

# **Global Vacuum Inert Gas Atomization (VIGA) Processing Technology Market 2024 by Manufacturers, Regions, Type and Application, Forecast to 2030**

<https://marketpublishers.com/r/G4B6E357E49CEN.html>

Date: January 2024

Pages: 114

Price: US\$ 3,480.00 (Single User License)

ID: G4B6E357E49CEN

## **Abstracts**

According to our (Global Info Research) latest study, the global Vacuum Inert Gas Atomization (VIGA) Processing Technology market size was valued at USD 73 million in 2023 and is forecast to a readjusted size of USD 175.5 million by 2030 with a CAGR of 13.4% during review period.

Vacuum induction melting and inert gas atomization is the leading process for production of a variety of high-performance metal powders and essential for quality manufacturing of Ni-based super-alloys as well as Fe-, Co-, Cr-based and other special alloy powders. In the VIGA system, a vacuum induction melting unit is integrated with an inert gas atomization unit. The starting materials are melted using electromagnetic induction which couples electrical power into the crucible/material under vacuum or in an inert gas atmosphere. Once the desired melt homogeneity and chemical composition have been achieved, the material is poured into a tundish by crucible tilting. The fine metal stream flowing from the tundish orifice into the atomization nozzle system is subject to a high-pressure, inert-gas jet and then atomized. The combination of molten metal and gas jet creates a spray of micro-droplets that solidifies in the atomization tower and forms fine powder with spherical shape.

VIGA is where the melting and pouring of the alloy prior to atomisation is carried out in a vacuum chamber, to allow the production of the most oxidation-sensitive and reactive alloys, especially Fe-, Ni- and Co-based alloys containing Al, titanium and rare earths. This includes 'superalloys' such as IN718, maraging steels and M-Cr-Al-Y alloys. This technique was developed from the 1950s and 1960s when there was a push to explore

the potential benefits of rapid solidification (RS) to allow the production of more highly alloyed superalloys for aerospace and defence applications. This proved to be a very challenging field of application but, after several decades of development, is now absorbing many thousands of tonnes per year of VIGA-produced superalloy powders. This intensive development has meant that the technology lends itself well to producing powders for HIP, MIM and AM. Oxygen contents in the 50–200 ppm range are achievable. Particle shape is, again, spherical with mis-shapes. Particle sizes are as for IGA.

By 1940, air atomisation was a well-established process for the production of zinc, aluminium, and probably also copper/brass/bronze powders. During World War Two, German engineers applied it to pig iron for iron powder production using the RZ process (Roheisen Zunder-Verfahren or 'pig iron ignition process'). In the 1950s, W D Jones in the UK worked on inert gas atomisation as well as water atomisation and, by the 1960s, plants were being built for thermal spray alloy powder production of the NiCrBSi self-fluxing type. The development of Powder Metallurgy of high alloys and the concept of Rapid Solidification (RS) for refinement of microstructures led to the construction in Sweden of inert gas atomisers for tool steels, which went commercial on a 1–2 t scale in the 1970s. At the same time, the US government invested heavily in R&D on RS superalloys for aerospace and the first Vacuum Inert Gas Atomiser (VIGA) units were constructed with 100–300 kg capacity.

Since then, the use of inert gas atomisation (IGA) with air melting, as well as VIGA, has become widespread in use for thermal spray powders, PM superalloys, AM powders, and MIM powders. VIGA production of superalloy powders in the US alone now amounts to something in the order of 10–20 kt/year.

Inert gas atomisation is the method of choice for more demanding applications, such as MIM, AM, HIP, HVOF, brazing pastes, etc. Nitrogen is the most economic option, but argon is also used on reactive alloys like superalloys and titanium. Helium is used mostly in the production of aluminium and magnesium powders, but there is currently a huge incentive to switch to argon due to the unstable supply and high cost of helium. Total installed capacity of IGA and VIGA probably approaches 100 kt/ year, with large numbers of plants in different countries and industries. They range from tiny plants for a few kgs of precious metal brazing alloy to 3 t/h continuous plants for tool steel production. The fact that they are mostly processing relatively valuable metals and alloys (high value-added, large margin applications) makes small, local, plants economically feasible as opposed to iron powder plants, where low cost and economy of scale is imperative.

