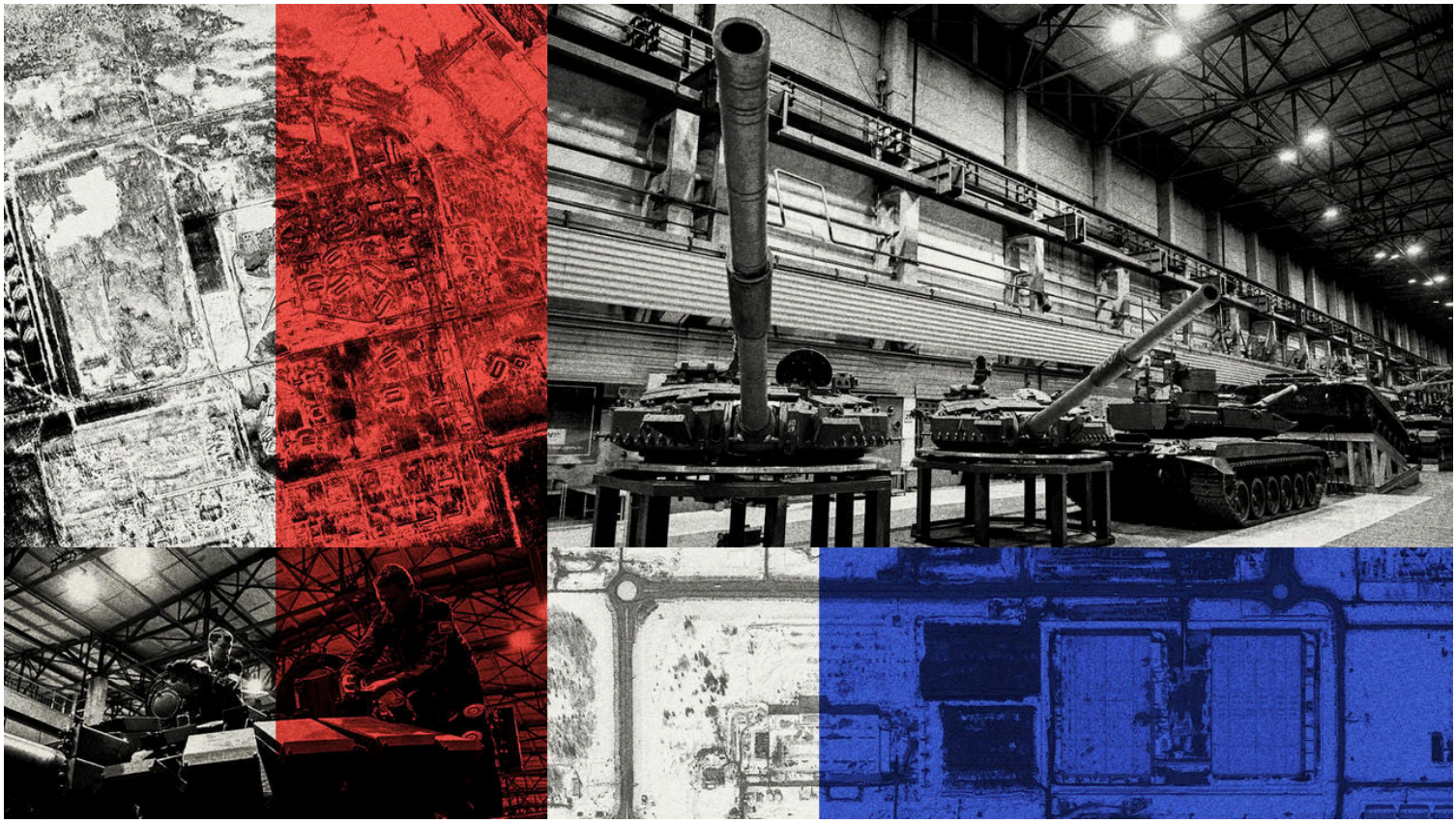
Briefing | Russia's military-industrial complex

A glimpse inside Putin's secret arms empire

The Economist tracks mobile signals to plot the Kremlin's build-up



May 8th 2025

GENERAL CHRIS CAVOLI, NATO's top commander, recently told the Senate Armed Services Committee that Russia was replacing troops, tanks and munitions "at an unprecedented pace". Its factories would roll out 1,500 tanks this year, compared with America's 135. It would produce 3,000 armoured vehicles; America produces no new infantry fighting vehicles. Russia would produce 250,000 shells per month, putting it "on track to build a stockpile three times greater than the United States and Europe combined".

