 to just €111 million in 2025, and even turned negative in some years. The lowest balance (–€1.16 billion) occurred in 2022, when import values peaked at €9.97 billion.

The COVID-19 pandemic and subsequent supply shocks catalysed price jumps

The most acute price anomalies hit specific bilateral routes. A price shock was detected for EU exports to Mexico centred in 2020, with an 83.3 % shift in unit price (abnormality score 92.3). On the import side, a dramatic 146.6 % price surge occurred for supplies from Viet Nam in 2022 (abnormality 22.5). These events, linked to pandemic-era logistics disruptions and component shortages, temporarily inflated costs even as quantities contracted. View shock events

2. Geopolitical Realignments Reshaping the Partner Map

The collapse of trade with Russia is the most dramatic single partner shift

EU exports to the Russian Federation fell from €244 million in 2015 to just €65 thousand in 2025 (practically –100 %), collapsing in the wake of sanctions imposed after 2022. At its peak in 2017, Russia had taken €465 million of EU exports; by 2023 it accounted for less than €10 million. The volatility of this flow (coefficient of variation 0.65) underscores the abruptness of the severance.

China solidifies its role as the principal supplier and a major customer

China dominates both flows. EU imports from China grew from €1.9 billion in 2015 to €4.0 billion in 2025 (+108.2 %), reaching 41.5 % of total extra-EU imports of CN 8501 in 2025. Exports to China increased by a more modest 38.1 %, from €886 million to €1,224 million. The import relationship exhibits low year-on-year quantity variability (CV 0.15), indicating a stable, high-volume sourcing channel. See top partners

Serbia’s rapid ascent points to nearshoring in the EU’s neighbourhood

Imports from Serbia surged from €163 million to €657 million (+303.1 %), the fastest relative growth among major partners. This likely reflects production relocation by European manufacturers to adjacent lower-cost locations. Vietnam (+91.9 %), the United States (+99.8 % imports; +107.4 % exports) and the Republic of Korea (+91.3 % imports) also recorded vigorous growth, reinforcing a multi-polar but China-centric landscape.

Partner (ranked by 2025 import value)	Imports 2015 (€M)	Imports 2025 (€M)	Change	Exports 2015 (€M)	Exports 2025 (€M)	Change
China	1,899	3,954	+108.2%	886	1,224	+38.1%
Serbia	163	657	+303.1%	–	–	–
United States	508	1,015	+99.8%	1,114	2,310	+107.4%
United Kingdom	232	354	+53.0%	506	843	+66.5%
Korea, Republic of	138	265	+91.3%	248	307	+24.0%

3. Production Specialisation and Concentration Dynamics Inside the EU

Central Europe has emerged as a specialised manufacturing cluster

At the member-state level, Hungary (RSCA 0.61, RCA 4.09), Slovenia (RSCA 0.39, RCA 2.26) and Czechia (RSCA 0.25, RCA 1.68) are the most specialised exporters of CN 8501 in 2025. Germany, the largest absolute exporter (€3.8 billion in 2025), also maintains a clear specialisation (RSCA 0.15). Meanwhile, Poland and Spain recorded the fastest import growth among major EU reporters (+196.7 % and +223.7 % respectively), signalling their role as assembly and re-export hubs rather than pure production specialists. View specialisation map

Import supply concentration has increased moderately, while export markets remain diversified

The Herfindahl-Hirschman Index (HHI) for extra-EU imports rose from 1,830 to 2,074 (+13.3 %), with a peak of 2,588 in 2022. This is still a moderately concentrated market, but China's growing share is the primary driver. Export market concentration is lower (HHI from 789 to 959) and, though it ticked upwards, remains well within a diversified range. See concentration data

Product segment composition highlights a division of labour

Low-power motors (≤37.5 W, code 850110) and DC motors/generators ≤750 W (850131) dominate EU imports, together accounting for about 45 % of import value in 2025. In contrast, multi-phase AC motors above 75 kW (850153) and medium-power AC motors (850152) lead exports, reflecting the EU's strengths in higher-power industrial motors and generators. Unit values rose across all major segments; for instance, the import price per unit of small motors (850110) climbed from €17,244 to €24,268, while export unit prices for large AC motors (850153) moved from €12,204 to €18,986, underscoring the broad-based price escalation described earlier. Explore product breakdown

Conclusion

Between 2015 and 2025, EU trade in electric motors and generators underwent a striking value surge that was almost entirely driven by higher unit prices rather than expanding physical volumes. The external trade position deteriorated from a comfortable surplus to near balance, as import values raced ahead. Geopolitically, the severance of ties with Russia and the deepening dependency on Chinese supply chains redefined the partner structure, while near-neighbour Serbia gained in importance. Inside the EU, a clear production specialisation pattern solidified in Central Europe, and imports became somewhat more concentrated. These dynamics point to a sector that is technologically upgrading but faces increasing import dependence and a need to monitor supply-chain resilience, particularly in its dominant sourcing relationship with China.

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