Global 5 largest manufacturers of Vacuum Inert Gas Atomization (VIGA) Processing Technology are ALD, PSI, Arcast, Consarc and ACME, which make up about 80%. Among them, ALD is the leader with about 25% market share.

Americas is the largest market, with a share about 45%, followed by Europe and Asia-Pacific, with share about 30% and 23%. In terms of product type, Medium VIGA Systems (50~250 kg) occupy the largest share of the total market, about 69%. And in terms of product application, the largest application is Metal Powder Manufacturer, followed by Universities and Research Institutes.

The Global Info Research report includes an overview of the development of the Vacuum Inert Gas Atomization (VIGA) Processing Technology industry chain, the market status of Metal Powder Manufacturer (Small VIGA Systems (

## Contents

### 1 MARKET OVERVIEW

1.1 Product Overview and Scope of Vacuum Inert Gas Atomization (VIGA) Processing Technology

1.2 Market Estimation Caveats and Base Year

1.3 Market Analysis by Type

1.3.1 Overview: Global Vacuum Inert Gas Atomization (VIGA) Processing Technology Consumption Value by Type: 2019 Versus 2023 Versus 2030

1.3.2 Small VIGA Systems (

## List Of Tables

### LIST OF TABLES

- Table 1. Global Vacuum Inert Gas Atomization (VIGA) Processing Technology Consumption Value by Type, (USD Million), 2019 & 2023 & 2030
- Table 2. Global Vacuum Inert Gas Atomization (VIGA) Processing Technology Consumption Value by Application, (USD Million), 2019 & 2023 & 2030
- Table 3. ALD Basic Information, Manufacturing Base and Competitors
- Table 4. ALD Major Business
- Table 5. ALD Vacuum Inert Gas Atomization (VIGA) Processing Technology Product and Services
- Table 6. ALD Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity (Units), Average Price (K US\$/Unit), Revenue (USD Million), Gross Margin and Market Share (2019-2024)
- Table 7. ALD Recent Developments/Updates
- Table 8. Consarc Basic Information, Manufacturing Base and Competitors
- Table 9. Consarc Major Business
- Table 10. Consarc Vacuum Inert Gas Atomization (VIGA) Processing Technology Product and Services
- Table 11. Consarc Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity (Units), Average Price (K US\$/Unit), Revenue (USD Million), Gross Margin and Market Share (2019-2024)
- Table 12. Consarc Recent Developments/Updates
- Table 13. PSI Basic Information, Manufacturing Base and Competitors
- Table 14. PSI Major Business
- Table 15. PSI Vacuum Inert Gas Atomization (VIGA) Processing Technology Product and Services
- Table 16. PSI Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity (Units), Average Price (K US\$/Unit), Revenue (USD Million), Gross Margin and Market Share (2019-2024)
- Table 17. PSI Recent Developments/Updates
- Table 18. SMS Group Basic Information, Manufacturing Base and Competitors
- Table 19. SMS Group Major Business
- Table 20. SMS Group Vacuum Inert Gas Atomization (VIGA) Processing Technology Product and Services
- Table 21. SMS Group Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity (Units), Average Price (K US\$/Unit), Revenue (USD Million), Gross Margin and Market Share (2019-2024)

- Table 22. SMS Group Recent Developments/Updates
- Table 23. Arcast Basic Information, Manufacturing Base and Competitors
- Table 24. Arcast Major Business
- Table 25. Arcast Vacuum Inert Gas Atomization (VIGA) Processing Technology Product and Services
- Table 26. Arcast Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity (Units), Average Price (K US\$/Unit), Revenue (USD Million), Gross Margin and Market Share (2019-2024)
- Table 27. Arcast Recent Developments/Updates
- Table 28. Topcast Basic Information, Manufacturing Base and Competitors
- Table 29. Topcast Major Business
- Table 30. Topcast Vacuum Inert Gas Atomization (VIGA) Processing Technology Product and Services
- Table 31. Topcast Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity (Units), Average Price (K US\$/Unit), Revenue (USD Million), Gross Margin and Market Share (2019-2024)
- Table 32. Topcast Recent Developments/Updates
- Table 33. Avimetal Basic Information, Manufacturing Base and Competitors
- Table 34. Avimetal Major Business
- Table 35. Avimetal Vacuum Inert Gas Atomization (VIGA) Processing Technology Product and Services
- Table 36. Avimetal Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity (Units), Average Price (K US\$/Unit), Revenue (USD Million), Gross Margin and Market Share (2019-2024)
- Table 37. Avimetal Recent Developments/Updates
- Table 38. VMP Basic Information, Manufacturing Base and Competitors
- Table 39. VMP Major Business
- Table 40. VMP Vacuum Inert Gas Atomization (VIGA) Processing Technology Product and Services
- Table 41. VMP Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity (Units), Average Price (K US\$/Unit), Revenue (USD Million), Gross Margin and Market Share (2019-2024)
- Table 42. VMP Recent Developments/Updates
- Table 43. ACME Basic Information, Manufacturing Base and Competitors
- Table 44. ACME Major Business
- Table 45. ACME Vacuum Inert Gas Atomization (VIGA) Processing Technology Product and Services
- Table 46. ACME Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity (Units), Average Price (K US\$/Unit), Revenue (USD Million), Gross Margin and



