



Centre for Joint Warfare Studies



AMMO^{MM} INDIA 2018

12-13 March 2018 | Federation House, New Delhi



Proceedings of

International Conference on

Military Ammunition

Make in India - Opportunities and Challenges



PROCEEDINGS OF INTERNATIONAL CONFERENCE ON
“MILITARY AMMUNITION: MAKE IN INDIA
OPPORTUNITIES & CHALLENGES”
12-13 MAR 2018

Prelude

1. Till recently the Indian Private Industry was not permitted to partake in the manufacture of ammunition for lack of policy frame work and since no industrial licenses were issued. Thus the ammunition manufacture remained solely in the ambit of the OFB. However, recently with a policy shift, the government has opened up the ammunition manufacture to the private defense industry. Aforementioned, the Indian private Industry is keen to leverage the opportunity and establish capabilities & the capacities for indigenous ammunition manufacture. Currently, the domestic, annual ammunition market size in India exceeds USD 1 billion and there is scope of additional annual capacity of approximately USD 250 million in private sector.

2. In pursuance of the government policy, the Indian Army issued a request of information (RFI) for participation in a USD 400 million program to manufacture a variety of ammunition in the next five to eight years.

3. The present policy of ammunition manufacture **juxtaposed with the prevailing requirements provides unique opportunities to the Private Industry** to develop the required capabilities and capacities as also to engage in Joint Ventures with foreign OEMs.

4. Apropos, to acquaint **the Indian industry with the prevalent policy frame work, user requirements, opportunities & challenges of the Indian Defence Industry in participation in the Make In India initiative in the naïve ammunition manufacturing sector** the First International Conference on Military Ammunition: Make in India Opportunities and Challenges was held on 12-13 Mar 2018 conjointly by Centre For Joint Warfare Studies (CENJOWS) and FICCI.

Objectives

5. The objectives of the International Conference on Military Ammunition: Make in India Opportunities and Challenges are listed as under:-

- (a) Familiarize the industry with the **current policy frame work of Make In India in general and ammunition manufacture** in particular.



- (b) Acquaint the industry with the business **opportunities in the ammunition manufacture.**
 - (c) Provide insight in the **role of OFB in the ammunition manufacturing sector and the prevalent opportunities for private sector to engage with OFB.**
 - (d) Assess the **outlook of FOEMs towards the Make in India initiative and their sentiment towards potential partnerships** with Indian companies.
6. The endeavor was to provide **a common platform to the users, private industry and the policy makers to discuss shared concerns and jointly evolve measures/mechanisms to mitigate/overcome the challenges.**

Conduct Methodology

7. In order to achieve the outlined objectives the ibid conference was divided into five sessions apart from the Inaugural Session and the concluding Panel Discussion. The sessions are listed under:-

- (a) **Session 1.** Ammunition for Small Arms –Trends and Opportunities for Industry
- (b) **Session 2.** Artillery Ammunition - Programs and projects.
- (c) **Session 3.** Tank Ammunition - Programs and Projects
- (d) **Session 4.** Missiles.
- (e) **Session 5.** Fuze Manufacturing – Technology and Way Forward

Inaugural Session

8. The Inaugural Session had Mr Rashesh Shah, President FICCI, Lt Gen Giri Raj Singh, DG Ordnance Services, Lt Gen Vinod Bhatia, PVSM, AVSM, SM (Retd), Director CENJOWS with Smt Nirmala Sitharaman, Hon'ble Raksha Mantri as the Chief Guest.

