



सत्यमेव जयते

Government of India
Ministry of Defence
Department of Defence Production

MISSION RAKSHA GYAN SHAKTI

ज्ञानवृत्त



Mission Raksha-Gyan-Shakti
Intellectual Property for Self-Reliance in Defence

LAUNCHING OF 'MISSION RAKSHA GYAN SHAKTI'



Dr Ajay Kumar, Secy(Defence) initially conceptualized creation of an IPF Cell during April 2018 to boost the IP culture in the Defence manufacturing units and to create synergy between all DPSUs/Shipyard/OFB, in the name of 'Mission Raksha Gyan Shakti' (MRGS) under the aegis of DGQA. MRGS was formally launched by former Hon'ble RM Smt Nirmala Sitharaman, on 27 Nov 2018. The mission targets to create and nurture a framework in entire Defence Production ecosystem for creation, protection and management of Intellectual Property Rights (IPR). The end objective of Mission Raksha Gyan Shakti is to hasten our march towards achieving Self Reliance in Defence.

Government of India
Ministry of Defence
Department of Defence Production
New Delhi- 110011



Shri Raj Kumar
Secretary (DP)



Government has envisioned the need to hone the creative and innovative skills of our own human capital towards the nation's technological independence and economic growth.


Our aim is to foster a competitive, innovative and robust defence industry by providing a boost to MSMEs and startups, encourage collaborations to pursue R&D, acquire latest technology and skill-sets.

Among the several innovative initiatives of the Government, 'Mission Raksha Gyan Shakti' is unambiguously, one of the most significant initiative, and the most defining drive to inspire the young, creative and innovative talent of our country.

I am very happy to know the achievements / progress made by the scheme in a very short span of time.

I am hopeful that this magazine will ignite the innovative and creative young minds to achieve Self Reliance in Defence Sector.

Jai Hind


(Raj Kumar)
Secy (DP)

Government of India
Ministry of Defence
Department of Defence Production
New Delhi- 110011



Lt Gen Sanjay Chauhan
Director General Quality Assurance



In the current scenario and the Govt's thrust of 'Make in India' policy, an aggressive and targeted creation of Intellectual Property in the Defence Sector is the need of the hour. The protection of Intellectual Property Rights (IPR) was not a major international trade issue prior to 1990. However, with recent trends such as globalization, emergence of new technologies in the field of defence production have elevated the importance of IPR protection both politically and strategically and has become a global issue.

'Mission Raksha Gyan Shakti' scheme has been launched by MoD/DDP to hasten our march towards achieving Self Reliance in Defence by tapping the Intellectual Property created by entire defence manufacturing sector. The progress achieved by the mission in a very short duration is not only remarkable but also very encouraging. Globally, an IPR compliant framework is the cornerstone for any knowledge intensive sector, such as defence production. IPR is a strategic business tool in today's 'Knowledge' based economy of which Defence manufacturing is a subset.

It gives me immense pleasure to launch the inaugural issue of 'Mission Raksha Gyan Shakti' (MRGS) E-magazine and I am sanguine that this magazine will provide a platform for not only encouraging our young talented innovators to share their knowledge but will also open the doors for boosting the IPR Culture in the entire defence production eco-system.

I convey my best wishes for successful publication of this e-magazine.

Jai Hind

(Sanjay Chauhan)
Lt Gen
DGQA

MISSION RAKSHA GYAN SHAKTI: INTELLECTUAL PROPERTY (IP) FOR SELF RELIANCE IN DEFENCE

1. In today's globally competitive environment, Intellectual Property (IP) has placed itself on pedestal in context of 'Self Reliance in Defence Production' due to its significance & importance. The increasing significance of intangible assets in the global Defence manufacturing is forcing business organizations to actively manage their Intellectual Property as the key driver for building and sustaining the competitive edge and achieving superior performance. Intellectual Property Rights (IPRs) acts as a strategic business tool to enhance Industrial Competitiveness and plays key role for any business organization to stand out in the world of competition and provides the desired 'Winning edge' over the competitors.

2. In order to achieve military superiority in terms of strategic independence and cost effective defense equipment, a vibrant change in the defense industry has become an inevitable necessity. Despite some of the highlighted achievements of our defense production majors and R&D efforts in new technology development from our 52 DRDO labs across the country, a significant part of our nations defense requirements continue to be import dependent which is rather disheartening fact. R&D and innovation are the most important determinants of defense production capabilities. Technological advancements in the Information and Nano-technology arenas and its proliferation are likely to adversely impact the military operations, unless our own defense industry intuitively responds in the need of the hour. Thus, developing cutting-edge technologies to be able to achieve leadership in defence products had been envisaged as a determinant of major technological growth as being done world over in the defense sector. The Indian Ordnance Factories and Defence PSUs can sustain in this competitive world through continuous growth and development oriented innovations.

3. Ministry of Defence, Department of Defence Production (MoD,DDP) has initiated 'MISSION RAKSHA GYAN SHAKTI' in the month of Apr 2018, with a primary objective of 'Boosting IP culture' and to promote creation of Intellectual Property in the defence production sector, in

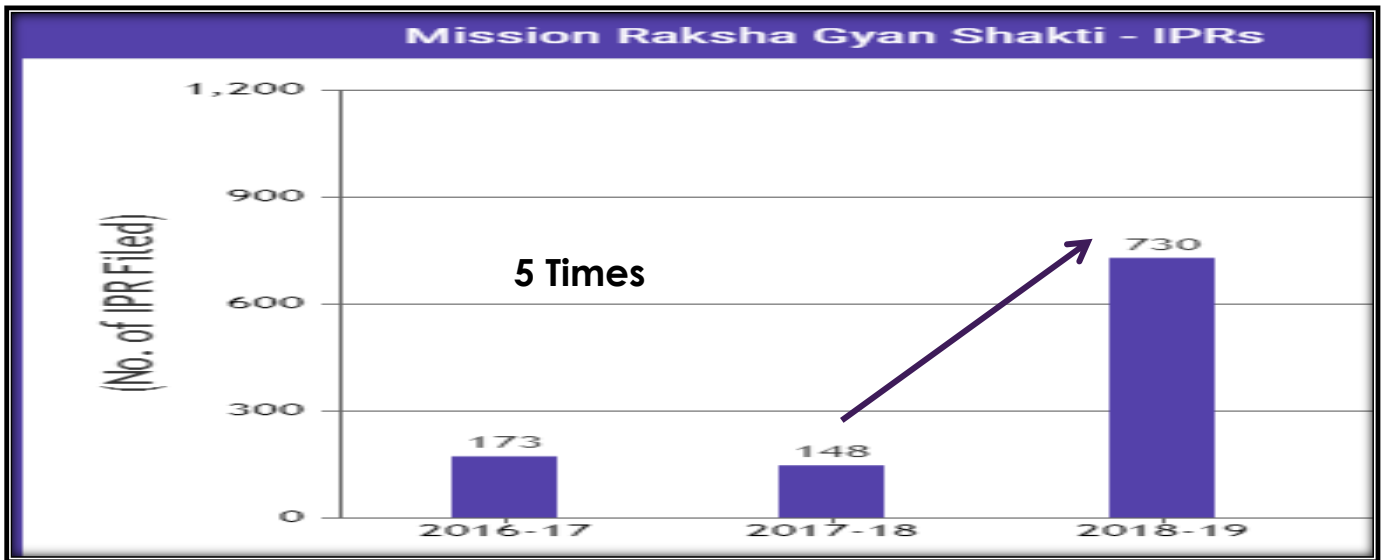
line with the national policy on IPR to encourage and assist the Defence Public Sector Units (DPSUs), Ordnance Factories (OFs) and their creative/innovative officials towards IPR regime.



form of an 'Intellectual Property Rights Facilitation Cell (IPFC) in Apr 2018, under the aegis of DGQA as part of DDPs 'Mission Raksha Gyan Shakti – Intellectual Property for Self Reliance in Defence'. The mission was formally launched by Hon'ble Raksha Mantri on 27 Nov 2018 with setting up an ambitious target of training approximately 10,000 personnel and *filing at least 1,000 IPR applications during the financial year 2018-19.*

MISSION RAKSHA GYAN SHAKTI: INTELLECTUAL PROPERTY (IP) FOR SELF RELIANCE IN DEFENCE

5. In the first year itself, the progress as was laid down in the road map was very significant and encouraging with almost 5 times increase in the IPR applications filing as compared to the previous years (shown below).



