



Strengthening indigenization through innovation & Collaboration

Session 02: Chalking out the Blueprint of Growth

National Facility for Castings & Forgings

25th Nov 2024

Bharat Mandapam, New Delhi

Panel for Discussion

Name	Designation	Organization
Shri J.P. Srivastava	Director (E,R&D)	BHEL
Shri T.S. Murali	ED (HEEP & CFFP)	BHEL
Shri S J Ahmed	ED (CMMG)	SAIL
Shri T Muthu Kumar	Director (Prod & Mktg)	MIDHANI
Shri Parthasarathi Hans	OS & Scientist H	GTRE, DRDO
Dr. I Balasundar	Scientist G	DMRL, DRDO
Shri Rajeev Kumar Jadon	Vice President	Ashok Leyland
Shri Praveen B	AGM	HAL

Evolution of Public Procurement Policy – Make in India

PPP-MII Order
2017

2017

Public Procurement (Preference to Make in India), Order 2017 Dtd 15.06.2017 - to promote manufacturing and production of goods & services in India

Works
included

2018

PPP-MII Order partially modified on 28.05.2018 to include works (including turnkey works)

Partial
modification

2019

PPP-MII Order partially modified on 29.05.2019 (only local suppliers eligible if sufficient local capacity is available)

Restriction
on GTE

2020

PPP-MII Order partially modified on 04.06.2020 (Class I/ Class II local suppliers, no global tender above Rs. 5 Lakh and below Rs. 200 Cr. etc., unless approved by CA)

Type	Local content	Price preference
Class I	≥ 50%	✓
Class II	More than 20% but less than 50%	X
Non Local	≤ 20%	X

Notification
on Countries
sharing land
border

2020

DoE Order dated 23.07.2020 (Bidders from countries sharing land borders to be registered with DPIIT)

Notification
on Countries
sharing land
border

2023

DoE Order dated 23.02.2023 (Includes even TOT from Bidders from countries sharing land borders to be registered with DPIIT)

PPP-MII
Order (Rev)

2024

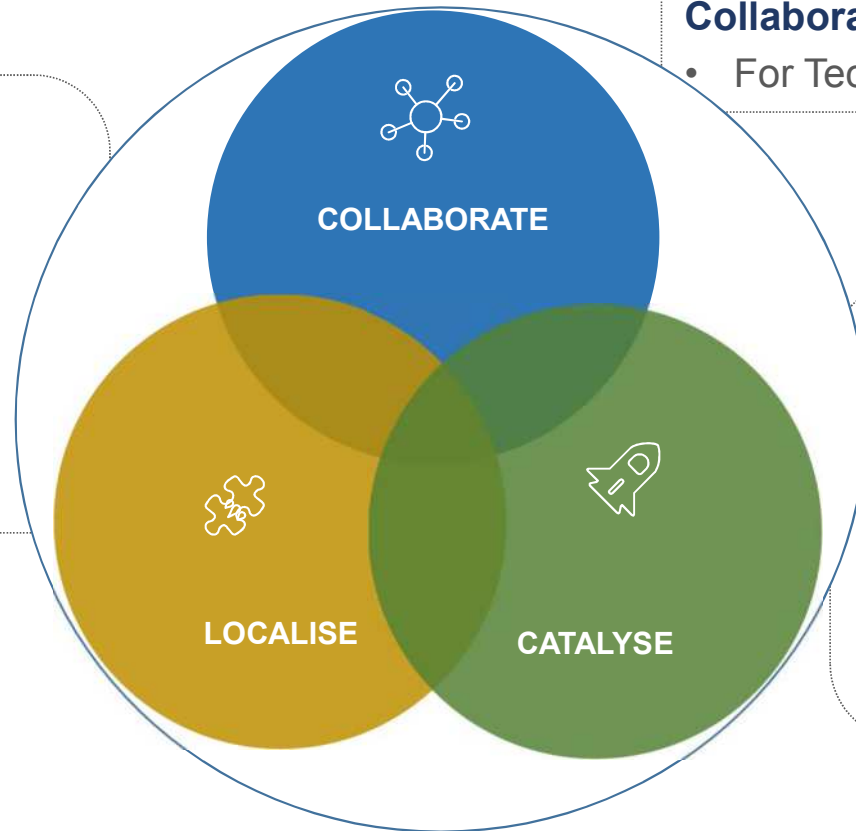
DoE Order dated 19.07.2024 (Rebranding, repackaging, refurbishing not considered as value addition ; 10% of contract value would be deducted in case false MII declaration)

