

## Diatech, Mumbai-Maharashtra, India - 2024

Diatech located at Virar, Maharashtra is a leading tool manufacturer for Gem polishing. Diatech has been offering the industry dynamic & innovative products since 1985.

*Independent Research Intern under Mr. Hiren Sanghavi Proprietor.*

During my time with Mr. Hiren & his team, I engaged with experts in gem cutting and polishing, seeking insights and knowledge to enhance the project. I also went for factory visits to observe the current processes and gain a deeper understanding of the challenges and opportunities in the field. Through these interactions and observations, we devised a method to improve the efficiency of the existing Scaife used in gem cutting and polishing.

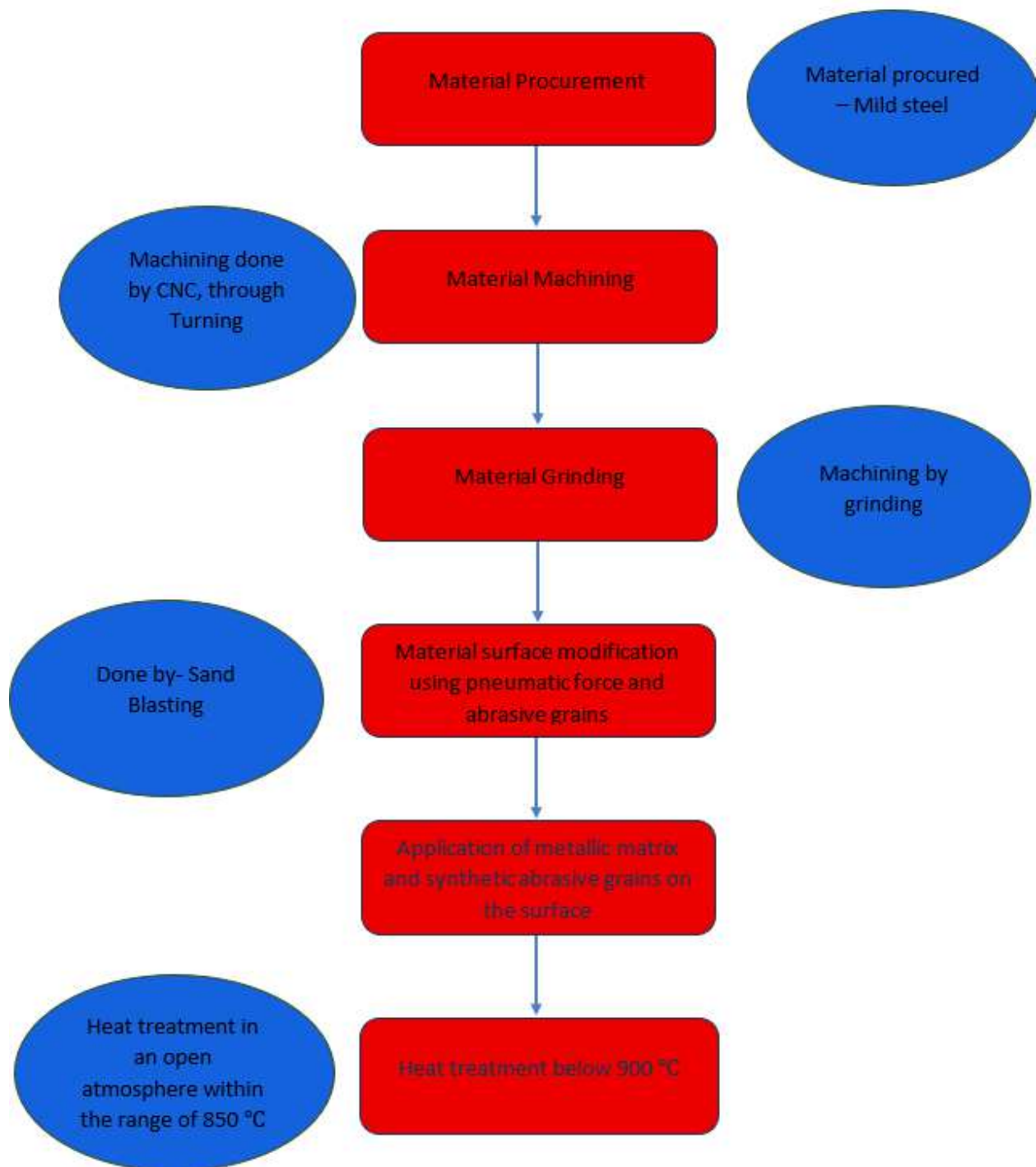
Our goal was to create a high-efficiency cutting and polishing horizontal Scaife that would not only surpass previous models in performance but also prioritize environmental benefits. In today's competitive world, where being lucrative and efficient is essential for survival, our project emphasized the importance of cost-effective solutions that also consider environmental impact.