6. The IPFC was successful in spreading the IPR awareness amongst the DPSUs/ OFs as some of the organizations under DDP filed the IPR applications for the first time as evident from the table below.

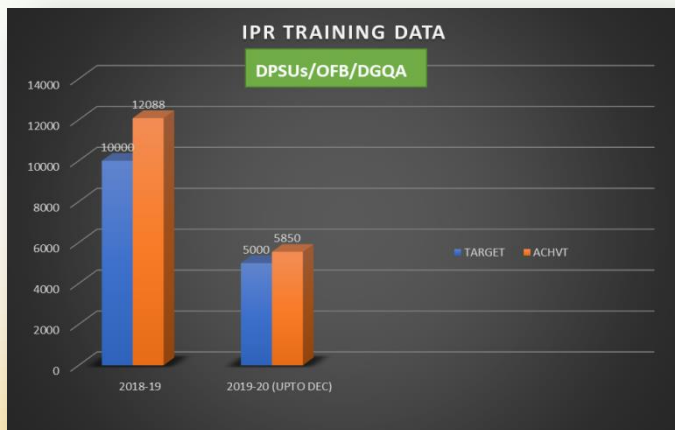
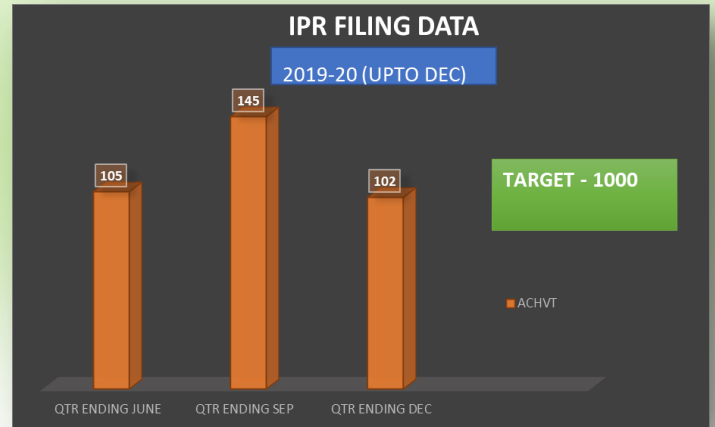
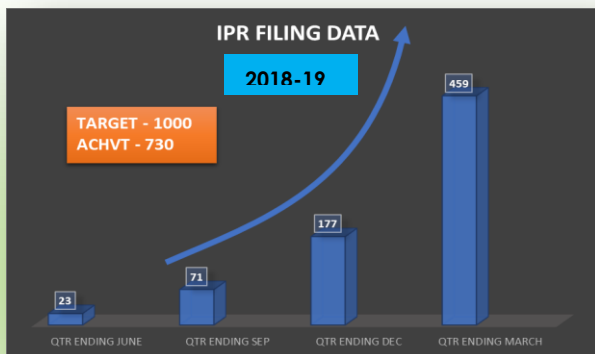
Year	OFB	BEL	GRSE	GSL	MDL	BEML	MDNL	BDL	HAL	HSL	TOTAL
2016-17	1	20	1	-	-	-	-	-	151	-	174
2017-18	0	25	0	-	-	-	-	-	123	-	148
2018-19	154	302	5	6	57	65	50	4	82	5	730
2019-20	81	10	13	17	12	11	00	31	167	10	352

8. Total 17938 personnel from all DPSUs/OFB/DGQA have been imparted with the basic awareness training by the team of selected 'Master Trainers' who were trained at Rajiv Gandhi National Institute of Intellectual Property Management (RGNIIPM) for this very purpose.

9. Total 1082 IPR applications have also been filed by DPSUs/OFB till date.

10. A comprehensive Action Plan 2019-20 has also been formulated and promulgated to all stakeholders including Army/ Navy/ Air Force on 07 Mar 2019 with approval of Hon'ble Raksha Mantri.

TARGETS - ACHIEVEMENTS



IPR FILING AND IPR TRAINING DATA (FY 2018-2019 & 2019-2020)

Period	IPR FILING		IPR TRAINING	
	Target	Achievement	Target	Achievement
FY 2018 - 2019	1,000	730	10,000	12,088
FY 2019 – 2020 (Upto Dec 2019)	1,000	352	5,000	5,850
Total	2,000	1,082	15,000	17,938

TARGETS - ACHIEVEMENTS

IPR FILING DATA FOR THE FY 2018-19

SI No.	Name of the Org	Target	Achievement
1	OFB	200	154
2	BEL	300	302
3	GRSE	50	5
4	GSL	50	6
5	MDL	50	57
6	BEML	50	65
7	MIDHANI	50	50
8	BDL	50	4
9	HAL	150	82
10	HSL	50	5
TOTAL		1,000	730

IPR FILING DATA FOR THE FY 2019 -20 (UPTO DEC 2019)

SI No.	Name of the Org	Target	Achievement
1	OFB	250	81
2	BEL	150	10
3	GRSE	50	13
4	GSL	50	17
5	MDL	100	12
6	BEML	50	11
7	MIDHANI	50	0
8	BDL	50	31
9	HAL	200	167
10	HSL	50	10
TOTAL		1,000	352

IPR TRAINING DATA FOR THE FY 2019-20 (UPTO DEC 2019-20)

SI No.	Name of the Org	Target	Achievement
1	OFB	1600	2690
2	BEL	1500	1314
3	MDL	360	141
4	BEML	360	339
5	BDL	360	270
6	MIDHANI	180	184
7	GSL	240	164
8	HSL	200	100
9	GRSE	200	209
10	HAL	--	420
11	DGQA	160	19
TOTAL		5,160	5,850

IPR TRAINING DATA FOR THE FY 2018-19

SI No.	Name of the Org	Target	Achievement
1	OFB	3150	5310
2	BEL	2700	2716
3	MDL	720	719
4	BEML	675	678
5	BDL	675	790
6	MIDHANI	360	381
7	GSL	360	417
8	HSL	405	405
9	GRSE	405	413
10	HAL	--	
11	DGQA	270	259
TOTAL		9,720	12,088

GLIMPSES OF IP AWARENESS DRIVE

BHARAT ELECTRONICS LTD



BHARAT ELECTRONICS LTD



BHARAT EARTH MOVERS LTD



BHARAT EARTH MOVERS LTD



HAL



HAL



GLIMPSES OF IP AWARENESS DRIVE

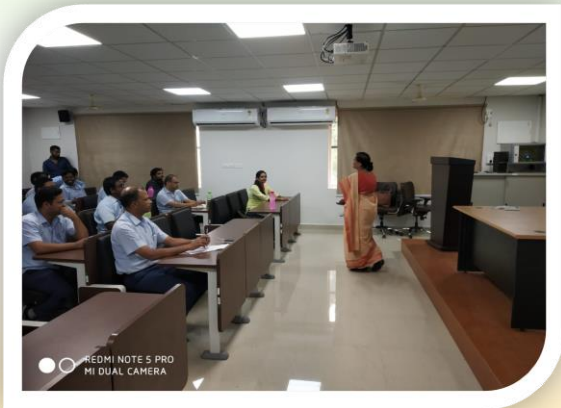
HSL



HSL



MISHRA DHATU NIGAM LTD.