To understand the scale of Russia's defence-industrial expansion, *The Economist* consulted a Western company which uses artificial intelligence to sift through data from a variety of mostly commercially available sources. This shows how the number of electronic devices, such as mobile phones, present at an industrial site has changed over time. The data capture only a fraction of total devices present—perhaps 2% to 10% of the number—but they serve as a proxy for the level of activity. The firm asked to remain anonymous owing to the sensitivity of the topic.

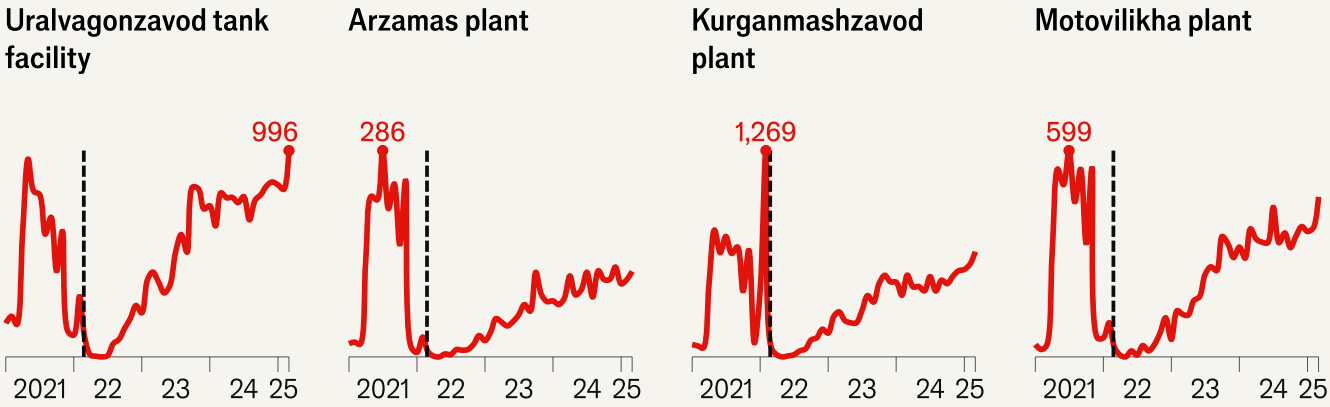
Consider Omsktransmash, or the Omsk tank plant, one of the largest tank factories in Russia. The facility takes old T-80 tanks, which were produced decades ago, and upgrades them, working around the clock.

The level of activity at Omsktransmash grew slightly prior to Russia's invasion of Ukraine in February 2022, before dropping.

But since the invasion, the number of people at the factory has climbed dramatically. The level of activity has remained particularly high since the middle of 2023, when the Kremlin realised that it would need to mobilise for a long war.

The same story can be seen across Russia's defence-industrial facilities.

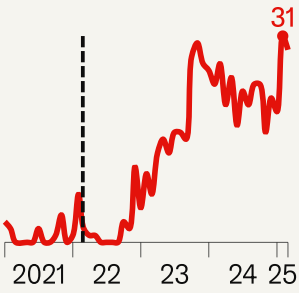
Vehicles



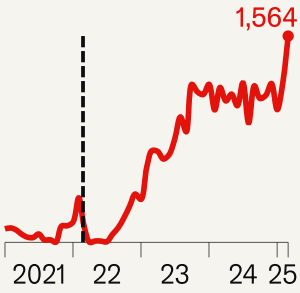
Uralvagonzavod, Russia's largest tank facility, saw significantly higher activity in 2024 than in 2023. The Arzamas plant, which produces armoured personnel carriers, and the Kurganmashzavod and Motovilikha plants, which make infantry fighting vehicles, are also booming.

