

17th INTERNATIONAL CONFERENCE ON ENERGISING INDIAN AEROSPACE INDUSTRY: CHALLENGES FOR 'AATMANIRBHAR BHARAT'

**23 February 2024
Manekshaw Centre, Delhi Cantonment, New Delhi**

CONFERENCE REPORT

INAUGURAL SESSION



Welcome Remarks

Air Mshl Anil Chopra, DG CAPS:

DG CAPS set the tone for the conference by reiterating the importance of air power in battle fields and how Atmanirbharta has become both a need and an anticipated vision in the 21st century. After WWII, it was evident that the one who controls aerospace would continue to dominate the planet. Nearly 40% of the global defence expenditure is done on aerospace, which is estimated at around USD \$2.2 trillion. India is amidst the booming commercial aviation sector and the market for the same is huge. Prime Minister on various platforms has given 'Atmanirbharta' the required moral boost, and as India is in the prime of its demographic advantage, there are a series of initiatives that the government and defence forces have rolled out. This includes simplification of Make in India procedures, reformed policies for technology transfer, and allocation of increased resources in the interim budget. The need lies in indigenizing the aircrafts, especially the jet engines, and do away with license culture. The IAF further envisions to merge the air and space domains and incorporate new technologies in the best way possible.

Opening Remarks

Mr Rajinder Singh Bhatia, President SIDM

Mr Bhatia highlighted how the Indian economy continues to go from USD \$3 trillion to USD \$ 4 trillion and will complete the desired target of USD \$5trillion much before the deadline. However, for the employment opportunities to rise at a similar pace, the manufacturing sector must also grow manifold. As strategy and technology will continue to evolve, new frontiers will keep coming up. Technology will travel from civilian to military space as opposed to earlier times. There lies tremendous scope for cooperation in critical and emerging technology, and the major focus area involves rare earth minerals and control of global supply chains,



development of indigenous engines, and MROs. The country needs to work on building infrastructure for testing, as it will also help the industry to navigate its path. In addition, the acquisition of skilled workforce would further streamline the process. Lastly, the country should be inclined towards being technology leader, and not technology follower which it is now. To achieve this, academia, and think tanks must lead the way and find a niche area to develop the capabilities holistically.

Keynote Address

Air Marshal Ashutosh Dixit, AVSM, VM, VSM, Deputy Chief of the Air Staff, Indian Air Force. The Air Marshal emphasized upon the fact that every country wants to be self-reliant. The IAF has been at the forefront of many developments including the production of first aircraft in the 1950s called Kanpur 1 and Kanpur 2. IAF also played a crucial role in agro aircraft negotiations, and the aircraft manufacturing division used to do majority of the work, which was later merged with HAL. There are numerous challenges that lie in the way of being Atmanirbhar in defence which the government, MODS, IAF and others are trying to overcome. This includes the lack of basic infrastructure for certification, manufacturing, testing, etc., along with funding and finance which is the life blood of aerospace as it is very capital intensive. Furthermore, there is a need to better the existing regulatory framework and establish a regulatory body where the civil and military can reach a common understanding. The government has tried to tackle a range of these issues by announcing developmental technology funds, and easing the mechanism, which would bear fruit in the near future.

Key Recommendations emerged from the deliberations:

1. Emphasize the importance of achieving 'Atmanirbharta' (self-reliance) in the aerospace and defence sectors, as it is a critical need and anticipated vision for the 21st century.
2. Indigenize the production of aircraft, particularly jet engines, and move away from a license-based culture.
3. Merge the air and space domains and incorporate new technologies in the best way possible.
4. Promote cooperation in critical and emerging technologies, with a major focus on rare earth minerals, control of global supply chains, development of indigenous engines, and MROs (Maintenance, Repair, and Overhaul).
5. Build infrastructure for testing, which will also help the industry navigate its path and support the acquisition of a skilled workforce.
6. Strive to become a technology leader, not just a technology follower, with academia and think tanks leading the way in finding niche areas to develop capabilities holistically.
7. Address challenges such as lack of basic infrastructure for certification, manufacturing, and testing, along with funding and finance issues, which are crucial for the capital-intensive aerospace industry.
8. Improve the existing regulatory framework and establish a regulatory body where civil and military stakeholders can reach a common understanding.
9. Utilize the government's initiatives, such as the announcement of developmental technology funds and easing of mechanisms, to facilitate progress in achieving self-reliance.