Market Share (2019-2024)

Table 47. ACME Recent Developments/Updates

Table 48. Zhuzhou ShuangLing Basic Information, Manufacturing Base and Competitors

Table 49. Zhuzhou ShuangLing Major Business

Table 50. Zhuzhou ShuangLing Vacuum Inert Gas Atomization (VIGA) Processing Technology Product and Services

Table 51. Zhuzhou ShuangLing Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity (Units), Average Price (K US\$/Unit), Revenue (USD Million), Gross Margin and Market Share (2019-2024)

Table 52. Zhuzhou ShuangLing Recent Developments/Updates

Table 53. Hunan Skyline Basic Information, Manufacturing Base and Competitors

Table 54. Hunan Skyline Major Business

Table 55. Hunan Skyline Vacuum Inert Gas Atomization (VIGA) Processing Technology Product and Services

Table 56. Hunan Skyline Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity (Units), Average Price (K US\$/Unit), Revenue (USD Million), Gross Margin and Market Share (2019-2024)

Table 57. Hunan Skyline Recent Developments/Updates

Table 58. Zhuzhou Hanhe Basic Information, Manufacturing Base and Competitors

Table 59. Zhuzhou Hanhe Major Business

Table 60. Zhuzhou Hanhe Vacuum Inert Gas Atomization (VIGA) Processing Technology Product and Services

Table 61. Zhuzhou Hanhe Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity (Units), Average Price (K US\$/Unit), Revenue (USD Million), Gross Margin and Market Share (2019-2024)

Table 62. Zhuzhou Hanhe Recent Developments/Updates

Table 63. Global Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity by Manufacturer (2019-2024) & (Units)

Table 64. Global Vacuum Inert Gas Atomization (VIGA) Processing Technology Revenue by Manufacturer (2019-2024) & (USD Million)

Table 65. Global Vacuum Inert Gas Atomization (VIGA) Processing Technology Average Price by Manufacturer (2019-2024) & (K US\$/Unit)

Table 66. Market Position of Manufacturers in Vacuum Inert Gas Atomization (VIGA) Processing Technology, (Tier 1, Tier 2, and Tier 3), Based on Consumption Value in 2023

Table 67. Head Office and Vacuum Inert Gas Atomization (VIGA) Processing Technology Production Site of Key Manufacturer

Table 68. Vacuum Inert Gas Atomization (VIGA) Processing Technology Market:

**Company Product Type Footprint**

Table 69. Vacuum Inert Gas Atomization (VIGA) Processing Technology Market:

**Company Product Application Footprint**

Table 70. Vacuum Inert Gas Atomization (VIGA) Processing Technology New Market Entrants and Barriers to Market Entry

Table 71. Vacuum Inert Gas Atomization (VIGA) Processing Technology Mergers, Acquisition, Agreements, and Collaborations

Table 72. Global Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity by Region (2019-2024) &amp; (Units)

Table 73. Global Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity by Region (2025-2030) &amp; (Units)

Table 74. Global Vacuum Inert Gas Atomization (VIGA) Processing Technology Consumption Value by Region (2019-2024) &amp; (USD Million)

Table 75. Global Vacuum Inert Gas Atomization (VIGA) Processing Technology Consumption Value by Region (2025-2030) &amp; (USD Million)

Table 76. Global Vacuum Inert Gas Atomization (VIGA) Processing Technology Average Price by Region (2019-2024) &amp; (K US\$/Unit)