BHEL's Framework for AtmaNirbhar Bharat

Localise

Import substitution through

- in house engineering or manufacturing
- supporting domestic manufacturers for indigenization



Collaborate

- For Technology and Manufacturing

Catalyse

- Enable solutions for challenges faced in engineering and manufacturing
- Support domestic ecosystem with R&D and Testing infrastructure

Indigenized offerings with Indigenized supply chain

BHEL's Outreach Initiatives

COLLABORATE

April '20

Expression of Interest (29.04.20)

Manufacturing in India with BHEL

July '20

SANYOJAN (03.07.20)

Domestic Collaborations for Manufacturing

Aug '20

SANRACHNA (24.08.20)

Technology Innovation Platform

CATALYSE

Nov'20

Expression of Interest (13.11.20)

for import substitution

Interaction (18.11.20)

with IEEMA

LOCALISE

Dec '20 – Oct'23

Interaction (03.12.20)

with Local industry (coordinated by DPIIT)

SAMVAAD 1.0 (21.12.20 – 11.02.22)

Workshops with Local industry

SAMVAAD 2.0 (28.10.22 – 29.11.22)

Workshops with Local industry

SAMVAAD 3.0 (09.11.23 – 06.08.24)

Workshops with Local industry

SAMVAAD 4.0 (25.11.24 – ..)

Workshops with Local industry

Items imported hitherto where local suppliers have been developed – Post SAMVAAD 2.0

Orders Placed			
Sl.	Item description	Source identification through	Supplier, M/s
1	2 mm sheets & 6 mm Plates of C276 grade	BHEL-SAMVAAD	MIDHANI, Hyderabad
2	C276 Cladded Plate through Hot rolling (1250 mm width)		Jindal Stainless Limited
3	Tubes of grade: SA312TP304 H/347 H, SUP 304 SS		Tubacex Tubes & Pipes
4	Tubes of grade: SA213TP347H SS, SA213TP340H SS		Welspun Specialty Solutions Ltd
5	SA312TP304 SS Tubes		Ratnamani, Gujarat
6	SA335P22 Alloy steel Pipes (upto OD 355.6 mm and thickness upto 14.27 mm)		Maharashtra Seamless Ltd.
7	Spray pipes		Sunrise Industries, Vadodara
8	Spray nozzles		Lechler, Thane
9	Synthetic Ester Oil		Savita Oil, Silvassa
10	Hydrogenerator shaft forgings (36.3 MT)		LTSSHF, Mumbai
11	Hemispherical Dished ends SA234WP91		CHW Forge, Ghaziabad
12	RIP Bushings (245 kV)		Yash High Voltage, Vadodara Massa Izolyator Mehru, Gurugram
13	RIP Bushing (420 kV)		Siemens India Ltd. Hitachi Energy India Ltd

Items imported hitherto where local suppliers have been developed – Post SAMVAAD 2.0

Orders Placed			
Sl.	Item description	Source identification through	Supplier, M/s
14	OIP Bushing (800 kV)	BHEL-SAMVAAD	CG Power and Industrial Solutions Ltd., Nashik
15	Insulated Rivetless Roller Bearings for Inverter side of Traction Motors		SKF India, Schaeffler India
16	Auxiliary Additive 3A 333 of VPI varnish		3A Associates, Mumbai
17	GT Blade Flats C450		Star Wire India Ltd,
18	GT Blade Flats SS403Cb		Laxcon, Ahmedabad
19	Compressor Journal/Thrust Bearings		MICHELL Bearings (INDIA) LLP
20	Maintenance Free Breather		EASUN-MR TAP Changers (P) Ltd. Precimeasure Control Pvt. Ltd.
21	Size -2 and Size-3 BUSHINGS for 36kV GIS		Radiant Enterprises
22	Absorber Re-circulation Pumps		KSB Ltd., Thane
23	Beech Wood Tangential Top Ring	Open Tender	Agya Enterprises, Bhopal Roechling Industrial India Pvt Ltd
24	Helical Wire Shock Mounting	GeM	Ridham Industries, Ahmedabad SEISMOSYS, Bangalore

Items imported hitherto where local suppliers have been developed – Post SAMVAAD 3.0