SESSION 1: Capital Procurements



Chair: **AVM Anil Golani, ADG CAPS**

ADG CAPS in his opening remarks stressed upon the developments in the technology domain with reference to capital procurements, and how the local orders have been revitalizing the Indian Industry. Make in India, iDEX, and startup domains are crucial in this regard. There is an increased requirement for transfer of technology and to start at the earliest. For instance, the development cycle of an air engine is nearly 20 years, which implies that we are already behind the curve. Therefore, it is fundamental to start early and develop along the way.

Capital Procurements of the IAF

AVM Marshal George Thomas, AVSM, VM, Assistant Chief of the Air Staff (Plans), Indian AVSM Thomas brought in perspective 'capability development' and how economy is the key driver for the air force industry. If the country wants to expand its strategic interest, then aerospace is an indispensable component. The United States understands this well and employed airpower extremely effectively. The Indian response should be more proactive, and we should build and maintain credible deterrence near two fronts. Moreover, as warfare is transitioning to multi-domain, it is becoming increasingly difficult to define area of operations geographically alone. Intelligent weapons are going to be the norm and unmanned systems will be the next big thing. In order to persist, the IAF needs to give a sustained response, and the starting point of a lot of which is 'money'. The funds required to attain some of these capabilities would be huge, and the technology roadmap includes short-, medium- and long-term goals. The short-term goals include countering UAS, intelligent swarm, long range smart munitions, AI based applications, quantum technology, persistent ISR and cyber defence. The short to medium term goals include SEAD/DEAD CAPB, advanced materials,



helicopters, A-A missiles, and MALE UAV/UCAV/HALE, 5G/6G, aero engines, and long-range Weapons. Whereas, in the long term, hypersonic/counter hypersonic, quantum radars and advanced autonomy/ kinetic AI.

Key Recommendations emerged from the deliberations:

1. Recognize the rapid developments happening in technology domains and their impact on capital procurements for the Indian Air Force (IAF).
2. Prioritize initiatives like Make in India, iDEX, and start-up domains to revitalize the Indian industry and drive indigenization.
3. Emphasize the urgent need for transfer of technology and early start of development programs, considering the long gestation periods (e.g., 20 years for air engine development).
4. Develop capabilities across short, medium, and long-term goals to build credible deterrence and persist in multi-domain warfare.
5. Short-term goals: Counter UAS, intelligent swarms, long-range smart munitions, AI applications, quantum technology, persistent ISR, and cyber defence.
6. Medium-term goals: SEAD/DEAD capabilities, advanced materials, helicopters, air-to-air missiles, MALE UAV/UCAV/HALE, 5G/6G, aero engines, and long-range weapons.
7. Long-term goals: Hypersonic/counter-hypersonic capabilities, quantum radars, and advanced autonomy/kinetic AI.
8. Allocate significant funds required to attain these critical capabilities, recognizing that aerospace power is indispensable for expanding strategic interests.



SESSION 2:
Panel Discussion on DAP & Positive Indigenisation List – Reality check with reference to the Aviation /Aerospace sector



Chair: **Air Vice Marshal George Thomas, AVSM, VM, Assistant Chief of the Air Staff (Plans) IAF.**

AVM George Thomas in his opening remarks emphasised on self-reliance. He stressed that self-reliance or Atmanirbhar Bharat cannot work without policy change and highlighted the Incremental policy reform currently undergoing. AVM expressed the complexity of the entire process and said there is no simple situation. The speaker requested for more understanding on part of industry and stressed the need to pursue and reduce dependence, from a national and organizational perspective, expressing the need to be pragmatic, backed by rational policy which is doable and implementable.

DAP-2020 and its Effect on Procurement

Air Cmde Mansij Lal, AVSM, Air Cmde Plans, Indian Air Force

The speaker started with giving an elaborate explanation regarding the DAP-2020 and procurement process, its evolution. He emphasised on the focus areas of DAP-2020 and touched upon current initiatives such as BUY/BUY & MAKE, and MAKE & INNOVATION, and IDDM. He started with the post-independence industrial capacity and its evolution, stressing on the state led approach slowly moving to licence production. He emphasised the realisation that happened in the Defence Ministry post-USSR breakdown about the need to establish more capacity with regards to the military industrial development, including the PAC report of 1989, and the Post Kargil DPP 2002.