MISHRA DHATU NIGAM LTD.



OFB



OFB



IMPORTANT INNOVATIONS: DPSUs / OFB

BHARAT EARTH MOVERS LIMITED, BANGALORE

Parking Brake System for Off Highway Dumper

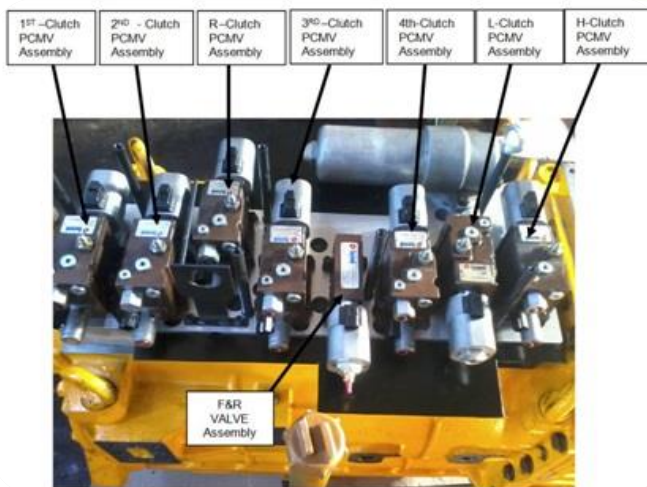
PATENT NO. : 288297

TITLE OF INVENTION: A CONTROL SYSTEM FOR AN AUTOMATIC POWERSHIFT TRANSMISSION

A control system for an automatic power shift transmission comprises a transmission power train selectively coupled to a plurality of gears via at least one clutch. The control system further includes a pressurecontrolled modulation valve (PCMV) assembly coupled to the at-least one clutch, a forward/reverse safety valve, an electronic transmission control unit, and a manual override safety unit. The PCMV assembly includes at least one of a proportional valve and a fill valve. The PCMV assembly is configured to regulate the clutch pressure in the at least one clutch by means of different combinations of the proportional valve and the fill valve for different predetermined volumes of the at least one clutch.



BH60M DUMP TRUCK



BH60M TRANSMISSION

Name of the Inventors

HANUMESH

S. JEYAKUMAR

M. SINGARAVELAN

S. BARATH

P. RAGHU VAMSI

K. CHANDRA

IMPORTANT INNOVATIONS: DPSUs / OFB

GARDEN REACH SHIPBUILDERS & ENGINEERS LTD. KOLKATA

"Builders of 100 Warships"



Project title : Innovative launching by Floating out of 2 Nos FPV from Slipway



Dock block arrangement on inclined floor for 2 FPVs utilizing existing ground ways



Two FPVs in inclined building berth near lock gate and Additional support at aft below bottom shell for load during suing.

This innovative method has been successfully implemented and two numbers of FPV (Yard 2115 and 2116) launched on date 22.11.2018. This proven methodology can be implemented for construction and launching of vessel of sizes similar to FPVs from inclined berth thus by harnesses resources aptly.

Name of the Inventors

Name	Department & Designation	Name	Department & Designation
Gulshan Ratan	CDO, AGM	Cdr A.K. Mahapatra	MW, AGM
Saumya Sengupta	CDO, SM	Kripacharya Rai	MW (Dock Dept.), Mgr
Sanjeev Kumar	CDO, DM		

IMPORTANT INNOVATIONS: DPSUs / OFB

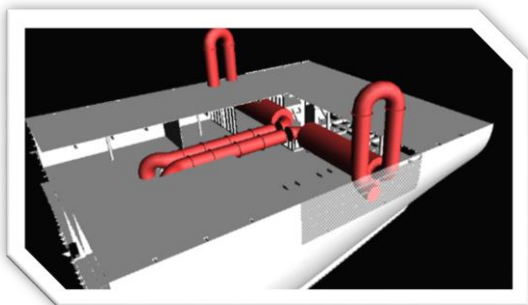
HINDUSTAN SHIPYARD LIMITED

1. Title of the Invention : Method for Joining Cu-Ni Pipe to Gunmetal Flange using TIG Welding



The present disclosure discloses a method for joining Cu-Ni (Cupro Nickel) pipe to Gunmetal (GM) flange through Tungsten Inert Gas (TIG) welding process. The Tungsten Inert Gas (TIG) welding process uses a high melting point non-ferrous alloy filler rod with 2 to 3 weight percentage of silver content in the filler rod to join Cu-Ni pipe to Gunmetal (GM) flange thereby preventing oxidation of joining or welding parts and with low cost. The other objective is to reduce the poisonous gases during welding process. **This innovation got recognition and HSL was awarded RM's Awards for excellence in the category of Innovation.**

2. Title of the Invention : Ship side exhaust concept for 9 mw main engine as an Industrial design

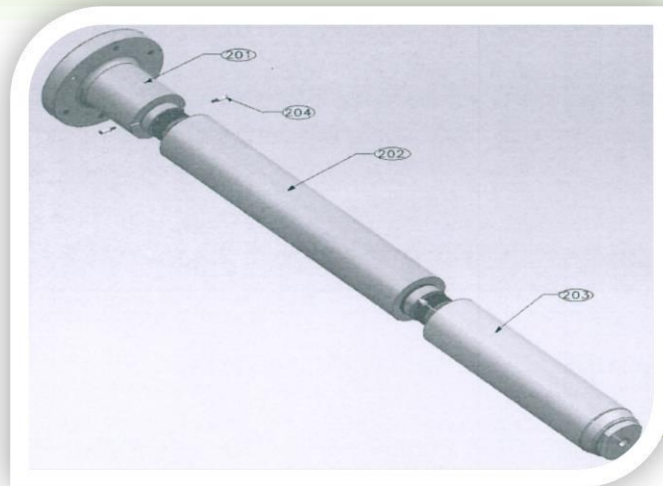
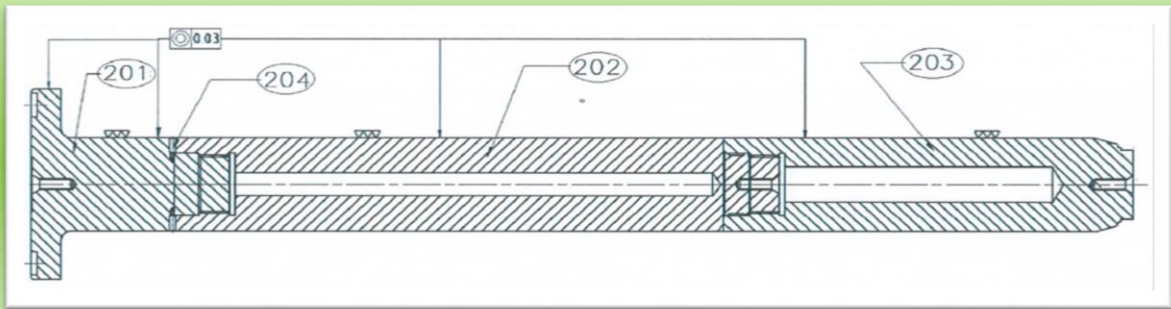


Generally, in a ship the exhaust of the Main engine and the Diesel Generators are routed through the funnel, which finally ends in top most decks of the superstructure. However in new concepts or in existing ships the concept to provide the exhaust on the ship's side above the waterline can be taken up for such big scale of vessels. Developed as an alternative innovative concept of ship side exhaust. All these aspects of this can be completed in the already defined project time without asking for any additional time while the production is in progress as per the delivery schedule of the vessel. It means that this concept can be used in newly built ships or in cases where location of funnel cannot be positioned on top. **For this innovation HSL was awarded SODET Awards in the category of Technology Development & Technology innovation.**

IMPORTANT INNOVATIONS: DPSUs / OFB

ORDNANCE FACTORY BOARD

Title of the Invention : Development of a Three Piece Mandrel for reverse flow forming operation.