Orders Placed			
Sl.	Item description	Source identification through	Supplier, M/s
25	Isothermal Tiles	BHEL-SAMVAAD	Thermoflyde Industries Private Limited, Gujrat Carborundum Universal LTD, Chennai Ganeshas Lime And Minerals, Ahmedabad
26	Chromite Sand		Khemka Refractories, Odisha
27	Welding Electrode (Tungsten based)		D & H Secheron Electrodes, Mumbai
28	16Mo3 Forgings & SA350LF2 Forgings		Bharat Forge, Pune
29	DIN EN 10028-7-1.4550 SS Plates		Jindal Stainless Limited, Hissar
30	FIN FLAT 89.7 x 6 - SA387GR12CL2		Evonith Value Steel Ltd, Hyderabad
31	Forged Elbow- D42.4X8.8/D38.1X7.11 F12CL2		Suhani Alloys Pvt Ltd, Faridabad
32	AS Round Bar Dia 200MM - SA213GrT91		Laxcon Steels Limited, Ahmedabad
33	CRNGO 270 Grade		JSW, Bellary
34	Field lead Core Bar	Open tender	IMA, Kolkata
35	Exciter Half ring Forging		IMA, Kolkata
36	Epoxy Glass Fabric tape used as Rotor Inter Turn Insulation		Sahney Insulation Group, Nasik
37	Nomex Interturn Tape		Sahney Insulation Group, Nasik

Items imported hitherto where local suppliers have been developed – Post SAMVAAD 3.0

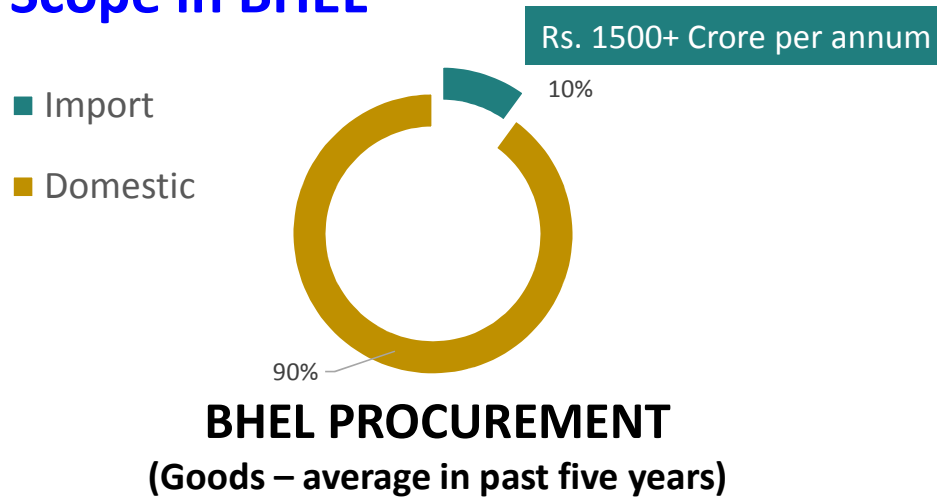
Orders Placed			
Sl.	Item description	Source identification through	Supplier, M/s
38	Magnetic Shunt Paper	BHEL-SAMVAAD	Isovolta (I), Nasik Senapathy Symons, Bengaluru
39	Mica Paper Glass tape with accelerator		Isovolta (I), Nasik Lakshmanan Isola, Bengaluru
40	Angulating Spring Support with Weld on Bracket		Lisega, India
41	Electro hydraulic actuators of Turbine valves		Bosch Rexroth India
42	Oil Module		Hydac, Coimbatore
43	Oil Throttle Valve		Hawa Valves, India
44	Gun Barrel Assembly		M/s Advance Weapons Equipment India Ltd.(AWEIL), Kanpur
45	Heat Sink, Water Cooled		Thermovac Aerospace, Bengaluru Perfect Machining centre Vinayaka CNC
46	FEMALE QUICK COUPLINGS		Ritra Technologies, Bhopal
47	Wire silicone 0.5sqmm 20kV RED		Thermo Cables Ltd
48	CURRENT TRANSDUCER 1000A/250MA		Electrohms Pvt Ltd
49	CAP POLYPROP MTL 1MF 10% 1400V		Advacne Components & Instruments
50	Centrifugal Fan		Superior Electric Machines Pvt. Ltd.