9. The Raksha Mantri reinforced that the Government's **resolve to the actualization of the Make in India in right earnest.** She reiterated that the DPP 2016, the Strategic Partnership (SP) et al were amongst the slew of measures taken by the Government towards promoting indigenous defence manufacturing capabilities. **She further emphasized that currently the default choice in defence purchases is Made in India and the same shall be reinforced.** The Raksha Mantri further stated that the two dedicated Defence Industrial corridors announced



in the Union Budget 2018-19 were **aimed at promoting defence manufacturing facilities with the requisite infrastructural and associated support system.**

10. The Raksha Mantri further stated that there is a **concerted effort by the Government to promote the involvement of MSMEs and ensure the creation of a responsive eco system.** She further emphasized that there would be ease of licensing to ensure greater participation by the desirous players. Further the Raksha Mantri assured that the competitive and shortlisted industry of minimum 10 years order book commitments. She also highlighted that forthcoming Defence Expo in April 2018 is being organized with a focus on integration of MSMEs in the defence manufacturing sector and **is themed to showcase the indigenous capabilities in defence manufacture.**

11. The Raksha Mantri highlighted that in pursuit of the 'Make in India' despite the numerous enabling provisions which have been incorporated in the policies for facilitating **"Ease of Doing Business"** the MoD is open to further accommodate **viable & worthwhile recommendations of the industry.** She concluded by stating that the long term objective of the government is to transform **India into a net Exporter of defence goods from a currently being a net importer.**

SESSION 1

AMMUNITION FOR SMALL ARMS – TRENDS AND OPPORTUNITIES FOR INDUSTRY

12. The session was chaired by Lt Gen Subrata Saha, PVSM, UYSM, YSM, VSM**(Retd), former DCOAS (P&S), IHQ of MoD (Army) with Maj Gen Ajay Ohri, SM, ADG Inf, Mr Sanjay Prasad, JS(LS), Mr MK Mahapatra, OFB and participants from the Indian Industry and the FOEMs.

13. The Chair **highlighted the enormous potential of the Indian defence market and the huge opportunities that existed for the Indian industry to capitalise.** He further stated that the present procurement policies favour the domestic manufacturers and **also the user is committed in supporting the Make In India endeavor of the Government.** He alluded that the opportunity is ripe for the defence industry to build **capabilities and capacities towards meeting the user aspirations.** He however, cautioned the industry, that requisite checks and balances need to be dovetailed in the processes to ensure **critical aspects of Quality Assurance and Quality Control are adhered as any slippage on the account of these shall severely impact the user confidence and shall be a retrograde step.**



14. Maj Gen Ajay Ohri, ADG outlined the broad requirement of the small arms ammunition of the Infantry. He generically gave out the road map for the small arms ammunition for the Indian Army. **He further assured the private industry of complete support of the users within the laid down parameters of the existing policies.**

15. Mr Sanjay Prasad JS (OS) elucidated **the salient changes in the policy framework for facilitating Make in India duly juxtaposed with the Ease of Doing Business to foster the growth of the domestic defence industry.** He further assured the Industry of a hand holding approach and the commitment of the MoD towards ensuring the growth of the Indian Defence Industry. Apropos the industry should **shed all apprehensions and embark on the journey of supporting self reliance in defence sector.**

16. Mr MK Mahapatra highlighted the capacities of the Indian Ordnance Factories in ammunition manufacture and also **outlined the opportunities for the Indian Industry to engage with the Ordnance Factories**

17. The industry representative on behalf of the private Industries assured the **keenness and willingness of the Industry to accept the challenges and participate in the defence manufacture and drive India towards self reliance** in defence manufacture. The FOEM representative appreciated the positive business environment and expressed their **commitment to participate and collaborate with the Indian Industry.**

SESSION 2 : Artillery Ammunition - Programs and Projects

18. The session was chaired by Maj Gen Sandeep Apte, ADG Artillery with Brig Samir Gupta DDG Arty, Mr Sanjay Hazari, Ordnance Factory Rep and members of the private Indian Industries and FOEMs as members.

19. Maj Gen Apte lauded the efforts and success of the Indian Defence Industry towards realization of projects viz Dhanush etc. He **expressed utmost confidence on the capabilities and competence of the Indian defence industry towards meeting the User Requirements.** He assured the industry of complete support of the users with the laid down policy frame work.

