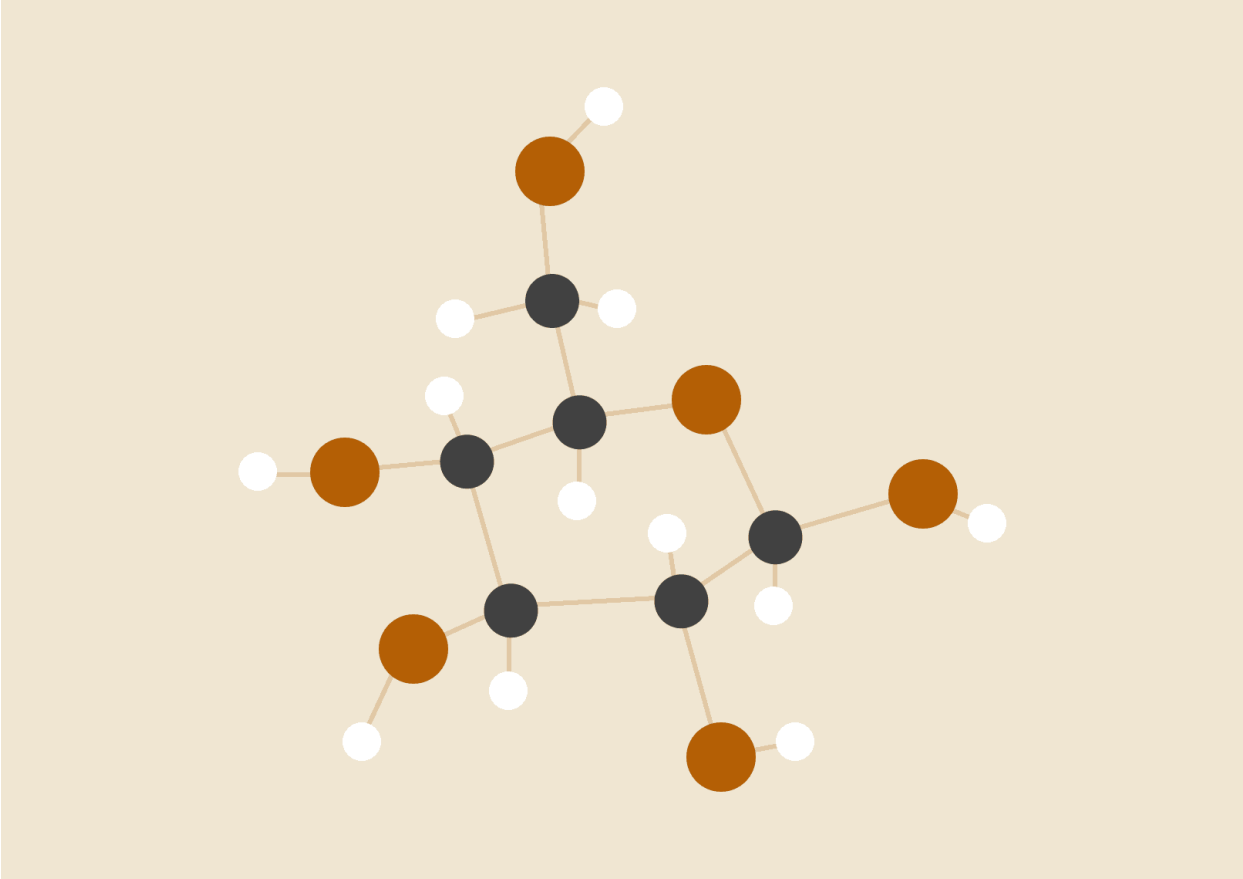
Low Cost Aerospace Manufacturing

Exploring near shore opportunities in Aerospace and Drone contracting



Adrian English - Project Advocate

Avionicle LLC - Defence Contract Management Services
South American Markets

INTRODUCTION

Allied defense departments are well supplied with high tech equipment by established defence contractors, however we see a niche market for low cost light manufacturing in South America, particularly Colombia with its excellent geographical access to both Pacific and Atlantic oceans. Colombia has a significant workforce capacity with relevant skill sets in metal working and compact engines, with very competitive cost levels. Colombia has well established defense and commercial relationships amongst Allied nations and could be a diversified location for nearshore manufacturing or maintenance of drone or light aviation assets.

With most of Colombia just 3 to 4 hours flight time from the mainland US, it is a close neighbor with significant capacity and potential in the light manufacturing space. Within Colombia, the state of Valle del Cauca presents a unique and attractive combination of factors that could support light aerospace manufacturing. Valle del Cauca has many smaller scale airports and landing strips that are away from general aviation with ample space for hangars and ground assembly. Valle del Cauca enjoys excellent access to the Pacific via the port of Buenaventura and already has an existing ecosystem of light manufacturing enterprises. The state is commercial and business oriented and is also surrounded by significant manufacturing bases in nearby cities like Pereira, Manizales and Armenia. While Medellin is also an excellent source of suppliers for aerospace manufacturing, the mountainous location of the city doesn't allow for many smaller airports and landing strips similar to what is encountered in Valle del Cauca.

Valle del Cauca already has some established light aviation industry with flight schools, commercial transport, and agricultural spraying operations. However what really stands out are the wealth of facilities, open airspace, and a valley full of landing strips that could support light aviation contractors, entrepreneurs and startups. We provide further detail in this report about potential opportunities for defence contractors to enter this market and potentially benefit from nearshore light manufacturing abilities.