Items imported hitherto where local suppliers have been developed – Post SAMVAAD 3.0

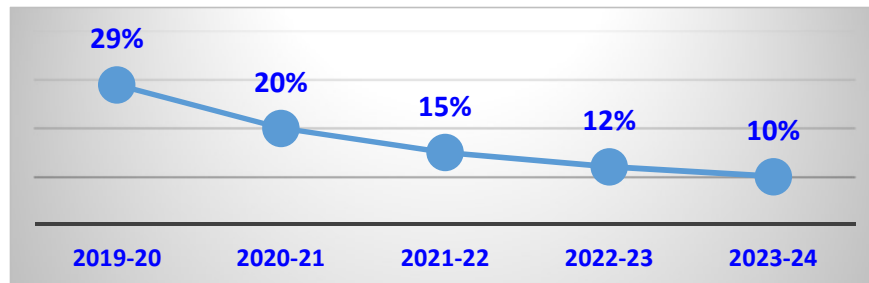
Orders Placed			
Sl.	Item description	Source identification through	Supplier, M/s
51	Resistors(3T)	BHEL-SAMVAAD	Precision Electronics Ltd., Noida
52	DC Earthing switch		Patra & Chanda, Howrah
53	Silicone Oil		Elkay Chemicals, Pune
54	FG Mat		Pliogrip Resins and Chemicals, Thane Fibreglass Insulation, Bhopal
55	HPH Tube sheet Forgings		CHW Forge Pvt ltd., Ghaziabad L&T Special Steels &Engg, Hazira
56	Compressor casing Forging		L&T Special Steels &Engg, Hazira
57	Fr-5 stg#1 Bucket casting		Indo MIM, Andhra Pradesh
58	Fr-6B Turbine Casting		Vimal Alloys, Ludhiana
59	Fr-6B CDC Casting		Vimal Alloys, Ludhiana