While mentioning about the DAP-2020, the speaker stressed the BUY (Global Manufacture in India) and MAKE III initiatives that were introduced and the three focus areas under it, MAKE IN INDIA, Atmanirbharta, and Ease of Doing Business.



The speaker elaborated on each focus area. The Make in India focuses on production capabilities, Time bound delivery, and decision-making aspects, while Atmanirbharta emphasises on the Design and Development, Innovation, Enhanced IC, Indigenous Material, Software and benefits to MSMEs, and the third focus areas touches on simplification, better timelines, Industry friendly environment and foreign collaboration.

The Speaker talked about the categorisation of BUY/BUY & MAKE and MAKE & INNOVATION subcategories and how it has incorporated the aspects of the three focus areas as mentioned in the DAP-2020. Innovation for Defence Excellence (iDEX) and its role in fostering innovation, research and technology development with dedicated funding through iDEX and iDEX-Prime of Rs. 1.5 Cr and Rs. 10 Cr respectively was also highlighted by the speaker. In addition, the Technology Development Fund (TDF) Scheme and the type of projects being covered under it, encourage public-private to create an ecosystem that enhances cutting-edge capability was welcomed by the speaker in assisting further growth of the ecosystem.

Following this, the speaker brought to attention the IDDM through DRDO/DPSUs, and the importance of leasing that was introduced in DAP 2020 catering to Indian and Global categories. The advantages that it brings in mitigating the effect of equipment obsolescence, and no large requirement for initial capital outlay.

In conclusion, the speaker talked about the impact that it has brought out like the change in mind set, better understanding of the geopolitical environment, fragile global supply chains, need for self-reliance, developing domestic private industry, reforms, ecosystem development with an expanded industrial base, and better funding opportunities.

Further the speaker highlighted the increasing focus on production capacity and IPR generation, more stress on increasing indigenous content, innovation and collaboration, and better incentives for MSMEs and close working relations with the academia and research institutes.

Civil Defence Cooperation in MRO Embracing Greater Indigenisation

Gp Capt MV Sridhar, VSM, Gp Capt Indigenisation, Indian Air Force

The speaker started by emphasising the importance of indigenisation and the economic costs incurred by the country, and the need to ensure better spending of money. Elaborating the two channels followed for the indigenisation in Indian Air Force (IAF) he talked about the first that is Revenue Route through Maintenance Branch and the Capitals Route through the Plans Branch.

Speaker talked about the effect of post-USSR break on the indigenisation and its impact particularly on IAF, and how following that the process and procedure of the LRUs, Sub-systems and complex items gained more momentum. He said that currently there are more than 1000 vendors that are registered with the Base Repair Depot (BRDs). Following that the speaker highlighted many success stories, such as MRO- AN32 by M/s SEC industries Pvt Ltd, focusing on Dis-assembly, De-painting, Wing strengthening, Repair and Sub-assembly,



employing 95 people. He also talked about another case M/s TAAL Pvt Ltd working on MRO-MiG 20 UPG employing 70 personnel.

The speaker talked about the Self Reliance Project, categorising it into Embedded Model Project, Independent Model Project, and the Repair Replacement and Refurbishment Projects and what each of that entails with respect to the expectations from Industry partners, and certification and qualification aspects.

In Conclusion, the speaker said that 'self-reliance is still a work in progress' and will continue to do so for a long time and hence the need for more collaboration with the industry. The speaker emphasised that despite challenges the efforts for indigenisation continues, also highlighting the progress made in low technology areas. His emphasis was on better implementation of existing procedures and processes to harness the true potential and reducing the gap between the aspirations and reality. Gp Cpt asked for more support from the industry for assisting IAF in adopting new technologies and out of box solutions. He ended his talk by expressing his intention to get better results with civil-defence cooperation.

Industry's Assessment of DAP and Negative Import List

Air Cmde Pramod Puranik, VSM (Retd) Vice President (Defence Aerospace), Bharat Forge Ltd.

The speaker talked about the issue that the industry has faced particularly taking into consideration the DAP, highlighting the positives followed by the negatives. The speaker noted that the increase from 60 percent to 80 percent in Indigenous content, shows confidence in the Indian industry. He highlighted some anomalies related to the issues of white labelling, that persists in the industry even after many initiatives to encourage more Indigenous content. To resolve this the speaker advocated for recognising the maturity of the industry to set standards as per the requirement and the need to have a relook. He highlighted that 100 projects have already been covered in this and three to four have already been closed.