IRAN AND THE COST FACTOR IN AEROSPACE MANUFACTURING

If the complex question of defence is, for a moment, simplified into two main questions.

Capacity and capability. Allied nations are well placed when capability is measured with significant technological edge in most if not all areas. However the question of capacity is a little more nuanced as it relates to both facilities for production and the comparative costs to undertake the work. While there is a well established and well developed military industrial base, its leading edge nature has resulted in large overhead costs and high workforce costs. This suggests that the existing base is more adapted to producing the most advanced (and expensive) defence assets. It also leaves space within the allied industrial base to explore new avenues for low cost manufacturing, if there is to be parity with other powers in the world that have access to production output from lower cost nations such as Iran.

During the Ukraine conflict, Iran has emerged as a key producer of light aviation assets and by several accounts they have been able to produce Russian designed assets for half to a quarter of the original cost. For example the Shahed 136 Drone, originally priced at around $200,000 has been rumored to have been produced at a unit cost as low as $50,000 by Iran during the Ukrainian conflict. IF competing powers are able to acquire defense assets at half to a quarter of usual cost this presents a significant capacity advantage that allied nations currently lack. Where is America's Iran? Where can allied defense assets be assembled for less than half of their usual cost when capacity needs a boost? We propose that South America, particularly Colombia, could be a location for low cost assembly of light aerospace assets. We explore in further detail below why large defence enterprises and allied defence departments may wish to consider expanding their presence in Colombia to position themselves for lower cost and geographically diversified manufacturing of aviation assets into the future.

MATERIAL OPPORTUNITIES IN COLOMBIA

1. Airports, Hangar Space, Shipping and Freeways
2. Geographical Advantages, Logistical Proximity, Political Cooperation
3. Compact Engine Manufacturing and Maintenance Capacity
4. Cost Advantages, Favorable Tariff Environment
5. Workforce Skills, Education and Training Organisations
6. Enterprise Zones and Industry Ecosystems
7. Electrical Grid Stability, Digital Connectivity

DRONE APPLICATIONS for COLOMBIA

1. Expanded Search and Rescue Capacity
2. Remote Grid and Infrastructure Maintenance
3. Defence and Aerospace Capacity Multiplier
4. Ecosystem Data Acquisition or Sampling - Forestry and Waterways
5. Just-in-time Medical Supply Delivery to Remote Areas
6. Increased International Trade and Export Opportunities
7. Employment and Training Opportunities

DRONES and LIGHT AIRFRAMES

Example Models	More Info	Comments
Shahed 136 	https://en.m.wikipedia.org/wiki/HESA_Shahed_136	Iranian example.
Dyke Delta 	https://en.m.wikipedia.org/wiki/Dyke_Delta	Excellent candidate for lower cost manufacturing.
Merlin - Aeromarine 	https://www.aeromarine-lsa.com	Simplified assembly, non-aviation powerplant option. Entry level.

Edgley Optica 	https://en.m.wikipedia.org/wiki/Edgley_Optica	Example twin-boom modular airframe, for drone or piloted setup.
FMX-4 Facetmobile 	https://wainfan.co/media/pavreport.pdf	Excellent candidate for lower cost manufacturing.

DEVELOPING AN AEROSPACE CONTRACTING ECOSYSTEM in COLOMBIA

The European example of international cooperation amongst nations and use of innovative aerospace contracting arrangements across borders provides a basis from which to explore the possibilities of fostering a smaller scale aerospace manufacturing ecosystem in Colombia and South America.

While there are fewer large industrial aerospace enterprises in the southern hemisphere in general, there is some industrial capacity that could readily be adapted to grow a larger ecosystem of part manufacturers, assemblers and associated ground facilities. Given available capacity in South America, there could be some significant opportunities for near shore, lower cost manufacturing in the light aviation space.

We are currently undertaking further analysis to provide more detail in the future that examines opportunities in locations suchs as the state of Valle del Cauca (Colombia) for:

1. Adaptability of existing infrastructure to light aerospace manufacturing. Including airport sites such as:

    i. Santa Ana (Cartago) - CRC / SKGO
    ii. Heriberto Gil Martinez (Tulua) - ULQ / SKUL
    iii. Gerardo Tovar López (Buenaventura) - BUN / SKBU

2. Adaptability of existing products and services to light aerospace applications.

3. Fostering international linkages, contracts and investments.

CONCLUSION

We forecast that South America in general, and particularly larger economies like Colombia that have port access to both Pacific and Atlantic oceans, as being advantageous opportunities for investment in light aerospace manufacturing.

Domestic strengths in metal working and compact engines combined with a business friendly market that includes well developed port and freeway transport infrastructure, allow for logistical convenience in a nearshore market.

Organizations that wish to benefit from future nearshore and lower cost manufacturing capacity enhancements may wish to act sooner to be better placed in this emerging aerospace ecosystem.

HOW WE CAN HELP

1. Local Point of Contact or Market Representative
2. Facilitate Localized Marketing, Industry Conferences and Presentations
3. Project Management, Contract Acquittals, Quality Assurance
4. Scoping and Planning, Feasibility Analysis, Site Visits
5. Aerospace Industry Ecosystem Advocacy with a focus on South America