Opportunity for Indigenization

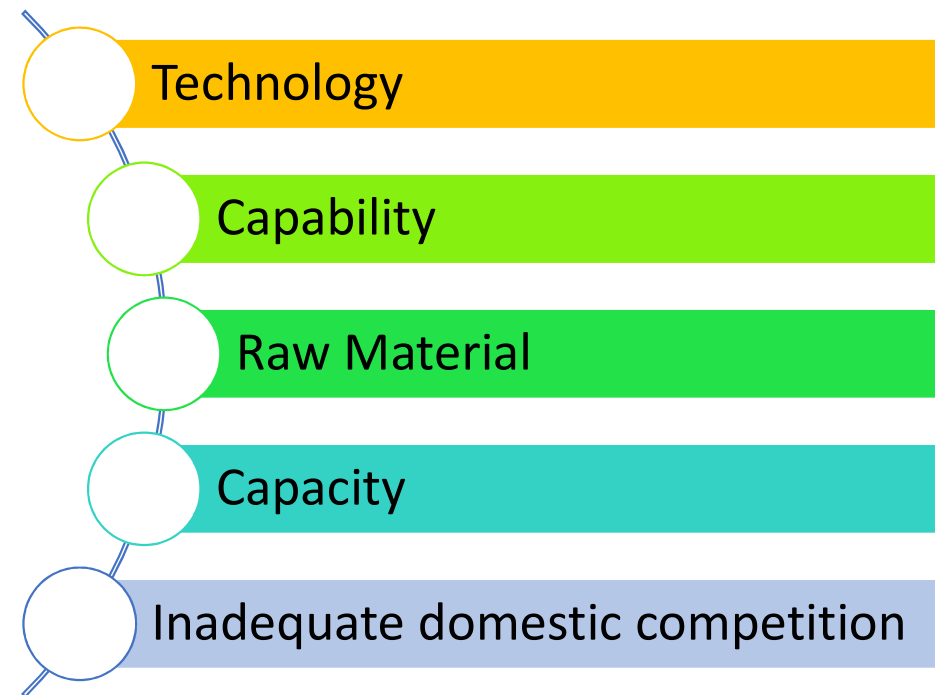
Scope in BHEL



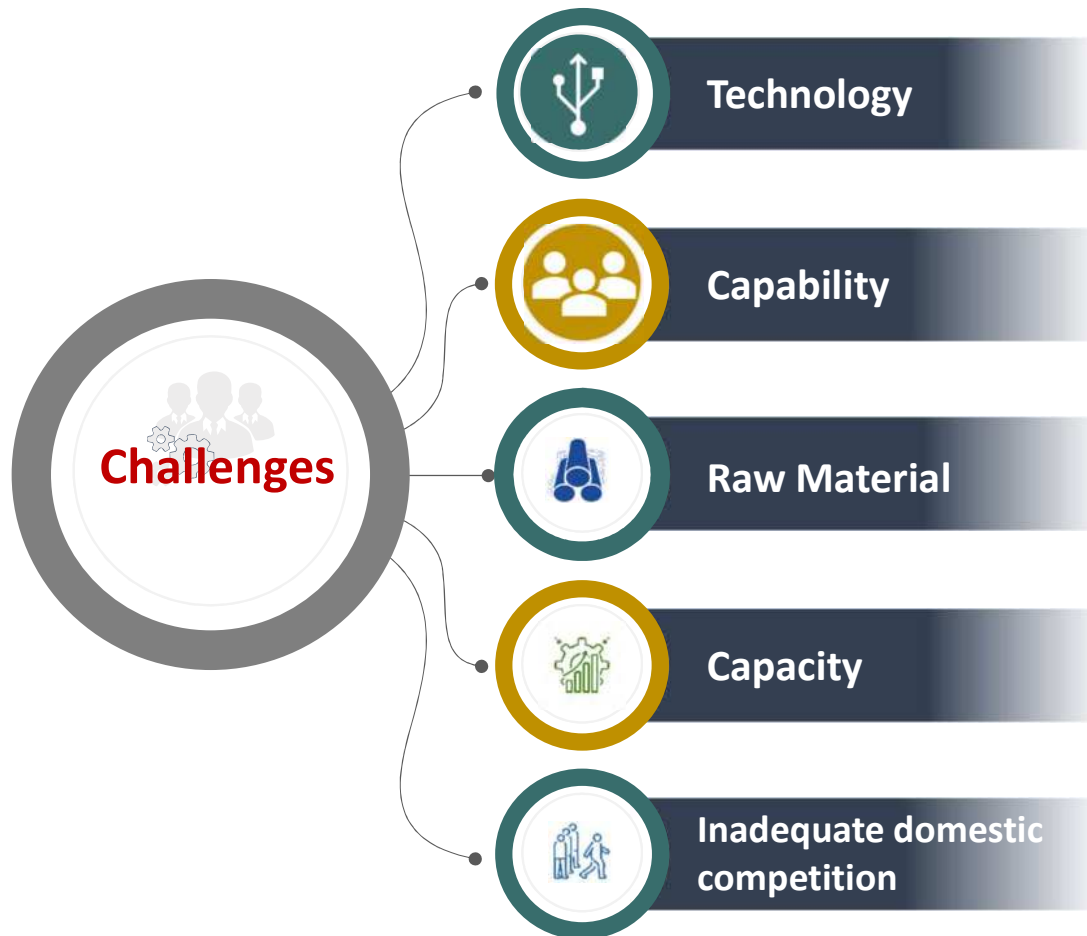
Trend of Imports in BHEL during the last few years



Overcoming the challenges...



Demand-supply gap – Few examples



Examples

Generator Circuit Breakers, Boiler Water Circulating Pumps, Integrated Electronic devices, Current Insulated Bearings, Solar Ingots and Wafers

LP & TG Forgings > 50 MT, HP & IP Forgings <50 MT, Retaining ring forgings, C276 sheets, Titanium Sheets

Nickel

Cladded sheets, Alloy Steel pipes & tubes (P91/ 92, T91/ 92)

Pressurization system for Motors, Armature Reversing Contactor, Mono PERC solar cells, Gypsum Dewatering System

BHEL SAMVAAD

An opportunity for local vendors to meet the Demand – Supply gap

10

Categories

200+

Items

16

Manufacturing Units

2000+

Crores per annum

- Special Alloy Steels, Pipes and Tubes (P91/ 92 Pipes, T91/92 Tubes, etc)
- Special / Alloy / Electrical Steel
- Items for FGD
- Castings & Forgings
- Insulated rivetless and antifriction bearings
- Electrical Insulating Materials
- Electrical , Electronic & Solar items
- Systems/ Packages

What's new in SAMVAAD 4.0

1.

Focus

*on the core where
gaps in technology
/ facilities are
prominent*

2.

Collaborate

*Invite ideas from the
domestic industry and
academic / research
institutions on how, as
part of a joint effort with
BHEL, one can minimize
the imports in the
Country*

3.