Table 77. Global Vacuum Inert Gas Atomization (VIGA) Processing Technology Average Price by Region (2025-2030) &amp; (K US\$/Unit)

Table 78. Global Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity by Type (2019-2024) &amp; (Units)

Table 79. Global Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity by Type (2025-2030) &amp; (Units)

Table 80. Global Vacuum Inert Gas Atomization (VIGA) Processing Technology Consumption Value by Type (2019-2024) &amp; (USD Million)

Table 81. Global Vacuum Inert Gas Atomization (VIGA) Processing Technology Consumption Value by Type (2025-2030) &amp; (USD Million)

Table 82. Global Vacuum Inert Gas Atomization (VIGA) Processing Technology Average Price by Type (2019-2024) &amp; (K US\$/Unit)

Table 83. Global Vacuum Inert Gas Atomization (VIGA) Processing Technology Average Price by Type (2025-2030) &amp; (K US\$/Unit)

Table 84. Global Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity by Application (2019-2024) &amp; (Units)

Table 85. Global Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity by Application (2025-2030) &amp; (Units)

Table 86. Global Vacuum Inert Gas Atomization (VIGA) Processing Technology Consumption Value by Application (2019-2024) &amp; (USD Million)

Table 87. Global Vacuum Inert Gas Atomization (VIGA) Processing Technology Consumption Value by Application (2025-2030) &amp; (USD Million)



Table 88. Global Vacuum Inert Gas Atomization (VIGA) Processing Technology Average Price by Application (2019-2024) & (K US\$/Unit)

Table 89. Global Vacuum Inert Gas Atomization (VIGA) Processing Technology Average Price by Application (2025-2030) & (K US\$/Unit)

Table 90. North America Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity by Type (2019-2024) & (Units)

Table 91. North America Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity by Type (2025-2030) & (Units)

Table 92. North America Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity by Application (2019-2024) & (Units)

Table 93. North America Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity by Application (2025-2030) & (Units)

Table 94. North America Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity by Country (2019-2024) & (Units)

Table 95. North America Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity by Country (2025-2030) & (Units)

Table 96. North America Vacuum Inert Gas Atomization (VIGA) Processing Technology Consumption Value by Country (2019-2024) & (USD Million)

Table 97. North America Vacuum Inert Gas Atomization (VIGA) Processing Technology Consumption Value by Country (2025-2030) & (USD Million)

Table 98. Europe Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity by Type (2019-2024) & (Units)

Table 99. Europe Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity by Type (2025-2030) & (Units)

Table 100. Europe Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity by Application (2019-2024) & (Units)

Table 101. Europe Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity by Application (2025-2030) & (Units)

Table 102. Europe Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity by Country (2019-2024) & (Units)

Table 103. Europe Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity by Country (2025-2030) & (Units)

Table 104. Europe Vacuum Inert Gas Atomization (VIGA) Processing Technology Consumption Value by Country (2019-2024) & (USD Million)

Table 105. Europe Vacuum Inert Gas Atomization (VIGA) Processing Technology Consumption Value by Country (2025-2030) & (USD Million)

Table 106. Asia-Pacific Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity by Type (2019-2024) & (Units)

Table 107. Asia-Pacific Vacuum Inert Gas Atomization (VIGA) Processing Technology

Sales Quantity by Type (2025-2030) & (Units)

Table 108. Asia-Pacific Vacuum Inert Gas Atomization (VIGA) Processing Technology

Sales Quantity by Application (2019-2024) & (Units)

Table 109. Asia-Pacific Vacuum Inert Gas Atomization (VIGA) Processing Technology

Sales Quantity by Application (2025-2030) & (Units)

Table 110. Asia-Pacific Vacuum Inert Gas Atomization (VIGA) Processing Technology

Sales Quantity by Region (2019-2024) & (Units)

Table 111. Asia-Pacific Vacuum Inert Gas Atomization (VIGA) Processing Technology

Sales Quantity by Region (2025-2030) & (Units)

Table 112. Asia-Pacific Vacuum Inert Gas Atomization (VIGA) Processing Technology

Consumption Value by Region (2019-2024) & (USD Million)

Table 113. Asia-Pacific Vacuum Inert Gas Atomization (VIGA) Processing Technology

Consumption Value by Region (2025-2030) & (USD Million)