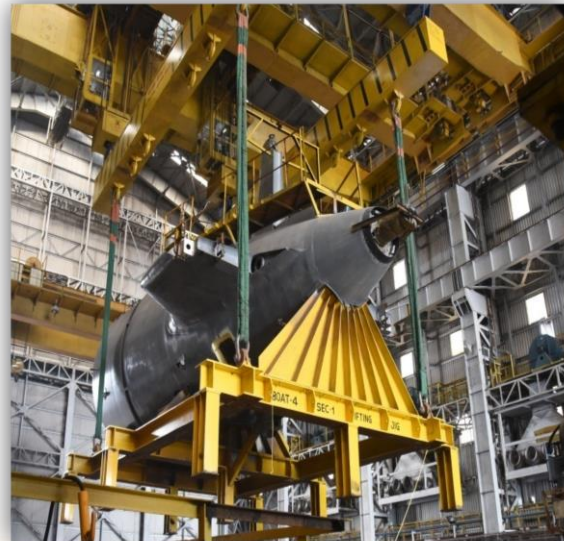
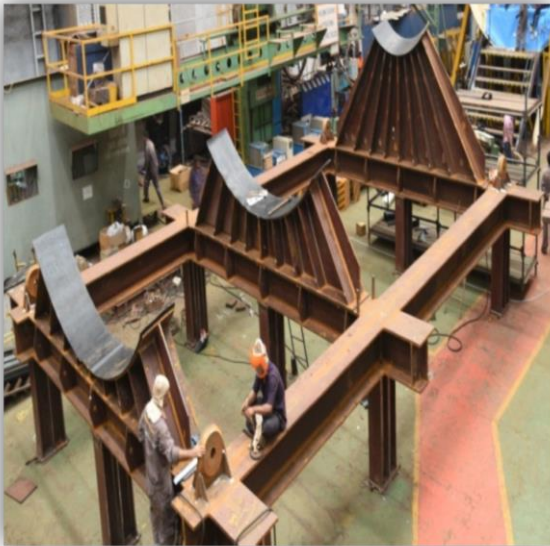
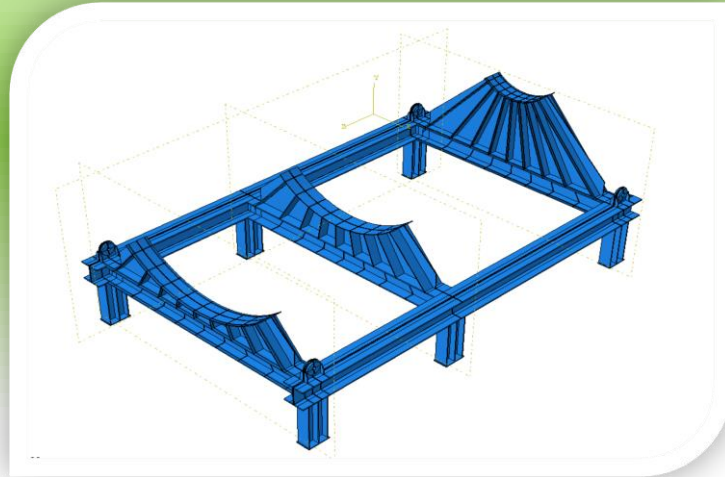
Development of a Three Piece Mandrel (Figure 1 & Figure 2) for flow forming process is carried out to reduce change over cost due to worn out of middle portion of mandrel. This comprises manufacturing three parts of mandrel with three separate steel material grades viz. En-47, D-2 & T-90. Due to this development, production target of steel tube through flow forming process is increased. This also helped save costly material and provided facility for replacement of only middle portion of the mandrel, thereby saving precious machine time and manpower along with the tooling etc.

Name of Applicant : Ordnance Factory Ambajhari

IMPORTANT INNOVATIONS: DPSUs / OFB

MAZAGON DOCK SHIPBUILDERS LIMITED

Title of the Invention : DESIGN AND FABRICATION OF SECTION-1 LIFTING JIG



MDL has designed and fabricated an innovative lifting jig which enabled transfer of complete outfitted Section-1 on Pontoon. This has resulted in time reduction on availability of Dry Dock from 9 months (boot together period) to 6 months and thus resulting in savings of 79.20 Cr.

IMPORTANT INNOVATIONS: DPSUs / OFB

SIGNIFICANT INNOVATIONS - HAL

Title of the Invention : HYDRAULICALLY OPERATED TOE-OUT / TOE-IN AND MANUAL LOCKING MECHANISM ON MAIN LANDING GEAR (PATENT GRANT NUMBER 201344)

Brief about the invention: Swiveling of main wheels and locking in toe-out and fore-and-aft position are required on main landing gear for spot turning of the helicopter on ship deck with harpoon engagement point as pivot. A swivel axis is created on main landing gear by inserting a turning tube. A mechanically operated spring loaded lock is introduced which can lock, stay unlocked and gets locked automatically, when released prior to reaching final position, in toe-out position or in fore-and-aft position. A hand pump operated dual chamber hydraulic actuator is as-



sembled between barrel and turning tube for power swiveling of main wheels of main landing gear. This arrangement facilitates simple, easy and effective swiveling and locking of main wheels at either fore-and-aft position or toe-out position. This invention is adopted in Coast Guard and Navy variants of ALH.

Name of the Inventors :

V N Divakaran
Ex-AGM (Landing Gear),
Aircraft Research & Design
Center

P Jayarami Reddy,
Ex-AGM (Landing Gear),
Aircraft Research & Design
Center

Shri A.Prabhakaran,
HOD(MS),
Aircraft Research & Design
Center

GLOBAL IP NEWS

(EXTRACT FROM WORLD INTELLECTUAL PROPERTY INDICATORS 2019 – WIPO)

SHARE GROWTH OF WORLD

-P\ Patents	2017	2018	rate (%)	total (%)
Applications worldwide	3,162,300	3,326,300	5.2	100.0
China	1,381,594	1,542,002	11.6	46.4
U.S.	606,956	597,141	-1.6	18.0
Japan	318,481	313,567	-1.5	9.4
Utility models				
Applications worldwide	1,761,440	2,145,960	21.8	100.0
China	1,687,593	2,072,311	22.8	96.6
Germany	13,301	12,307	-7.5	0.6
Russian Federation	10,643	9,747	-8.4	0.5
Trademarks				
Application class counts worldwide	12,395,700	14,321,800	15.5	100.0
China	5,739,669	7,365,522	28.3	51.4
U.S.	613,895	640,181	4.3	4.5
Japan	560,265	512,156	-8.6	3.6
Industrial designs				
Application design counts worldwide	1,242,100	1,312,600	5.7	100.0
China	628,658	708,799	12.7	54.0
EUIPO (EU Office)	111,234	108,174	-2.8	8.2
Republic of Korea	67,482	68,054	0.8	5.2
Plant varieties				
Applications worldwide	18,550	20,210	8.9	100.0
China	4,465	5,760	29.0	28.5
Community Plant Variety Office (EU)	3,422	3,554	3.9	17.6
U.S.	1,557	1,609	3.3	8.0

Source: WIPO Statistics Database, August 2019.