20. Brig Samir Gupta, DDG Artillery gave a **perspective on the requirements of the Artillery Ammunition by the Indian Army.** He also highlighted the proposed methodology towards realization of the ammunition requirement by the Artillery. Mr Sanjay Hazari, spoke on the existing capabilities and capacities of the ordnance



factories in manufacture of Artillery Ammunition. He further highlighted the **opportunities which exist for the private industry to engage with ordnance factories.**

21. Mr Sartaj Singh, Director of Solar Industries on behalf of the industry emphasized that the **domestic defence industry is totally competent to produce Artillery Ammunition compliant to the user requirements.** The FOEM representative gave an insight on the global trends in artillery ammunition. He further **reiterated the willingness of the Global players to collaborate with Indian Defence Industry.**

22. While concluding The Chair expressed complete faith in the capabilities of the Indian Defence Industry **towards realizing the needs of the artillery however, advised the industry to adopt the global best practice to ensure availability of world class defence products indigenously.**

SESSION 3 Tank Ammunition - Programs and Projects

23. The session on Tank Ammunition was chaired by Lt Gen MJS Kahlon, AVSM, Director General of Mechanized Forces and amongst the speakers were Col Vishal Singh Director, Mechanised Forces Directorate, Mr MK Aggarwal OFB and representatives of the private industry and the FOEMs.

24. Lt Gen MJS Kahlon in his opening remarks while complementing the Indian Industry on their remarkable growth **in the past few years stated that the Indian defence Industry is still in its nascent stages and has to mature to be in sync with global players.** He called upon the Industry Captains to embark upon the journey of to make the country self reliant in defence goods. The Chair on behalf of the Directorate of Mechanised Forces assured complete support to the private industry in pursuance of Make In India.

25. Col Vishal Singh, lucidly highlighted the opportunities that existed for the private defence industry to engage in the manufacture of the tank ammunition. He further alluded that apart from focusing only on the RFP of the 125mm Ammunition, the industry **should also invest in R&D since the future requirements are likely to be of higher lethality ammunition.** He also emphasized on the need for the industry to focus on the prevailing modern trends in the tank ammunition so as to enable the availability of higher lethality ammunition in the near future.

26. Mr MK Aggarwal , gave out the capabilities and capacities available with the Ordnance Factories in tank ammunition manufacture. He also highlighted the



opportunities that existed for the private industry in engaging with the OFB in supplementing the existing capacities.

27. Col Rajesh Gandhi, (Retd) from Larsen & Toubro outlined the initiatives taken by the industry in establishing the manufacturing facilities of Tank Ammunition. He reiterated the **preparedness and capability of the private sector in undertaking the manufacture of modern and contemporary tank ammunition** compliant to international norms.

28. Reps of the FOEM highlighted the following facets:-

(a) Availability of **low cost tank ammunition** for training purposes which apart from being substantially cheaper **considerably reduces the weapon fatigue.**

(b) Perspective on manufacture of **higher lethality 30mm Canon** ammunition for BMPs.

29. While concluding the Chair highlighted the following issues:-

(a) Need for a **robust eco system** for promoting indigenous manufacture of tank ammunition.

(b) Need for **investment in R&D** to ensure timely availability of the cutting edge technologies indigenously.

SESSION 4 : Missiles

30. The session on Missiles was chaired by Lt Gen AB Shivane, PVSM, AVSM (Retd) ex Director General of Mechanized Forces and amongst the speakers were Brig Vikash Sharma, DDG Army Air Defence (AAD) Corps, Col G S Sahota, Director, Perspective Planning Directorate and Mr Rudra Jadeja representative of BDL.

31. The Chairman recounted the success of indigenous missile development programme however, highlighted the need to acquire greater capabilities for effective deterrence. The chair reiterated the **imperative need for the indigenous industry to participate in the furtherance of the Indian missile capability.** He also emphasized on the need for the indigenous availability of critical technologies essential for self sufficiency and thus the imperative need for the industry to take



up R&D. He also highlighted that most of the **missile technologies are dual purpose and hence availability of these shall lead to spin offs** for utilization in multiple fields.

32. Brig Vikash Sharma while alluding to the role & capabilities of the AAD Corps gave out the requirement of rockets by the AAD for achieving the desired capabilities. He lauded the support and success of the private industry in many ongoing projects viz Pinaka etc . He assured the Indian industry of the requisite support in their endeavor for indigenization.