Some issues pertaining to the MAKE and TDR project remain which need to be addressed from the industry standpoint. These issues relate to the ownership of the products, example relating to certifications and testing agencies. He recommended some mechanism for the MAKE project to be prioritised, based on potential, identifying projects that need priority from the Indian Air Force particularly those that have export potential and those which may bring some technical capability to India. In addition, he emphasised the importance of not losing time in today's geopolitical turbulent time and making process time and money efficient arranging projects in a preference order.

He expressed his gratitude for the Air Headquarter with the start of the Directorate of Design to take care of MAKE projects. He further suggested incorporating the association of Veterans with the directorate to share the grass root level issues that the industry faces, as there is a gap between the Air force expectation and industry capacities. Formulation of QR is not a pragmatic process currently, expecting high deliveries from the industry which doesn't match their capabilities is an issue. Pricing issues were also highlighted by the speaker with respect to MMRCA procurement, stating the budgetary hierarchies could also lead to



potential delays and cancellation of projects. He said that to indigenous we need to create the infrastructure and can not only look at the costing coming from the OEMs.

Lastly, he said that IC content at prototype stage should be given away with, price escalation due to the time delay must be considered in the DAP. On the positive indigenisation list, he mentioned its positive impact on the industry, he quoted his own Bharat Forge company example, stating the indigenization of artillery guns and leading to its exports. He mentioned some observations, with regards to the inclusion of low technology products in the list and need to have a deeper discussion on it. He highlighted the absence of the case of indigenisation development of aero engines in the policy, and suggested the need to relook at it stating that the industry capacity exists to support these initiatives.

On the concept of centre of excellence, he asked for the creation of a consortium between industry, following which the consortium can assist in giving suggestions on a positive indigenisation list. He concluded by saying that Co-design and Co-development is the mantra to go ahead, and global OEMs are ready to work with the industry today. The speaker ended by saying that aerospace is a difficult nut to crack and there needs to be a high tolerance to it.

Questions and Answers

During the question and answer (Q&A) session following the deliberations on 'DAP and Positive Indigenisation List- Reality Check with Reference to the Aviation/Aerospace Sector,' several pertinent queries were raised, and insightful discussions ensued.

Participants sought clarification on various aspects of the proposed strategies, including the feasibility of establishing a centre of excellence and the potential challenges in implementing a phased approach to streamline flight test operations. Concerns were expressed regarding the limitations of the current Defence Acquisition Procedure (DAP) and the need for a more robust framework to incentivise indigenous product development and manufacturing.

Attention was drawn to the evolving role of the Indian Council in defining indigenous content parameters and the implications for industry stakeholders. Additionally, questions were raised about the practicality and relevance of quality requirements (QRs) in light of rapid technological advancements, with suggestions for QRs to be tailored to frontline user needs rather than arbitrary industry benchmarks.

Discussions also touched upon the draft Defence Acquisition Bill 2020 (DAB 2020) and the importance of industry collaboration in shaping future procurement frameworks.

Key Recommendations emerged from the deliberations:

1. Establish a mechanism for prioritizing 'MAKE' projects based on their potential, export opportunities, and ability to bring technical capabilities to India.
2. Involve veterans/industry associations in the formulation of Quality Requirements (QRs) to ensure alignment with industry capabilities and pragmatic expectations.
3. Reconsider the requirement for high indigenous content at the prototype stage, as it may hinder innovation and development.



4. Incorporate provisions in the DAP to account for price escalations due to time delays in project execution.
5. Create a consortium of industry players to provide suggestions on the Positive Indigenisation List and assist in identifying areas for co-design and co-development with global OEMs.
6. Explore the inclusion of aero engine development in the Positive Indigenisation List, considering the existing industry capacity.
7. Review the inclusion of low-technology products in the Positive Indigenisation List to ensure a strategic focus on high-end capabilities.
8. Foster greater civil-defence cooperation and industry collaboration to adopt new technologies and out-of-the-box solutions for indigenisation.
9. Streamline flight test operations through a phased approach, addressing potential challenges in implementation.
10. Incentivise indigenous product development and manufacturing through a robust Defence Acquisition Procedure (DAP) framework.
11. Tailor Qualitative Requirements (QRs) to frontline user needs rather than arbitrary industry benchmarks, considering rapid technological advancements.
12. Engage industry stakeholders in shaping future procurement frameworks, such as the draft Defence Acquisition Bill 2020 (DAB 2020).
13. Address issues related to ownership, certification, and testing agencies for "Make" and Technology Development Fund (TDF) projects.