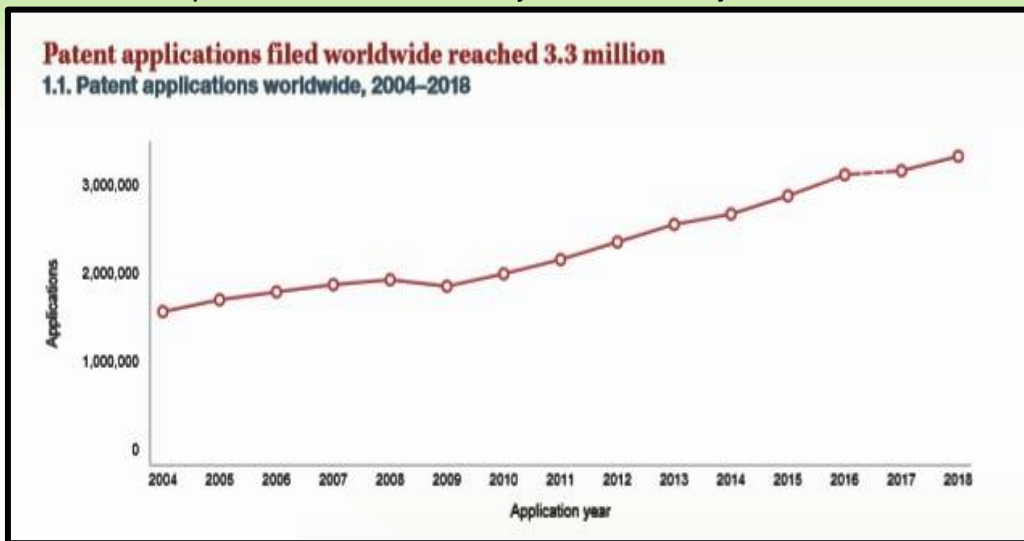
WORLD INTELLECTUAL PROPERTY INDICATORS 2019

[EXTRACT FROM WORLD INTELLECTUAL PROPERTY ORGANISATION (WIPO) SITE]

Patent applications worldwide grew by 5.2% in 2018

Applicants around the world filed 3.3 million patent applications in 2018. This represents a 5.2% increase on the previous year (Fig below). Driving such strong growth was an exceptional number of filings in China, which received about 160,400 more filings in 2018 than it had in 2017. The next largest contributors were the European Patent Office (EPO) (7,812 additional filings) and the offices of the Republic of Korea (5,217) and **India (3,473)**.

The long-term trend shows patent applications growing worldwide every year since 2004, with the sole exception of 2009 when they decreased by 3.8% due to the financial crisis.



Of the 3.3 million applications filed worldwide in 2018, resident applicants filed 2.4 million (71.5% of the total), while non-resident applicant filed the remaining 0.9 million (28.5%). Resident share increased from 61.6%

in 2004 to 71.5% in 2018. In addition, the proportion of resident versus non-resident filings varies greatly across offices. For example, more than half of all applications filed in the United States of America (U.S.) were non-resident applications, whereas non-resident share was less than a one-tenth of all applications filed in China.

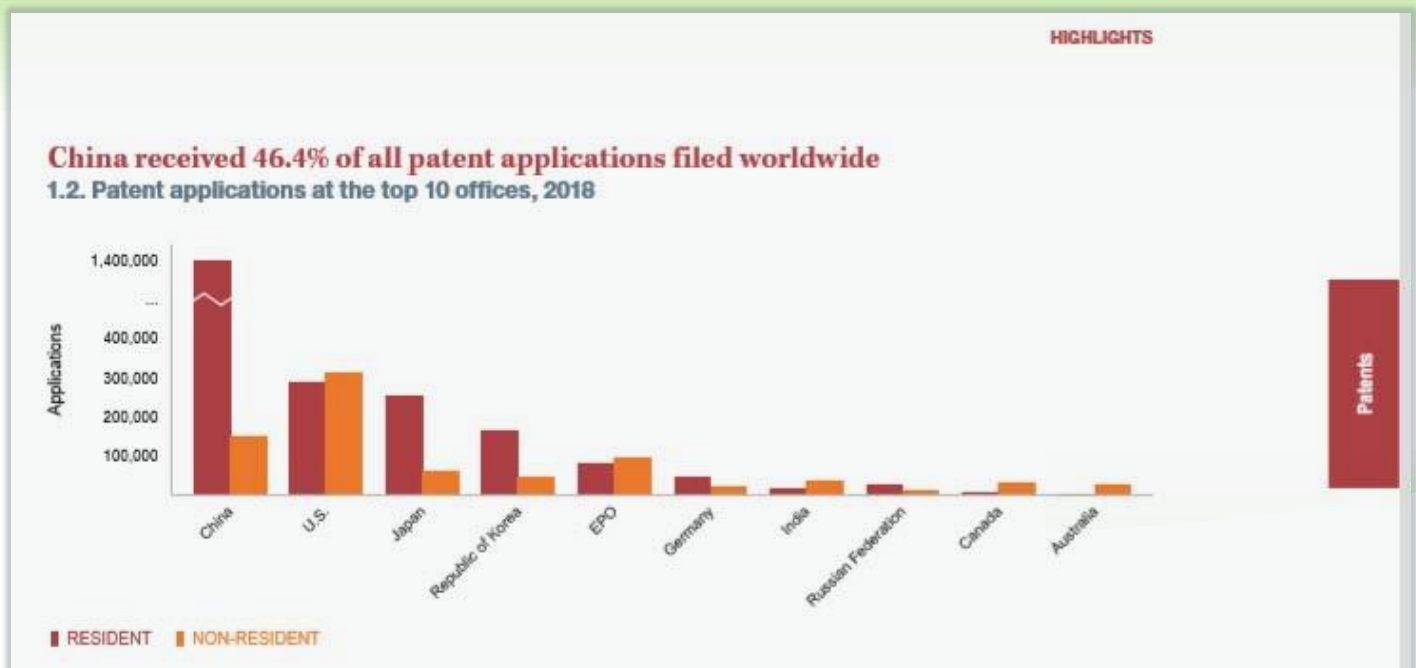
The National Intellectual Property Administration of the People's Republic of China received 1.5 million patent applications in 2018, an amount similar in magnitude to the combined total of the offices ranked from 2 to 11.

The United States Patent and Trademark Office (USPTO) ranked second, with 597,141 applications. It was followed by the Japan Patent Office (JPO), with 313,567 applications, the Korean Intellectual Property Office (KIPO), with 209,992 applications, and the EPO, with 174,397 applications. Together, the top five offices accounted for 85.3% of the world total in 2018, which is 10 percentage points higher than their combined 2008 share. **China's share of the world total increased from 15% in 2008 to 46.4% in 2018**, whereas that of the other four offices declined over the same period.

The composition and the ranking of the top 10 offices have both remained relatively stable since 2008. The composition of the top 10 offices has remained the same, except that in some years Australia has been among the top 10 offices, while in others it has lost its place in the list to Brazil. In addition, **China moved up from third position in 2008 to take the top spot in 2011 and has continued to head the ranking for the past eight years.** Figure below shows the patent applications received by the top 10 offices, broken down by resident and non-resident filings. The intellectual property (IP) offices of China (90.4%), Germany (68.7%), Japan (80.9%), the Republic of Korea (77.4%) and the Russian Federation (65.7%) received the bulk of their applications from resident applicants. In contrast, Australia (90.8%), Canada (88%) and India (67.5%) reported a high share of non-resident filings.