Artillery

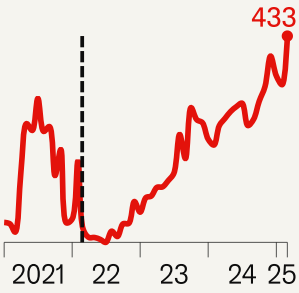
Yekaterinburg Factory No.9



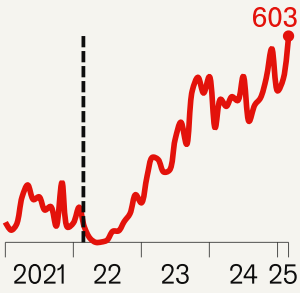
NPO Novator



Volgograd Titan-Barrikady



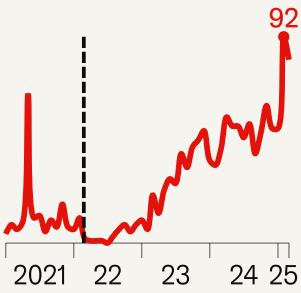
NPO Splav



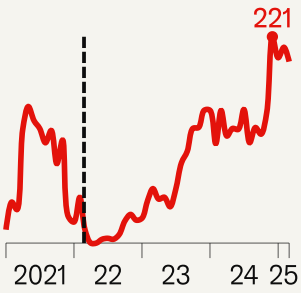
The Yekaterinburg Factory No.9 produces the barrels for howitzers and tanks. Artillery pieces and cannons can be seen parked in the open on satellite images. A few kilometres away lies NPO Novator, which develops Iskander ballistic missiles. There are also signs of strong growth at Volgograd Titan-Barrikady, where Iskander launch systems are built, and at NPO Splav in Tula, which makes Grad, Uragan and Smerch rockets.

Explosives

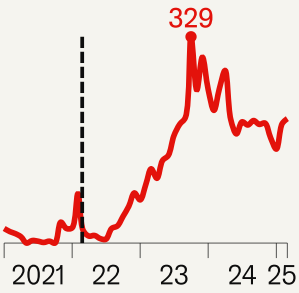
Sverdlov plant



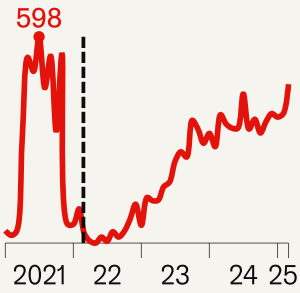
Selmash plant



Kazan gunpowder plant

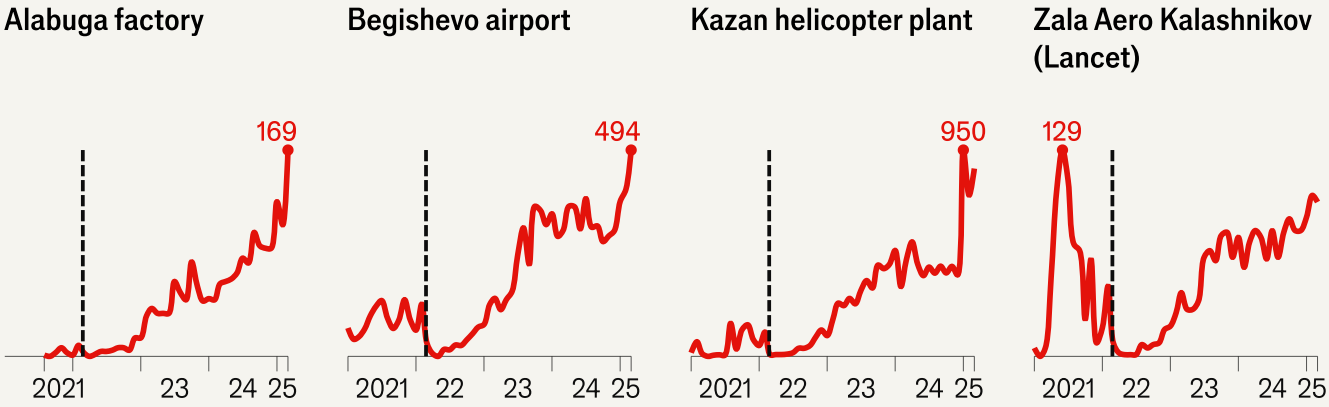


Perm gunpowder plant



Filling 3m shells per year requires prodigious amounts of explosives. The Sverdlov plant in Dzerzhinsk is Russia's largest explosives plant, producing chemicals for shells and glide bombs. The number of monthly devices there has shot up in recent months. Activity has also increased at the Selmash plant in Kirov, which makes casings for munitions, according to Julian Cooper of the University of Birmingham.