Session 3:
Start-Up and Technology- Overview, Challenges & Future Roadmaps



Chair: **Rear Admiral Pritam Lal (Retd)**

Rear Admiral Lal commenced the session by highlighting India's significant position as the third-largest start-up ecosystem globally, particularly in the industrial sector. He emphasised the commendable progress made by the defence and aerospace sector, attributing it to initiatives such as the Innovation for Defence Excellence (IDEX) and the Technology Development Fund by the Defence Research and Development Organisation (DRDO). **Rear Admiral Lal** also noted the Ministry of Defence's proactive approach in facilitating collaborations between the armed services and start-ups, with over 305 Memorandum of Understanding (MOUs) established to address specific challenges. He underscored the importance of identifying genuine problems as a crucial step towards fostering successful start-ups within the ecosystem.

Emerging Trends in Indian Start-Up Ecosystem: Opportunities and Challenges

Mr. Ramit Arora, **Senior Vice President, New Space Research & Technologies Pvt Ltd**
Mr. Ramit Arora delved into the intricacies of the defence aerospace domain and its interface with start-ups, highlighting key challenges and opportunities. He stressed the critical importance of identifying fundamental needs for a successful defence start-up, including securing funding, leveraging cutting-edge technology, and ensuring sustained sales.

The speaker underscored the significant market potential within the defence capital procurement budget. However, he noted that only a small fraction of this budget is allocated for capital procurement, with many high-cost, high-tech legacy instruments dominating expenditures. Mr. Arora advocated for a focused approach, targeting 10-20% of products classified as innovation in defence to expand the market size effectively.



Challenges highlighted included bureaucratic hurdles, prolonged decision-making processes, inadequate tax incentives for start-ups, and workforce transitions. Additionally, he emphasised the absence of government funding and advocated for the establishment of an independent regulator for CEMILAC and QA. While acknowledging the increasing availability of private funding, Mr. Arora underscored the difficulties associated with seed funding and technology development timelines.

Synergies in commercial and military aerospace- imperative for design and build

Mr. Kaushal Jadia, Senior Vice President & Chief Technology Officer, Cyient DLM Ltd.

In his presentation on synergies in commercial and military aerospace, Mr. Kaushal Jadia underscored the importance of aligning commercial and military aerospace sectors. He provided insights into the evolving commercial aerospace landscape and discussed defence exports and imports from 2019 to 2023. Notably, defence exports totalled US \$13.29 billion, while imports amounted to US \$27.73 billion during this period.

Mr. Jadia highlighted the growth of the commercial aircraft market in India, with a current fleet of 714 aircraft and 2,200 aircraft on order, growing at a rate twice that of the global market. Despite significant contributions from the Indian industry, there remains a substantial gap between commercial and defence aerospace markets, with imports of commercial aircraft far surpassing defence budgets.

To address this gap, Mr. Jadia emphasised the need for policy incentives to focus on design, localisation of raw materials, and quality processes driven by industry associations. He advocated for achieving a 10-15% share in the global aerospace and defence market as a reasonable goal.

Future Roadmap for Indian Tech Start-Ups: Policy Recommendations and Collaboration Strategies

Mr. Abhimanyu Arora, Senior Vice President, Raphe mPhibr Pvt Ltd

In his presentation on the future roadmap for Indian tech start-ups, Mr. Abhimanyu Arora delved into policy recommendations and collaboration strategies. He highlighted existing collaboration avenues between the government of India and the armed forces, such as IDEX, Make-1 and Make-2 projects. However, Mr. Arora expressed concerns regarding the Make-2 projects, noting that they have transferred a significant amount of system-level development to industries, leading to unclear evaluation parameters for indigenous content and potential backdoor entry of foreign equipment.

To address these challenges, he proposed a reevaluation of the thought process, advocating for the utilisation of subsystem-level developments within financial constraints and ensuring clarity in project categorisation to avoid duplication of processes. Additionally, Mr. Arora emphasised the importance of standardisation to benefit both the industry and the end-user. Overall, he recognised the government's efforts in fostering collaboration but underscored the need for refinement and clarity in implementation.