CHINA RECEIVED 46.4% OF ALL PATENT APPLICATIONS FILED WORLDWIDE

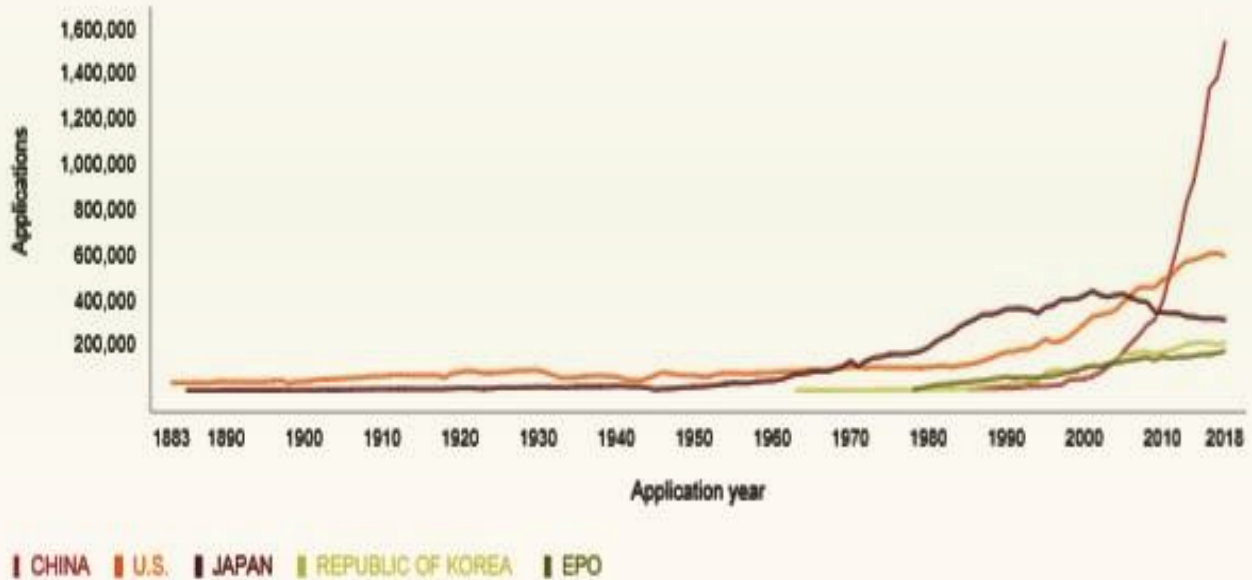
11.1. Patent applications at the top 10 offices, 2018



Patent filings since 1883

From 1883 to 1963, the patent office of the U.S. was the leading office for world filings. Application numbers in Japan and the U.S. were stable until the early 1970s, when Japan began to see rapid growth – a pattern also observed for the U.S. from the 1980s onward. Among the top five offices, Japan surpassed the U.S. in 1968 and maintained the top position until 2005. Since the early 2000s, however, the number of applications filed in Japan has followed a downward trend. Both the EPO and the Republic of Korea have seen increases each year since the early 1980s, as has China since 1995. China surpassed the EPO and the Republic of Korea in 2005, Japan in 2010 and the U.S. in 2011 – and it now receives the largest number of applications worldwide. There has been a gradual upward trend in the combined share of the top five offices in the world total – from 75.3% in 2008 to 85.3% in 2018.

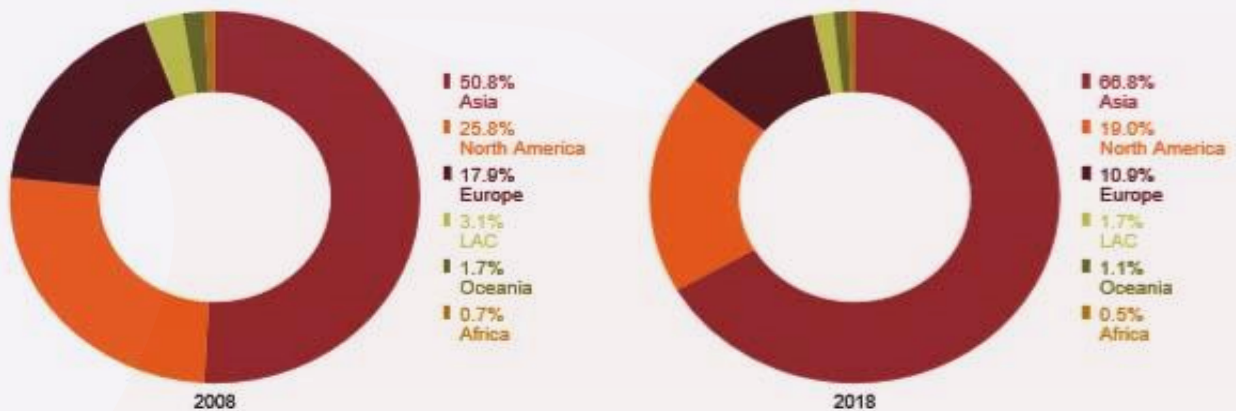
Trend in patent applications for the top five offices, 1883–2018



Note: The IP office of the Soviet Union, not represented in this figure, was the leading office in the world in terms of filings from 1964 to 1969. Like Japan and the U.S., the office of the Soviet Union saw stable application numbers until the early 1960s, after which it recorded rapid growth in the number of applications filed.

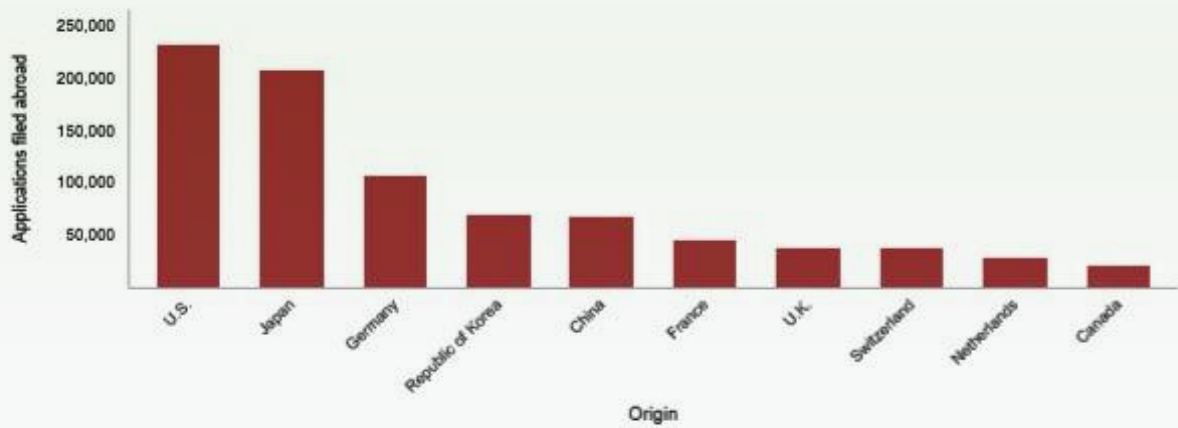
Offices located in Asia received 66.8% of all patent applications filed worldwide

