Source: *Railway Gazette International (from Tikhvin Foundry by V-Process)*

Economic Impact of Russian Petro-Rupee

A Qualitative Analysis

Opportunities for LFC & V-Process Foundries

ABSTRACT

This report underlines the growing trade relationship between India and Russia, emphasizing the potential for Indian foundries to offset the trade deficit through exports, like iron & steel castings. It suggests Indian foundries can leverage the global platform of GIFA 2023 by adopting economical moulding technologies such as Vacuum Process Castings and Vacuum assisted Lost Foam Casting, leading to global competitiveness and cost efficiency. This move could significantly influence the Petro-Rupee equation and benefit India's economic interests.

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Opportunities for LFC & V-Process Foundries

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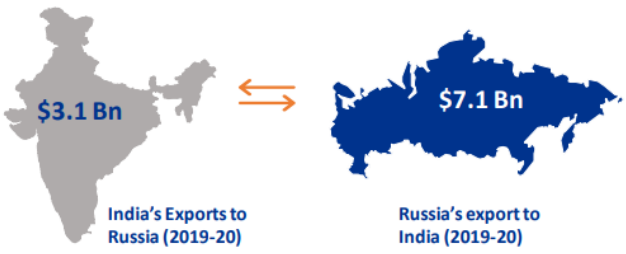
Riding the Waves of Russian Petro-Rupee

In the past year, Russia has emerged as a pivotal oil supplier to India, with a noteworthy slice of the trade transacted in Rupee. Owing to an uneven trade liaison, Russia finds itself accumulating an imposing INR 82.5 billion in Rupee assets monthly, according to a Bloomberg report. The first quarter revealed a staggering INR 1213 billion trade deficit for India with Russia, intensifying Russia's stockpile of INR 12.12 trillion stranded Rupee assets since the onset of the Ukraine war.

Interestingly, while the markets in the US and China exhibit a softened stance, engineering goods exports to Russia have rocketed eleven-fold to INR 11 million in April this year compared to the same period last year. This data from the Engineering Export Promotion Council of India outlines a flourishing avenue for engineering products such as copper and its derivatives, industrial boilers, IC engines, pumps and valves, air conditioning machinery, automobile parts, electrical machinery, and diverse construction machinery.



Casting, a dominant player in India's export portfolio, reaches over 189 nations. From April to November 2020-2021, India achieved an impressive export value of 933.899 USD million for casting alone. This balance surged manifold between 2022-2023, driven by crude oil purchases from Russia. Hence, we, the fraternity of foundrymen, need to rally swiftly and assertively to buttress the Government of India and safeguard the economic interests of our nation.

Diversifying Exports to Russia: The Road to Balancing Trade

What commodities are we shipping to Russia? The export palette is rich and varied. It encompasses axles, crankshafts, fasteners, pistons, power steering pump drive shafts, and a spectrum of iron & steel castings. The list further extends to oil pumps, valve springs, turbochargers, oil filters, spark plugs, ignition coils, seat belts, bumpers, welding materials, and bearings. Additionally, there's a range of sterilization equipment, a selection of active pharmaceutical ingredients (APIs), and fruit and vegetable concentrates.

The shifting production landscape in Russia, owing to the ongoing tensions with Ukraine, has sparked an elevated demand for Iron & Steel Castings in Russia and the Commonwealth of Independent States (CIS). In response, we, in India, have to bolster our export efforts to redress the Trade Deficits and the swelling Petro-Rupee reserve in Russia's account.

There are strategies at our disposal. One interim solution could be India converting the Indian Rupee into another currency, creating a pathway for Russia to leverage these funds for purchases from their ally nations. However, a more robust solution is to step up our exports to Russia, aiming to offset the trade deficit as significantly as possible. In this scenario, Indian foundries have a golden opportunity to engage more dynamically with Russian importers, carving a promising niche in the international market.

What can foundries export to Russia?

1. Railway Castings like Side-Frame Bolsters or the complete Casnub Assembly.
2. Railway castings & assemblies of Couplers, Brake Support, Disc Brakes etc
3. Railway castings like Manganese Steel Crossings & other track parts

4. Manganese Steel Castings, Wear Resistant & Heat Resistant Castings for PHE Engineering, Municipal incinerators, and other engineering services.
5. Pumps & Valves and their castings
6. Engine Blocks and complete automobile segment.
7. Castings and spare parts for Fire Fighting Equipment
8. Pipe & Pipe Fittings
9. Various other Engineering Castings
10. Non-Ferrous castings

Immense opportunity to balance the trade deficit by Indian Foundries.