Closing remarks

Rear Admiral Pritam Lal (Retd)

In his closing remarks, the moderator summarised key recommendations, including encouraging small, medium, and start up industries' participation in policy frameworks for ongoing improvement. Collaboration with industries was emphasised, along with the need for adequate testing facilities and the establishment of an independent regulatory body. Other points highlighted included prioritising design over manufacturing, promoting the localisation of raw materials, and leveraging initiatives like Make-2 projects for industry advancement. The importance of synergy between schemes and understanding diverse standards was also stressed. Overall, participants were urged to join efforts in addressing these challenges and driving progress collectively.

Key Recommendations emerged from the deliberations:

1. Target 10-20% of the defence capital procurement budget for innovative products to expand the market size for start-ups.
2. Establish an independent regulator for CEMILAC (Centre for Military Airworthiness & Certification) and Quality Assurance to streamline processes.
3. Provide government funding support and address challenges in securing seed funding for technology development by start-ups.
4. Implement policy incentives to focus on design, localization of raw materials, and quality processes driven by industry associations.
5. Set a reasonable goal of achieving a 10-15% share in the global aerospace and defence market for the Indian industry.
6. Re-evaluate the thought process behind Make-2 projects, ensuring clarity in project categorization and evaluation parameters for indigenous content.
7. Utilize subsystem-level developments within financial constraints to avoid duplication of processes and potential backdoor entry of foreign equipment.
8. Promote standardization to benefit both the industry and the end-user.
9. Encourage participation of small, medium, and start-up industries in policy frameworks for ongoing improvement.
10. Establish adequate testing facilities and an independent regulatory body.
11. Prioritize design over manufacturing and promote the localization of raw materials.
12. Leverage initiatives like Make-2 projects for industry advancement.
13. Foster synergy between schemes and understand diverse standards across sectors.



Session 4:

Panel Discussion with Captain of the Industry on Accelerating the Growth of Indian Aerospace Industry through Global Best Practices



Chair: Air Marshal NV Tyagi, PVSM, AVSM, VM, VSM (Retd)

The Chair made his remarks touching on many points. He talked about the need to focus on access to global practices in areas such as quality control and testing in addition to improving human resource development and skilling. Adequacy of financial resources for start-ups and MSMEs is another area that the speaker highlighted needed much attention. Inadequacy of Advance payments to finance the project or program are issues that start-ups face. The speaker said that program management is another area that needs more attention and highlighted the importance of making realistic assumptions accordingly while setting up requirements for the industry. Development of MSMEs and Start-up ecosystem is important, and recognising that large corporations are not good at doing everything, reiterating the critical work done by MSMEs and Start-ups in this area. He concluded by talking about the need to incorporate the Global best practices in the working of the defence ecosystem.

Panelist Remarks

Mr. Puneet Kaura, Managing Director & CEO, Samtel Avionics

Mr Kaura started his remarks by sharing his experience in the Aerospace industry domain. The speaker emphasised on developing technologies without compromising and working with the best talent. Highlighting the importance of skill development is a big-focused area for them, and at Samtel they have developed skills at different levels through training, and imparting courses. He also noted the need to address some issues such as talent drain when someone leaves the company and the challenge it poses for the knowledge the company



loses. Adopting high-end technology and skill development is an important aspect that needs attention and revision on a continuous basis. He stressed that an important aspect of his company is to work with global majors that help you to learn the best, which is also their company ethos. He reiterated that developing best practices take time and encourage private sectors to engage in doing that.

The speaker shared his company's core foundation in working being shaped by a 'Customer-centric approach' that is customers can sometimes have endless demands, and they want better, and sometimes there are specifications that are not available and to get them approved is another challenge. He said that in spite of these challenges, we need to make sure that the customer should be satisfied.

The speaker talked about Atmanirbharta should be about doing things within our means within the country to build a knowledge system. In addition, the speaker emphasised the importance of continuously continuing to invest in R&D and looking for the best technology and able to offer to customers, so investing in R&D is vital.

Panelist Remarks

Mr. Vijay Kumar

The speaker highlighted some important suggestions particularly related to the improvement of the defence industry ecosystem and what we can learn from the foreign defence industry and the ecosystem. He stressed on the need to enhance the programs that focus on emancipating MSMEs and Start-ups. Empowering youth skilling and defence manufacturing was something of the motto of the EU ecosystem.