1.3. Patent applications by region, 2008 and 2018



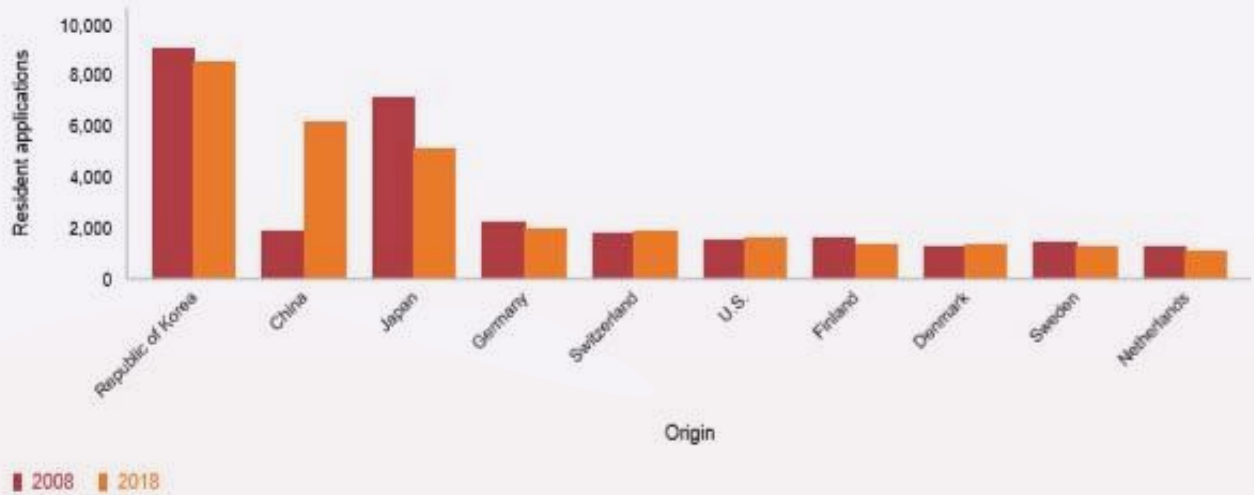
U.S. applicants filed the largest number of applications abroad

1.4. Patent applications filed abroad by the top 10 origins, 2018



The Republic of Korea had the highest number of patent applications per unit of GDP

1.5 Resident patent applications per USD 100 billion GDP for the top 10 origins, 2008 and 2018



IPR and Indian Defence Industry – Issues in Registering IP

Prathyusha M, Manager (Design), HAL



Ms. Prathyusha M is currently working in IPR Facilitation Cell, Design Complex of HAL as Manager (Design). She has a B.Tech in Mechanical Engineering from IIT Guwahati and a PGDIPRL (Post Graduate Diploma in Intellectual Property Rights Law) from National Law School of India University (NLSIU) Bangalore. She is a registered Patent Agent with Govt. of India. Additionally, she is also a certified Project Management Professional (PMP) from PMI USA.

IPR and Indian Defence Industry – Issues in Registering IP - Prathyusha M

*At the origin of all human invention is a lit fire,
What if an industrial design was registered of the tool that created the spark...
Who would then copyright the photograph and video of the process, sire,
I still wonder, if it was patented, would the inventor be called a shark..
Whatever the form, intellect it was that mattered whether it was on hire or on acquire,
Making Intellectual property rights ownership, the evergreen benchmark.*

Intellectual Property Rights (IPR) are at the core of inventions and creations all across the world, with the extent of its legislative framework stretching out to address the judicial needs of the ever-expanding universe itself. Yet, IPR still lures the Indian Defence Industry with the absence of a stronger footprint. According to the World Intellectual Property Report 2019 released by WIPO (World Intellectual Property Organization), “in the 2010s, more than a quarter of all international patent sourcing by U.S. multinational companies had an inventor from China or India and on the other hand, multinationals from middle-income economies also actively participate in global innovation networks”. But the patent grants owned by India are few in comparison to other nations. IPRs are negative rights that prevent others from claiming inventions as their own when they are not. Also, IPRs provide exclusive rights for commercial exploitation by the owner of IPR. Defence sector does not traditionally operate on commercial motive but to prevent other nations from claiming Indian inventions as theirs, it becomes crucial to register IPRs as and when they are created. The number of patents owned by Indian defence industry are quite few compared to those that belong to commercial entities of other technological areas. Intellectual Property refers to all the intangible assets arising from the creativity and intellect of minds.

IPR in India can broadly be categorized into Patents, Copyrights, Industrial Designs, Trade Marks, Semiconductor Integrated Circuit Layout Designs, Trade Secrets, Geographical Indications, Biodiversity, and Plant Varieties & Farmers Rights. With the exception of the innovations pertaining to Biological resources to an extent, all other categories of IPR are very much applicable to the defence sector. India has been the country of scholars, and is known to be at the roots of development all across the world in most of the technological fields. Indian defence sector has a mighty base of armoury for defending the nation from the sea, land and the airspace. Self-reliance is the most significant factor in driving innovation specific to the defence sector. For innovations to transform into registered IP, few basic hindrances need to be resolved for the defence IP portfolio to have a significantly evident impact.

Section 35 of the Patents Act 1970 routes any patent application, the subject matter of which seems prejudicial to the security of the nation to a scrutinizing agency. Once clearance is obtained from the agency, only then the application is published and moved

This creates undue delay where publishing of the subject matter is not prejudicial to the national security. Inventor's/ Applicant's responsibility in such cases is to carefully draft the application so as to not attract undue attention of the examiner by mention of terms which are prejudicial to the national security and defence unless necessary. For patent applications made by organizations under the MoD umbrella, an expedited procedure can be followed to complete the scrutinizing process quicker to atleast level the pace of patent prosecution, compared to applications in conventional route.

Section 4 of the Patents Act 1970 prohibits atomic energy related inventions to be patented. Whether the subject matter pertains to atomic energy or is it only a mere mention of substances used for atomic energy generation or related processes thereof, has to be taken into careful consideration. If the substance mentioned in the application falls under the list of atomic energy related substances, the trends show that the patent is refused, even after clearance from DAE is obtained. Grants in such cases have been more of an exception than the norm. The applications in fields related to atomic energy related R&D are only going to grow, especially if our country needs to strengthen its technical assets in defence. An optimal solution needs to be arrived at, which enables grant of Patents and other IPRs related to atomic energy inventions.

Artificial Intelligence (AI) has arrived into all modes of contemporary life. It only emphasizes the fact that the future technologies are going to rely more and more on AI. But the legislations for protecting AI in India have not been strengthened as required. AI and Machine Learning have gained prominence and these are based on data analysis, data learning by programmed systems and neural networks programming which mostly translate to algorithms and computer programs. Computer programs per se and algorithms, cannot be patented according to Section 3(k) of the Patents Act 1970. Copyright protection is available for software programs but it is difficult to monitor infringement for copyrights in case of software. The innovations in AI have to be given due regard as a separate area of technical advancement and legislations are to be amended to include such expertise.

Technology transfer from foreign OEMs has enabled entry of contemporary platforms possible in our defence sector from time to time but the IP rests with the OEM wherever the technology transfer has taken place. Know-why has never been as important as it is now. When snags or bottlenecks are found in equipment bought from the foreign OEM, Indian buyers and their innovators find ingenious solutions to make the equipment work, but ToT agreements impose legal limitations that hinder registering IP for such ingenious solutions.

Retaining IP as a Trade Secret has been effective in guarding innovations to an extent. As an effect, these have not been registered as any form of IP and thus do not reflect in the IP portfolio of the organizations pertaining to defence sector. A mechanism to include such IP, shall boost up the health of IP portfolios without having to completely disclose the related information.

Though there is an innovation driven ecosystem established in the defence sector, the transformation of such innovation into IP protection is essential not just for guarding Indian inventions, but also to prevent others from exploiting such inventions to their advantage. Amendments in respective legislations need to be brought out in order to safeguard contributions made by all the innovators involved in the process.

If we don't claim what is ours, someone else definitely will.