Going Global: The Competitive Edge in the Foundry Sector

In the words of the Past President of the Indian Institute of Foundrymen, Mr. Devendra Jain, and the MD of Porwal Auto Components Ltd, Indian foundries should foster a culture of knowledge-sharing and embrace cutting-edge technologies. This synergy can position our foundries on the global competitive map. GIFA 2023 presents an excellent platform for a global launch, provided our foundries have adopted the most cost-effective molding technologies such as:

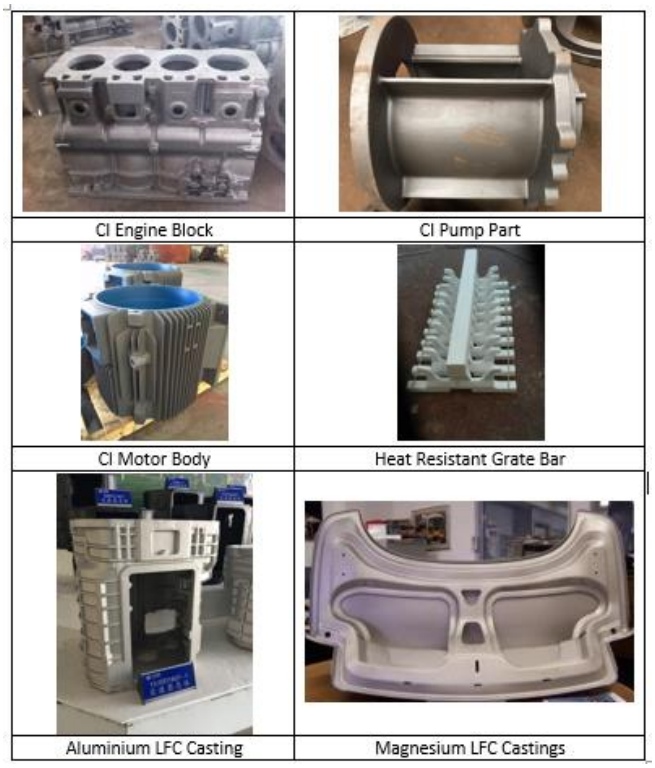
1. **Vacuum Process Castings (V-Process/VPC):** Ideal for steel, manganese steel castings, and Non-Ferrous Castings, especially in the Railway and other Engineering sectors.
2. **Vacuum Assisted Lost Foam Casting (v-LFC):** A highly versatile process suitable for Iron & Steel Castings.

The integration of these casting processes can propel your competitiveness on the global stage, potentially slashing 15-30% off your overall production costs. Additionally, this can lead to a reduction in inventory carrying costs and expedite delivery times.

How does v-LFC save your costs?

1. Most economical moulding process for 20 kg to 350 kg castings. Any size & shape weighing between 10-12 tons is also possible.
2. A kg of EPS (Expanded Polystyrene)/STMMA (styrene methyl-methacrylate) can produce 250-300 kg of casting.
3. Intricate parts can be cast
4. No Core, so no Core cost
5. No Rejections due to Core Shifting
6. No Fins so almost nil fettling
7. Faster Delivery, Satisfied Customers, Lesser Opportunity Cost.
8. Very good Surface Finish up to 200 RMS can be achieved, without big efforts, better surface finish up to 150 RMS can also be achieved.
9. Machining work minimized, 1.5-2 mm max at tool point.
10. Sand reused with only 2% wastage Steel, Ductile Iron & Grey Iron, Non-ferrous all can be cast very successfully.
11. Environmentally friendly and Pollution Free workshop.

v-LFC Process has been successfully adopted for Grey



Iron, Ductile Iron, Mn-Steel, Carbon Steel and recently expertise is being developed in special Alloy Steels too. Quite a few successful Aluminium Foundries by LFC are operating in China. Castings of Magnesium & Titanium Alloy castings is being practiced in Europe. One of our Indian Foundry is casting steel successfully for last 6 months to the tune of 50 ton/month achieving RT-Level-2.

How does V-Process Casting save your costs?

V-Process casting is not only for Counterweight but also adopted economically for other Railway & Engineering Castings.

Foundries which are into Railway Castings making Side Frames, Bolsters for Casnub Bogies, Coupler, CMS Crossings, Crushers parts like Cone Mantel, Track-Pads for crawlers should immediately target to reduce sand cost and shop-floor related pollution in their foundries.

Benefits of V-Process

1. Reduction in Sand Consumption 98%
2. No water, no binder and no additives in Sand
3. Cost reduction by about < 20%
4. Very Smooth Surface Finish 120 RMS
5. Excellent Dimensional Accuracy
6. Zero Draft
7. Thin Wall Sections Possible
8. Excellent Reproduction of Details
9. Increased Pattern Life (no wear of pattern)
10. Very Easy Knock-out, within no time.
11. No sand sticking or inclusion
12. No toxic fumes from burning the binders
13. Excellent sand permeability
14. Moisture related casting defects is zero.
15. Liquid Metal Yield increases.

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<tr><td>Mn-Steel Cone Mantel</td><td>Casnub Side Frame for Railways</td></tr>
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For techno-commercial discussions on vLFC & V-Process Moulding technology and turn-key projects, you can engage with our LFC/VPC pioneering expert and a partner at GDM Technics Mr. GD Mishra at steel@gdmtechnics.com

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