Defence vocational education is not available in India. Working on absorbing capacity through Transfer of Technology (ToT) and to handle complex program management is still inadequate in India. The speaker talked about his work in connecting the world's only unique accelerator known as Starburst and tying them with the Indian institutes like IIMs and IITs through his organisation.

He talked about the lack of aerospace skills and its impact on the industry demand, and even its limited availability being not at the level of industry requirements. He talked about the importance of sustainable Funding in India which is very difficult as compared to the EU. He concluded by saying that India can take European best practices experience and use it in its culture and industry ecosystem, as that would help in creating a national excellence center and that can be further used to assist Start-ups in scaling and developing better capabilities and capacities.

Key Recommendations emerged from the deliberations:

1. Focus on adopting global best practices in areas such as quality control, testing, program management, and realistic requirement setting for the industry.
2. Enhance access to adequate financial resources for start-ups and MSMEs, including advance payments to finance projects/programs.



3. Prioritize development of MSMEs and start-up ecosystem, recognizing their critical role in the aerospace industry.
4. Emphasize on skill development at all levels through training and courses to build a talented workforce.
5. Address the challenge of knowledge loss when skilled personnel leave companies.
6. Adopt a customer-centric approach to meet demanding customer specifications and requirements.
7. Achieve Atmanirbharta (self-reliance) by developing knowledge systems and capabilities within the country.
8. Continuously invest in R&D and acquire the best technologies to offer to customers.
9. Enhance programs and efforts to empower MSMEs, start-ups, and youth skilling in the defence manufacturing sector.
10. Introduce defence vocational education in India to build aerospace skills.
11. Improve capacity for Transfer of Technology (ToT) and complex program management.
12. Facilitate sustainable funding for the aerospace industry, taking inspiration from the European ecosystem.
13. Establish national excellence centres to assist start-ups in scaling up and developing better capabilities.



Session V:
Revenue Expenditure and Purchases



Chair: Air Marshal CR Mohan, AVSM, VSM, Air Officer in Charge Maintenance, IAF

In the final session, attendees were welcomed by Air Marshal CR Mohan AVSM VSM, Air Officer in Charge Maintenance, Indian Air Force (IAF).

The discussion underscored the longstanding challenge of aligning armed forces' logistics with business interests, particularly in the context of global supply chains. Air Marshal Mohan highlighted the vulnerability of highly globalised supply chains to geopolitical tensions, emphasising the need for a strategic rethink in IAF logistics.

Recognising the resilience of Indian logistics systems, particularly during the COVID-19 pandemic, Air Marshal Mohan outlined the IAF's renewed focus on revitalising the domestic aerospace industry. He emphasised repair and overhaul as a pivotal starting point for this revitalisation process.

The IAF intends to launch an incubator program aimed at enhancing repair and overhaul capabilities. The goal is to incubate industry partners, gradually transitioning them towards greater responsibility within the supply chain and eventually towards independent manufacturing.

While acknowledging the challenges and risks associated with military business, Air Marshal Mohan expressed optimism about industry participation. The aim is to eventually invite Original Equipment Manufacturers (OEMs) to set up operations locally. However, this



transition necessitates a reorganisation of procurement processes to accommodate industry partners with limited aerospace experience, ensuring compliance with certification authorities.

Challenges in Procurement and Way Ahead

Air Vice Marshal Rajesh Bhandari VSM, ACAS (Proc), Indian Air Force

In his address, AVM (Air Vice Marshal (Dr) Rajesh Bhandari VSM ACAS (Proc), Indian Air Force), highlighted the pressing challenges facing procurement amid current geopolitical tensions and global supply chain disruptions. Emphasising the imperative of self-reliance, he underscored the need for indigenous vendors to step up and seize the opportunities presented by the government's *Atmanirbhar Bharat initiative*.

AVM Bhandari outlined the multifaceted impact of geopolitical events, including sanctions and disruptions in international transport routes, on procurement objectives. He elucidated key performance indicators (KPIs) and procurement performance indicators aimed at enhancing efficiency and resilience in the face of these challenges. Despite obstacles such as contract delays and amendments, he expressed confidence in the Indian Air Force's proactive approach to mitigating procurement-related hurdles.