Evolution of Aviation Patents

Sushant Singh, Manager (Aerodynamics), HAL



Mr. Sushant Singh is currently working in Rotary Wing Research & Design Center of HAL as Manager(Aerodynamics). He has a B.Tech in Aerospace Engineering from IIT Kanpur and currently pursuing PGDI-PRL (Post Graduate Diploma in Intellectual Property Rights Law) from National Law School of India University (NLSIU) Bangalore. He works on the Aerodynamics of Helicopters and also a member of IPR Facilitation Cell at HAL.

In early years of airplane development, it was the dream to make a heavier than air machine fly for dream chasers and fearless inventors. It was a highly iterative exercise with experimentations on advance mathematics and science. Political and economic scenario also played a major role in developing the aviation industry more specifically during the tough times of world wars. A handful of enthusiastic people started collaborating with each other to make the dream of flying possible.

It is a perfect example of how risk traders of different backgrounds come together under specific political and economic scenario that result in ground breaking inventions. Pioneers in this field like Mr. Francis Herbart Wenham had no expectation to make money from their studies. He was a marine engineer and had a dream to make an airplane. He wrote an influential academic paper in 1866 and presented in the first meeting of Royal Aeronautical Society in London. It is difficult to make out which patent or technical studies shaped the evolution of aircraft industries. During world wars, government has significant influence on aviation industry which continues even until today.

In early years of development, inventors would learn from their experiments and would change their design based on their findings in experiment to go back again and test the model. Most of the inventors shared the findings on their experiments and reported it to the aviation community to expand the knowledge and also to evaluate whether or not to for others to take inspiration from their own designs. This was the time when exhibitions and conferences started to share the latest developments in aviation field across the globe. Clubs and societies were formed across the globe to share the knowledge of individuals with others.

Father of aviation, Mr. Octave Chaunte was an American Civil Engineer and Aviation pioneer, who facilitated the collaborative nature of aviation communities and published the book titled "Progress in Flight Mechanics" in 1894. He compiled all aviation related experiments findings and made it available to general public. He was the one who was in constant collaboration with inventors and exchanged the ideas on aviation experiments. Even Wilbur and Orville Wright were also among them who communicated with Mr. Chaunte about their experiments. In the early years of aviation industry development, the commercial potential for air travel was not realized. Hence inventors filed for patents only for displaying a sense of pride in the aviation community.

In 1903, Wright brothers filed their first patent in US patent office for a mechanism for aileron deflections and rudder structural design. US patents office granted the patent to wright brothers in 1906. Mr. Chaunte was critical with this move of the Wright brothers as they had refused to share their learnings with the aviation community from where they had learned so much initially. Meanwhile, Mr. Hugo Junkers, a German citizen, applied for a patent with German Patent Office for latest understanding of aerodynamics and more stable aircraft construction. His outstanding work in aviation shapes the development of future airplane designs. During this period, patent applications filed worldwide increased on fast pace.

In 1906, Wright Brothers were granted the patent which claimed rights on method of flight control. This Patent had taken the form of patent troll when it was used for filing infringement against all inventors who were developing anything that works on flight controls. This had eventually slowed the pace of airplane development in the US, which is evident from the fact that, for World War I, US used European designed airplanes. Acting on the realization of scope of IP rights, in 1917, US government established the Manufacturers Aircraft Association (MAA), whose responsibility was to encourage its members to cross-license their technologies through a patent pool to support country's war time needs. Similar associations were established in all major countries to pool all aircraft patents from different inventors. However, this didn't work the way it had intended to be. In Germany same as in the US, Mr. Junkers was reluctant to share his patents with others aircraft producers. However, Mr. Junkers was forced to share and contribute his patents with aircraft producers by the then Government.

Significant investments made by the government during World wars to ramp up the design and production of warplanes provided the boost in airplane developments. Inventors like Junkers, Dornier etc were forced by the German government to collaborate in the vision of making a best warplane design. National Advisory Community of Aeronautics (NACA) was established in the year 1915 in the US to speed up the progress in aviation.

By the end of the World War II, aviation industry had experienced a major shift in development in aviation innovation ecosystem. This ecosystem even today is significantly influenced by the respective governments. The whole aircraft commercial industry underwent major consolidation in years and two main competitors, Boeing and Airbus emerged as dominant players in global aviation. Numbers of patent filings in aviation industry took off again in recent decade or so but it has not matched up the numbers of patents filed during early start-up years on aviation industry. Aircraft manufactures started on relying on other methods to get the appropriate returns on their investment.

Over the years, industry innovation ecosystem became more sophisticated with the increasing complexity in aviation technologies. These technologies are highly specialized in nature so they cannot be reproduced easily, if not all, then most of them. Airplane manufacturers define the specification and standards of the parts and involve themselves in close collaboration with technology providers, who generally execute long term exclusive contracts. So supply chain became even more challenging to coordinate the integration of different technologies in an optimum and cost effective manner to make profitable aircraft business. To grow in the competitive environment, patent owners began licensing out their technologies to create new lines of revenue. Aviation majors now act more as integrators rather than as individual inventors holding a single patent and looking for commercial exploitation. Innovation first gets translated into a patent application, the grant then has a set of claims, and these claims are then put through the production cycle and finally finds its place into an aircraft platform. From an isolated patent to this complex network of patents, aviation industry is only growing in complexity and the technology only promises to grow leaps and bounds further into the invisible horizon.

NOMINATED MEMBERS OF IPF CELL



Col AK Gandhi
Col QA (IPF Cell) /DGQA
9971000027
akgnadhi2003@hotmail.com



Col Anuj Garg
Col QA (IPF Cell) /DGQA
8130732557
anujgarg.637P@gov.in



Smt. Prathyusha M
Manager (Design) (HAL)
9632136699
prathusha.m@hal-india.com



Sh. Somnath Sarkar
AGM (IPR) GSL
9422971073
sarkars@goashipyard.com



Sh. Hadubandhu Sahu
DGM (Innovation Cell) BEML
9448847065,
qic@beml.co.in



Sh. M. Chandra Sekhara Rao
DGM (D&E) BDL, Hyderabad
9989300178
bdldne@bdl-india.in



Sh. MT Sarvanan
Sr DGM (TP/CO) BEL
9448819649 saravananmt@bel.co.in



Sh. T. Bala Venkata Rao
DGM (IPR) HSL, VSP
9493792780
pppmehslvizag.in



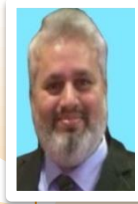
Dr. Saurabh Dixit
Manager Midhani
9483709900
saurabhdixit11@gmail.com



Sh. Dinesh Kumar
Regional Chief Manager (SLO) MDL,
Mumbai
9958677799



Sh. Praveen Kumar
Dir /R&D OFB
praveenkumar.ofb@gov.in



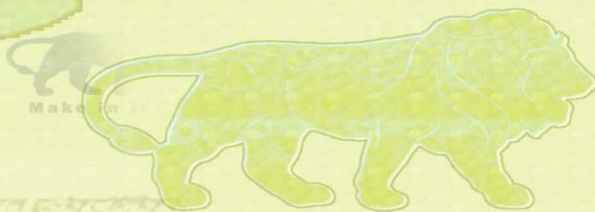
Sh. Gulshan Ratan
AGM (D) GRSE
9163361893
rattan.gulshan@grse.co.in



Make in India



Make in India



Make in India



India



BHARAT ELECTRONICS
QUALITY TECHNOLOGY INTEGRATION





Mission Raksha-Gyan-Shakti
Intellectual Property for Self-Reliance in Defence



सत्यमेव जयते

Government of India
Ministry of Defence
Department of Defence Production



DGQA