33. Col GS Sahota broadly outlined the **perspective of the Indian Army in towards the desired capabilities** in the field of missiles towards achieving both worthwhile deterrence and the mandated defence preparedness. He also highlighted the rapid advances being made in missile technology globally and called upon the domestic industry to **keep pace with global trends**.

34. Mr Rudra Jadeja, highlighted the capabilities and capacities of the BDL in missile manufacture. He gave out the brief history of the DPSU and brought out the contributions of BDL towards ensuring availability of missiles. He acquainted the audience with the **manufacturing facilities, advanced test facilities available and also the stringent QA/QC practices** in vogue with BDL

35. The chair while concluding highlighted the need for the industry to adopt a spiral approach towards acquiring/developing cutting edge technologies in missile production. Lt Gen Shivane, reiterated that it is imperative for the country to possess **niche technologies in the field of missile manufacture for ensuring worthwhile deterrence & holistic defence capabilities**. He further stated that the effort, cost and time invested in developing critical missile technologies would be adequately compensated post successful development since most of the **technologies are multipurpose and hence multi utility**.

SESSION 5 : Fuze Manufacturing

36. The session on Fuze manufacturing was chaired by Maj Gen S Dayal, AVSM,VSM,SM ADG (Proc), MGOs Branch with Col Ravi Madhok, Dir (Proc), Mr S Chatterjee, representing OFB and members from the Indian private industry.

37. Maj Gen Dayal, spoke about the efforts of the Army in promoting indigenous defence manufacturing and the Make In India initiative of the Government. He highlighted that the recently promulgated RFP for the ammunitions of various



weapon system was in pursuance of our efforts for self reliance. **He further assured that absolute transparency would be adhered to in the processes and reiterated that the adherence to the timelines shall be ensured.**

38. Col Ravi Madhok deliberated on the present ammunition needs of the Army and those in the future. He emphasized on the importance of **adherence to the laid down procedures for ensuring success of the ongoing procurement in the most transparent & responsive manner.** He clarified to the industry that the procurement process shall be followed in a time bound manner.

39. While concluding the chair reassured the industry about the **ample opportunities for the Indian Defence Industry** to engage with the Indian Army in the ammunition sector. He further stated that in addition to the domestic market the Industry should also **prepare and empower itself in a time bound manner to compete with global players.**

40. **Panel Discussion.** The Panel Discussion was chaired by Lt Gen Vinod Bhatia, PVSM, AVSM, SM, Director CENJOWS with the following panelist :-

- (a) Mr SK Chourasia, Chairman & DGOF Ordnance Factory Board
- (b) Maj Gen Ajay Ohri, SM, ADG Infantry
- (c) Maj Gen Sandeep Apte, ADG Artillery
- (d) Maj Gen S Dayal, AVSM, SM, VSM, ADG Procurement
- (e) Mr Sanjay Jaju , JS(OS)
- (f) Brig Deepak Saini, DDG MF (Mech Inf)
- (g) Shri AN Gupta, Premier Explosives

41. The salient aspects of the Panel Discussion are listed in succeeding Paragraphs:-

(a) **The Indigenously Designed Developed and Manufactured (IDDM).** The IDDM category is listed as the **Priority One procurement option in the DPP 2016.** The IDDM was expected to foster investments in R&D to ensure that the scientific talent in India is engaged in developing cutting-edge technologies. Despite being stated as the priority one procurement option, **there is lack of clarity on the process to be adopted for pursuing IDDM and thus an urgent need to formulate processes for ease of doing business.** The issue has been flagged time and again by the industry however, a standard operating procedure for IDDM is yet to be formulated.