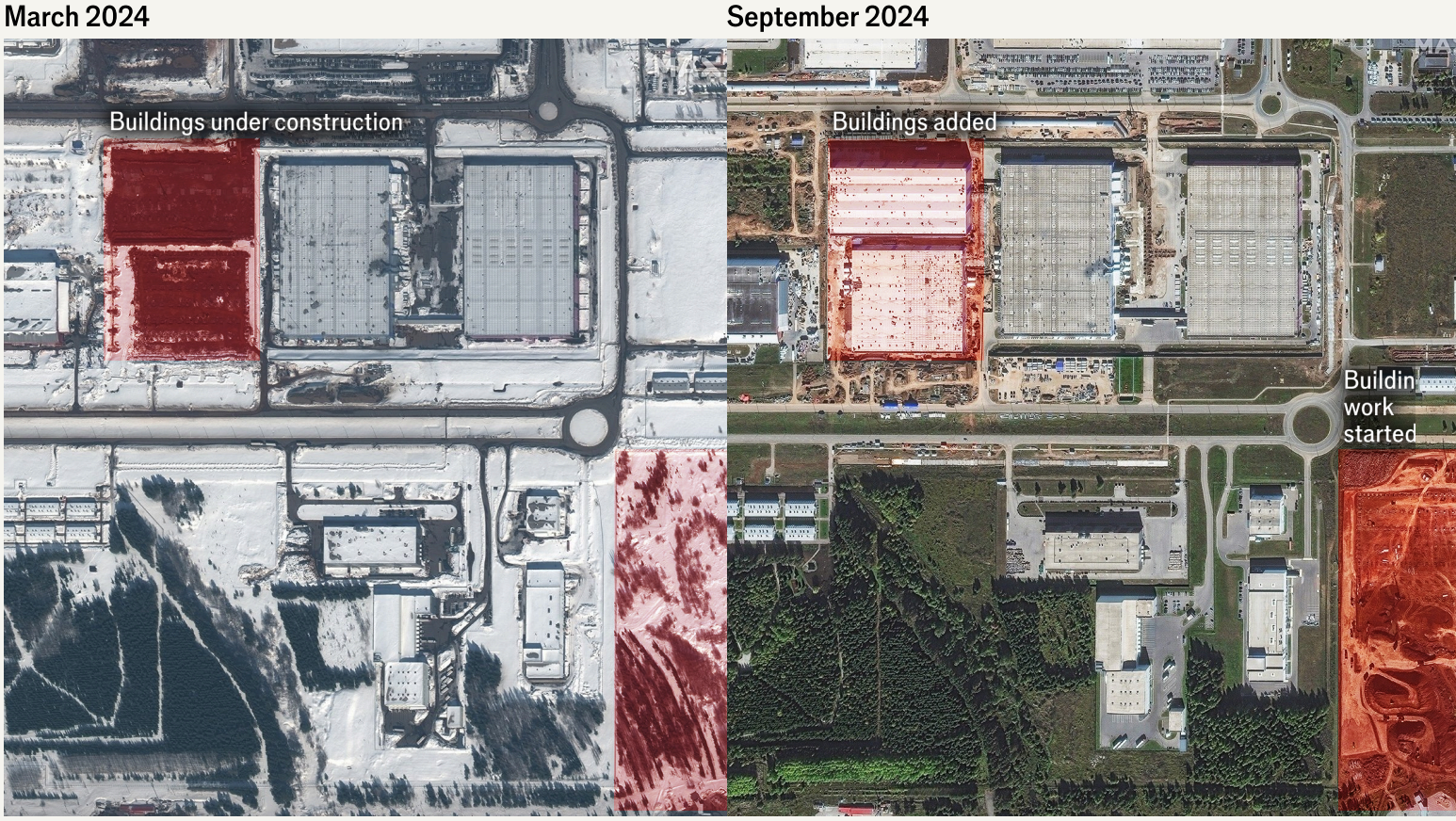
Aircraft



The Iranian-designed Shahed-136 suicide drone is an increasingly familiar sight in Ukraine's skies. There were almost 140 daily attacks in February, far above levels seen in 2024. That is consistent with rising activity at the Alabuga factory in Tatarstan, where the drones are made, as well as at Begishevo airport nearby.

The scale of recent construction work at Alabuga is apparent in photographs.

Alabuga drone plant



Satellite images ©2025 Maxar Technologies

These are not the only signs of Russia's hyperactive defence industry. *The Economist* has also seen a range of other indicators. In Biysk, for instance, home to an important plant that produces oleum, which is used in explosives, and a centre of military research, average daily traffic between dormitory areas and districts

with chemical plants rose 19% in 2023. "Dwell time"—how long people remain in one place—rose by 32% during periods associated with second and third working shifts.

Strava, an app which logs exercise, showed new clusters of running and cycling in areas near those plants, a sign that new workers had arrived in the area—which might also explain why housing rental costs grew by 21% a year.

Similar patterns can be seen at sites associated with Russia's planned expansion of military forces on NATO's borders. In Luga, for instance, where Russia began forming a new division last year, mobile-phone location data showed increases in population density around industrial zones, an increase in dwell time from 10pm to 6am, pointing to night shifts, and new commuter corridors between dormitories and military plants.