Table 114. South America Vacuum Inert Gas Atomization (VIGA) Processing

Technology Sales Quantity by Type (2019-2024) & (Units)

Table 115. South America Vacuum Inert Gas Atomization (VIGA) Processing

Technology Sales Quantity by Type (2025-2030) & (Units)

Table 116. South America Vacuum Inert Gas Atomization (VIGA) Processing

Technology Sales Quantity by Application (2019-2024) & (Units)

Table 117. South America Vacuum Inert Gas Atomization (VIGA) Processing

Technology Sales Quantity by Application (2025-2030) & (Units)

Table 118. South America Vacuum Inert Gas Atomization (VIGA) Processing

Technology Sales Quantity by Country (2019-2024) & (Units)

Table 119. South America Vacuum Inert Gas Atomization (VIGA) Processing

Technology Sales Quantity by Country (2025-2030) & (Units)

Table 120. South America Vacuum Inert Gas Atomization (VIGA) Processing

Technology Consumption Value by Country (2019-2024) & (USD Million)

Table 121. South America Vacuum Inert Gas Atomization (VIGA) Processing

Technology Consumption Value by Country (2025-2030) & (USD Million)

Table 122. Middle East & Africa Vacuum Inert Gas Atomization (VIGA) Processing

Technology Sales Quantity by Type (2019-2024) & (Units)

Table 123. Middle East & Africa Vacuum Inert Gas Atomization (VIGA) Processing

Technology Sales Quantity by Type (2025-2030) & (Units)

Table 124. Middle East & Africa Vacuum Inert Gas Atomization (VIGA) Processing

Technology Sales Quantity by Application (2019-2024) & (Units)

Table 125. Middle East & Africa Vacuum Inert Gas Atomization (VIGA) Processing

Technology Sales Quantity by Application (2025-2030) & (Units)

Table 126. Middle East & Africa Vacuum Inert Gas Atomization (VIGA) Processing

Technology Sales Quantity by Region (2019-2024) & (Units)

Table 127. Middle East & Africa Vacuum Inert Gas Atomization (VIGA) Processing Technology Sales Quantity by Region (2025-2030) & (Units)

Table 128. Middle East & Africa Vacuum Inert Gas Atomization (VIGA) Processing Technology Consumption Value by Region (2019-2024) & (USD Million)

Table 129. Middle East & Africa Vacuum Inert Gas Atomization (VIGA) Processing Technology Consumption Value by Region (2025-2030) & (USD Million)

Table 130. Vacuum Inert Gas Atomization (VIGA) Processing Technology Raw Material

Table 131. Key Manufacturers of Vacuum Inert Gas Atomization (VIGA) Processing Technology Raw Materials

Table 132. Vacuum Inert Gas Atomization (VIGA) Processing Technology Typical Distributors

Table 133. Vacuum Inert Gas Atomization (VIGA) Processing Technology Typical Customers

## List Of Figures

### LIST OF FIGURES

Figure 1. Vacuum Inert Gas Atomization (VIGA) Processing Technology Picture

Figure 2. Global Vacuum Inert Gas Atomization (VIGA) Processing Technology Consumption Value by Type, (USD Million), 2019 & 2023 & 2030

Figure 3. Global Vacuum Inert Gas Atomization (VIGA) Processing Technology Consumption Value Market Share by Type in 2023

Figure 4. Small VIGA Systems (

## I would like to order

Product name: Global Vacuum Inert Gas Atomization (VIGA) Processing Technology Market 2024 by Manufacturers, Regions, Type and Application, Forecast to 2030

Product link: <https://marketpublishers.com/r/G4B6E357E49CEN.html>

Price: US\$ 3,480.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

[info@marketpublishers.com](mailto:info@marketpublishers.com)

## Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/G4B6E357E49CEN.html>

To pay by Wire Transfer, please, fill in your contact details in the form below:

First name:  
Last name:  
Email:  
Company:  
Address:  
City:  
Zip code:  
Country:  
Tel:  
Fax:  
Your message:

**\*\*All fields are required**

Customer signature \_\_\_\_\_

Please, note that by ordering from marketpublishers.com you are agreeing to our Terms & Conditions at <https://marketpublishers.com/docs/terms.html>

To place an order via fax simply print this form, fill in the information below and fax the completed form to +44 20 7900 3970