(b) **Adherence to the Timelines of Procurement as per DPP 2016.** The industry expressed deep concerns wrt the **inordinately long**



procurement cycle in practice, despite unambiguous timelines being listed in DPP 2016 for the various sub processes as part of the overall procurement cycle. Thus there are time overruns in almost all cases sans exception. Although provisions exist with the vendor/supplier to exercise the penalty clause; however, for the fear of reprisal, the same is not exercised. The industry recommended that in order to make the **system more responsive, provisions should be made to ensure that slippages and delays lead to automatic activation of penalty clauses to enhance responsibility among stakeholders and fixing accountability.**

(c) **Certification Process.** In order to undertake exports of indigenously developed defence goods/technologies, it is an international norm to either have the proposed defence goods/technologies in service in the host country or else needs to be certified by accredited labs. The accreditation labs and testing facilities are mostly available with DRDO, DPSUs or OFB. In the Indian context CEMILAC and DGAQA the designated agencies for certification provide design and quality assurance certification to indigenously designed defence products only when they have been demanded by the users ie Indian Defence Forces. Innovative products developed by Indian companies, which have not been demanded by the defence forces, are not given design certification by CEMICAL/ DGQA, which **inhibits the Indian Industry to participate in global tenders. Also lack of certification adversely impacts the eco-system essential for enabling design and development of innovative and futuristic technologies by Indian companies.** Apropos, in order to promote innovation and encourage innovations and design in India there is an imperative need to extend the utilisation of the lab and testing facilities to private industry, albeit on cost basis. Therefore, a **transparent mechanism is needed to allow Indian companies designing innovative products to use test sites as well as obtain certification on payment.**

(d) **Level Playing Field to Private Defence Industry vis-a-vis OFB/DPSUs.** The industry perceives that the DPSUs/OFB are the default choice of the government in critical/big ticket defence acquisitions. In additions the OFB/DPSUs have inherent advantages on account of easy availability of capital, existing infrastructure et al. This perception has created an immensely negative sentiment amongst the private industry. The industry sited the example of FICV project wherein the OFB was accommodated at a later stage in the project **The industry strongly recommended that there is a need for providing level playing fields to the private industry vis-a-vis the DPSUs/OFB to stimulate the growth of indigenous defence industry.**



(e) **Pricing of Products.** The industry highlighted the clause pertaining to the validity of the commercial quotes for a period of ten years as in the case of the recent RFPs for the procurement of ammunition. It was highlighted that although tools exist for cost forecasting however, **predictive costing for a period of ten years may not be correct due to the large number of intangible attributes in the costing of military goods. Moreover, the pricing of critical military technologies do not follow defined trend lines and hence extrapolating of prices of such commodities may not be correct.** Further, improper pricing may lead to faulty costing which may result in default at a later stage. Such occurrences in turn may delay/derail the complete procurement process. Apropos the industry recommended that more pragmatism needs to be factored on this aspect and **recommended that Indexation Based Pricing criteria in lieu of the fixed pricing may be a better option.**

(f) **Outsourcing of products to Private Industry by OFB and DPSUs.** The industry expressed concern that the OFB and DPSUs are only offloading low end technology orders to the private industry. This is inhibiting the growth of the private defence industry in absolute terms. The industry reps assured that the Indian industry has matured over the years and hence need to be involved beyond the screw driver technology. **Apropos, due diligence needs to be done wrt the outsourcing of assemblies/subassemblies etc by OFB/DPSUs to ensure business sense holistic development of Indian Defence industry.**

(g) **Long Gestation Period for Open Tender Enquiries(OTE) by OFB.** The industry reps expressed anguish over the inordinate long time cycle from the time of publishing of OTE to the placement of Supply Order(SO) (ranging from 18 months to 24 months instead of the mandated six months). Due to the **long gestation period there is invariably a mismatch in the capacities and the pricing by the desirous private industry thus leading to either default or slippages in supplies.** Hence there is an imperative need to **minimise the gestation period for fruition of orders to the minimum and not beyond six months.**

(h) **Availability of Drawings .** The industry highlighted that while the OTE is undertaken by the OFB however, the drawings are held by DGQA (AHSP). While the OTE only gives out the specification of the product, quantities et al **however, the drawings provide an insight of the product. Thus absence of the drawings leads to ambiguity and lack of clarity wrt the product.** Due to the involvement of twin agencies viz OFB & DGQA there is often



mismatch in the OTE & availability of the drawings. The industry recommended that a single **window mechanism for availability of drawings dovetailed in the OTE needs be adopted for greater clarity and time bound response by the industry.**