There are still constraints on Russian industry. Last year the country relied on North Korea to provide a significant proportion of artillery ammunition used in Ukraine; those stocks are not limitless. Key inputs to the artillery supply chain—chromite for barrels and cotton cellulose for propellant—still have to be imported, according to research by the Open Source Centre and the Royal United Services Institute (RUSI) in London. But Russia is now able to produce some important components at home.

"In principle, there would seem to be no reason why this mobilised defence effort cannot be maintained for quite a long period of time," writes Mr Cooper, in a recent study for the RUSI Journal which surveys many of the facilities discussed above. "It is not without irony," concludes Mr Cooper, "that advanced Western economies may now find the need to look closely at Russia to understand how to adapt." ■

This article appeared in the Briefing section of the print edition under the headline "Putin's secret arms empire"

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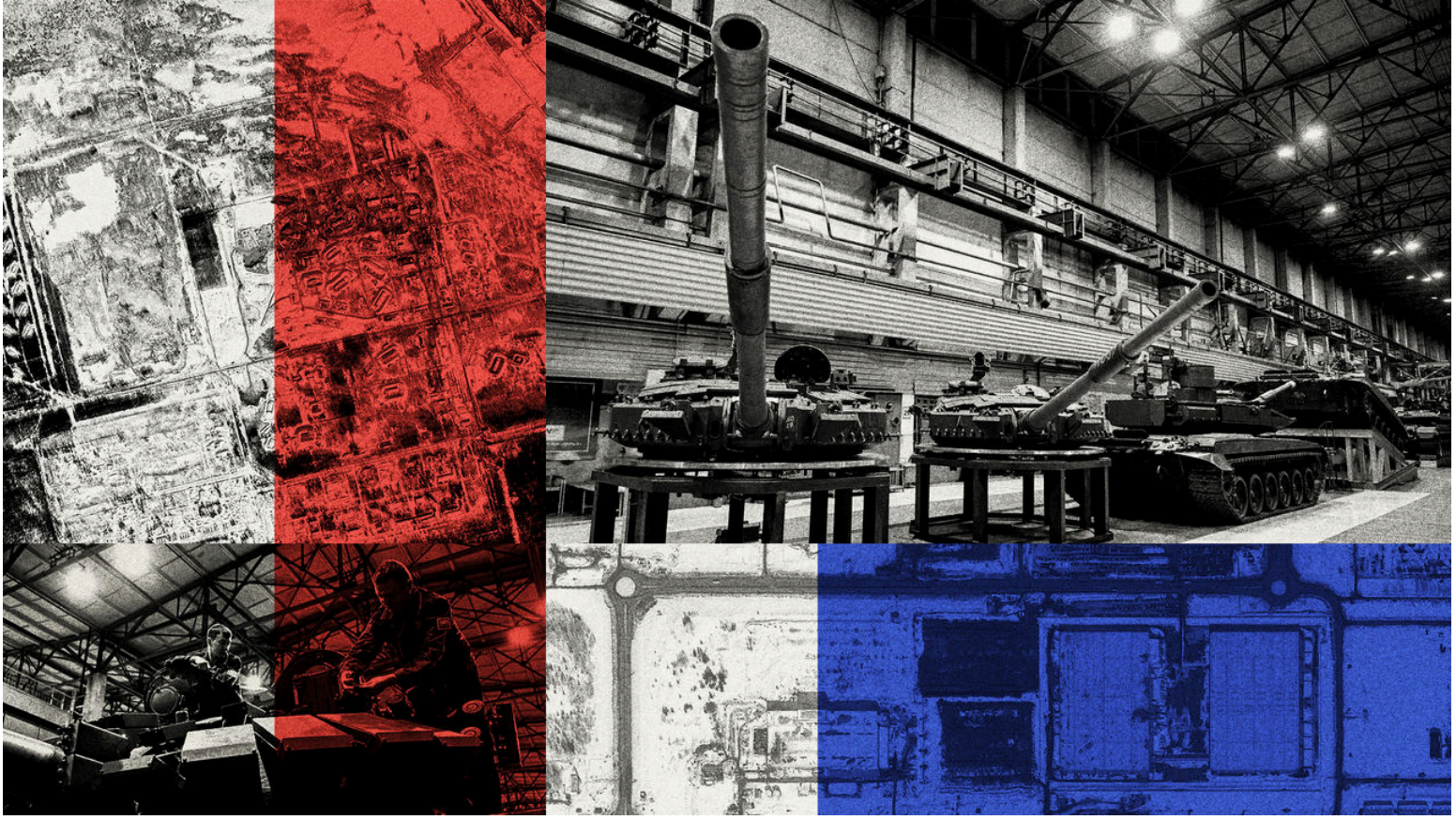

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