To achieve our objectives, we conducted extensive testing and data gathering, comparing the results to those of previous models. Through this process, we developed a new flipping Scaife (Double Sided Disposable Scaife) that met our efficiency and environmental goals.

Looking ahead, company aims to improve the production method to minimize energy usage in activities such as heating, grinding, and blasting. This will not only enhance the efficiency of the Scaife but also align with the goal of creating an environmentally friendly product.

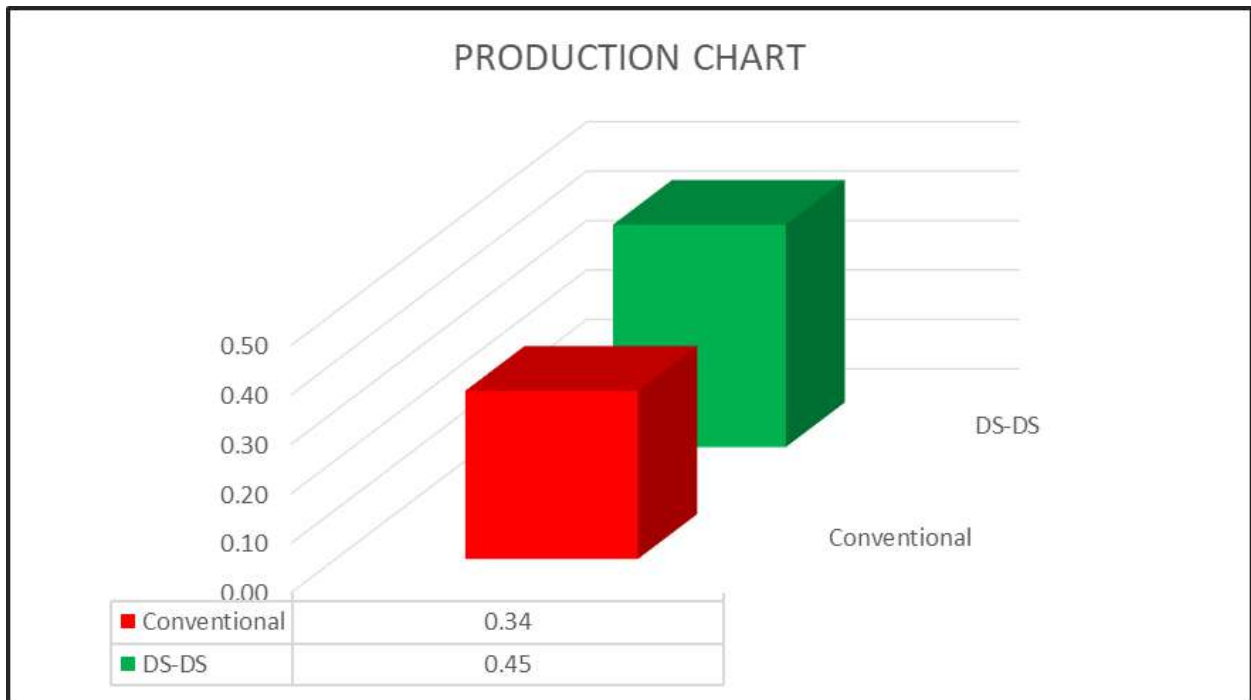
### *Preparation of the product.*

The project focuses on developing a highly efficient, environmentally friendly **Double-Sided Disposable Scaife** for gem cutting and polishing, designed to overcome inefficiencies in previous spindle arbor and motor shaft mounted models. Made from mild steel with synthetic diamond-based abrasive grains bonded through a thermal process, the scaife enhances operational efficiency by eliminating the need for maintenance or regrinding, while also reducing production costs and waste. Its recyclability promotes sustainability, aligning with global environmental regulations, especially in markets like Africa, Russia, Sri Lanka, and Thailand, making it both profitable and eco-conscious. This innovative tool offers improved product quality, consistency, and resource optimization, setting new standards in manufacturing practices.



## Analysis : Conventional Scaife ↔ DS-DS Scaife

Scaife Type	Conventional			DS-DS			Difference
Stress Level	None-Medium	High-Very High	Total Carats/Hour	None-Medium	High-Very High	Total Carats/Hour	
Weight loss/Hour	0.24	0.10	0.34	0.32	0.13	0.45	32.4%
Impact on Production	Production Increased By 32.4% On DS-DS Compared To Conventional Scaife						



## Analysis : Conventional Scaife ↔ DS-DS Scaife

Scaife Type	Conventional	DS-DS
Breakage Value In %	-0.11%	-0.06%
Impact Of Breakage In Stones	Breakage Reduced By 45.45% On DS-DS Compared To Conventional Scaife	