Directions of Raksha Mantri

42. The Raksha Mantri assured of the following facets :-

- (a) The Government's **resolve to the actualization of the Make in India in its right earnest.**
- (b) The default choice in defence purchases is Made In India and the same shall continue.
- (c) The proposed Defence Industrial corridors were aimed at **promoting defence manufacturing facilities with the requisite infrastructural and allied support system.**
- (d) **Concerted effort by the Government to promote the involvement of MSMEs in the defence manufacturing sector.**
- (e) For facilitating "**Ease of Doing Business**" the MoD is open to further **accommodate viable & worthwhile recommendations of the industry.**
- (f) The MHA will ease the licensing procedure for the industry with regard to manufacture of ammunitions.
- (g) An assured order for 10 year will be accorded on successful prototypes.
- (h) The long term aim of the Government to transform **India into a net Exporter of defence goods from currently being a net importer.**

Summary of Recommendations

43. The summary of recommendations by the Industry Captains are listed under:-

- (a) **IDDM.** There is lack of clarity on the process to be adopted for pursuing IDDM and thus an urgent need to formulate processes for ease of doing business.



- (b) **Time Lines Of Procurement.** Provisions should be made to ensure that slippages and delays lead to automatic activation of penalty clauses to enhance responsibility among stakeholders and fixing accountability.
- (c) **Certification Process.** A transparent mechanism is needed to allow Indian companies designing innovative products to use test sites as well as obtain certification on payment.
- (d) **Pricing of Products.** Indexation Based Pricing criteria in lieu of the fixed pricing may be a better option.
- (e) **Level Playing Field to Private Defence Industry.** The industry strongly recommended that there is a need for providing level playing fields to the private industry vis-a-vis the DPSUs/OFB to stimulate the growth of indigenous defence industry.
- (f) **Outsourcing of products to Private Industry.** The outsourcing of assemblies/subassemblies etc by OFB/DPSUs needs to factor adequate business sense and holistic development of Indian Defence industry.
- (g) **Long Gestation Period for Open Tender Enquiries(OTE)** There is an imperative need to **minimise the gestation period for fruition of orders to the minimum and not beyond six months.**
- (h) **Availability of Drawings.** Need to ensure **availability of drawings dovetailed in the OTE needs be adopted for greater clarity and time bound response by the industry.**

44. **Conclusion.** The AMMO India 2018 provided a common platform to the stake holders from MoD, SHQ and Industry both Indian and FOEMs to share common concerns, deliberate on issues of shared interests and evolve consensus on the way forward towards ensuring self reliance in ammunition manufacture. **While the assurances of the Government need to be complied with, the recommendations of the Industry need to be considered by stake holders in the right earnest for furtherance of Make In India and to foster growth of domestic defence industry and ensuring preparedness of the armed forces. In order to highlight the achievements and deliberate on the shortcomings the AMMO India shall be an annual affair.**



Glimpses of AMMO INDIA 2018



From (L-R): Mr Vivek Pandit, Assistant Secretary General, FICCI; Lt Gen Vinod Bhatia PVSM, AVSM, SM (Retd.), Director, CENJOWS; Smt. Nirjala Sitharaman, Raksha Mantri Ministry of Defence; Mr. Rashesh Shah, President, FICCI; Lt Gen Giri Raj Singh SM, Director General Ordnance Services, Indian Army; Dr. Sanjaya Baru, Secretary General, FICCI releasing the Knowledge Paper.



Mr. Rashesh Shah, President, FICCI honouring the Chief Guest - Smt. Nirjala Sitharaman, Raksha Mantri



Lt Gen Girdhar Singh SM, Director General Ordnance Services delivering special address at the Inaugural Session



Lt Gen Ranbir Singh AVSM**, YSM, SM, Deputy Chief of the Army Staff (IS & T), Indian Army inaugurating the AMMO INDIA 2018 Exhibition Display