He further underscored the challenges encountered in the procurement process, particularly regarding foreign participation in the initial tender cycle, which yielded disappointing responses. Conversely, Indian vendors exhibited a commendable level of engagement. Despite this setback, he emphasised the transparent nature of the procurement process, highlighting its accessibility through online tracking mechanisms for item delivery status.

Additionally, AVM Bhandari shed light on the impact of the ongoing war on procurement dynamics, noting that manufacturers have begun quoting exorbitant prices amid the prevailing uncertainties. This development further underscores the significance of the *Atmanirbhar Bharat* initiative in fostering self-reliance and resilience in India's procurement ecosystem.

In conclusion, by leveraging strategic partnerships and prioritising self-reliance, he envisaged a path forward that ensures operational readiness and national security in an increasingly complex global landscape.

Questions and Answers

During the Q&A session, a query arose regarding the potential involvement of IAF technical officers in technology development processes, including the possibility of integrating them into design teams to enhance product success rates. Additionally, there was interest in establishing avenues for innovators within the Air Force to transform their ideas into tangible products, possibly through the creation of a dedicated technology incubator centre for IAF personnel.

In response, the moderator affirmed the robust engineering foundation within the IAF, emphasising the focus on ensuring aircraft safety. While acknowledging the presence of



research centres such as DRDO, IDEX, and various academic institutions with incubator facilities, concerns were raised about foreign entities capitalising on indigenous talent. Despite this, it was noted that IAF engineers contribute to research efforts, albeit with a primary focus on ensuring operational safety.

Concluding Remarks

Air Marshal CR Mohan

In conclusion, while much of the defence research remains within the public sector, there is a notable trend of establishing R&D centres in Bengaluru, India's aeronautical hub. However, it's observed that many of these facilities predominantly cater to foreign markets, leveraging Indian labour. To achieve self-reliance, particular attention must be given to two strategic industries: raw materials and semiconductor chips. These sectors play a crucial role in fostering indigenous capabilities and reducing dependency on external sources, ultimately bolstering India's defence and technological sovereignty.

Key Recommendations emerged from the deliberations:

1. Revitalize the domestic aerospace industry, with a focus on repair and overhaul capabilities as a starting point.
2. Launch an incubator program by the Indian Air Force (IAF) to enhance repair and overhaul capabilities, gradually transitioning industry partners towards greater responsibility within the supply chain and eventually independent manufacturing.
3. Reorganize procurement processes to accommodate industry partners with limited aerospace experience while ensuring compliance with certification authorities.
4. Mitigate procurement challenges through proactive measures, such as online tracking mechanisms for item delivery status and strategic partnerships.
5. Foster self-reliance and resilience in India's procurement ecosystem to address challenges posed by geopolitical tensions and global supply chain disruptions.
6. Explore the possibility of integrating IAF technical officers into design teams to enhance product success rates.
7. Establish dedicated technology incubator centres for IAF personnel to transform their ideas into tangible products.
8. Focus on developing indigenous capabilities in strategic industries like raw materials and semiconductor chips to reduce dependency on external sources and bolster India's defence and technological sovereignty.



Closing Remarks

Air Marshal Anil Chopra, PVSM, AVSM, VM, VSM (Retd) DG, CAPS

Air Marshal Anil Chopra addressed the audience, noting that this conference marks its 17th iteration. He highlighted the significant disruptions faced by the global supply chain due to various geopolitical and health crises, including the COVID-19 pandemic, the Ukraine conflict, the Israel-Palestine conflict, and the Red Sea crisis. Emphasising India's role as a leader among the nations of the Global South, he underscored the nation's trajectory towards becoming the world's third-largest economy and its aspirations for a permanent seat on the UN Security Council.

Air Mshl Chopra stressed upon the imperatives for India to ensure its readiness to participate effectively in global affairs, emphasising the need to address internal challenges. He outlined several steps taken by the government to enhance self-reliance in the defence sector, including incentivising start-ups, establishing a Positive Indigenisation List, and fostering collaborations with foreign partners. Acknowledging that the journey towards self-reliance is extensive, he also highlighted the importance of skill development, a crucial aspect for the nation's technological advancement.

While concluding, Air Mshl Chopra informed the audience that the entire session would be accessible on YouTube, ensuring wider dissemination of the discussions and insights shared during the conference.

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