Deliberate

*on inputs w.r.t.
technical
alternatives*



**Let's get down
to business!**



Thank You

THANK YOU

Please see <https://corpapp.bhel.in/EOIDetails/> for five year projections

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Casting & Forging items: BHEL REQUIREMENT

Sl.	Item Description	Application	BHEL Unit	HSN Code	Reqt. per annum, Rs. Cr.
A.	Forgings				
1.	Generator Rotor Forgings	Turbo-Generator	Haridwar, Hyderabad	85030090, 85030010	60.0
2.	LP Rotor Shaft Forging	Steam Turbine	Haridwar	84069000	55.0
3.	Rotor Forging for Industrial ST	Industrial Steam Turbine	Hyderabad	84069000	40.0
4.	IP Rotor Shaft Forgings	Steam Turbine	Haridwar	84069000	35.0
5.	Retaining Ring Forgings	Generator	Haridwar, Hyderabad, Bhopal	85030090, 85030010	33.0
6.	HP Rotor Shaft Forging	Steam Turbine	Haridwar	84069000	27.0
7.	Rotor Wedges	Turbo-Generator	Hyderabad	74099000, 85469090, 85030010	3.5
8.	Bar Blade Profiles	Steam Turbine	Hyderabad	72224020	2.5
9.	Casing Forging for BCL compressor	Centrifugal Compressor	Hyderabad	73261990	1.1
10.	Copper Forging	Turbo-Generator	Haridwar	74099000	1.0

Casting & Forging items: BHEL REQUIREMENT

Sl.	Item Description	Application	BHEL Unit	HSN Code	Reqt. per annum, Rs. Cr.
B.	Castings				
1.	Investment Castings	Gas Turbines	Hyderabad	84119900	99.0
2.	<u>Castings of IP Outer Casing – Nodular Grade</u>	Steam Turbines	Haridwar	84069000	20.0
3.	<u>Small Castings for Industrial steam Turbines (Steam Chamber/GB Carriers/ valve block/ intermediate piece/ valve cover/ Bearing Pedestals)</u>	Steam Turbines	Hyderabad	73259999	20.0
4.	Grey Iron Castings	Gas Turbines	Hyderabad	73259910	1.85
5.	<u>Centrifugal Castings</u>	Generator	Bhopal	85030090, 85030010	0.5

Retaining Ring Forgings

BHEL					HSN Code	Details of other clients in India who require the job
Classification	Application	Specification	Unit	Requirement p.a. (Rs Cr)		
Forgings	Turbo Generator	HW19299/HW19364	HEEP Haridwar	15	85030090, 85030010	Siemens, WEG, Crompton Greaves, L&T
	Turbo-Generator	HY19372	HPEP Hyderabad	15		
	Generator/ Motors	BP19381/BP19383	HEP Bhopal	3		
Special Features of the job		Material Grade: X8CrMnN1818K/ X4CrNiMnMo N19138 / X4CrNiMnMo N19165, Non-ferrous (Bhopal): CuNi14Al3 Dimension 1 (F): OD: 1131 to 1320 mm, ID.: 991 to 1167 mm, Weight: 1000 to1800 Kg Dimension 2 (F): OD: 700 to 1150 mm, Thk.: 60 to 80 mm, Weight: 33 to1250 Kg Dimension 3 (F - Bhopal): OD: 403 to 1028 mm, ID: 350 to 981 mm, Weight: 33 to 203 Kg Dimension 4 (NF-Bhopal): OD: 594 to 1245 mm, ID: 544 to 1189 mm, Weight: 78 to 255 Kg				
Sl.	Requirements of the job		Facility /Technology		Whether available in India (Yes / No)	
1	Steel Ingot		Steel Melting & Refining		YES	
2	Hot Forging & Heat Treatment		Forging & Heat Treatment		YES	
3	Cold expansion of forging below 300°C		Cold Expansion		NO	

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Retaining Ring Forgings



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Rotor Wedges

BHEL					HSN Code	Details of other clients in India who require the job
Classification	Application	Specification	Unit	Requirement p.a. (Rs Cr)		
Extruded Profiles (CuNi 2Si , (AlZnMgCu1.5F52)	Turbo-Generator	TG65811 TG65854	HPEP Hyderabad	3.45	74099000, 85469090 85030010	
Special Features of the job		<ul style="list-style-type: none"> • minimum 0.2% proof stress required is of the order of 520 N/mm2; • tensile strength of 590-750 N/mm2 				

Sl.	Requirements of the job	Facility /Technology	Whether available in India (Yes / No)
1.	Precision Extrusion with close tolerances	Extrusion & heat treatment	Yes

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Rotor Wedges



Generator Rotor Forgings

BHEL					HSN Code	Details of other clients in India who require the job
Classification	Application	Specification	Unit	Requirement p.a. (Rs Cr)		
Alloy Steel Forging	Turbo-Generator	26NiCrMoV145 / 26NiCrMoV115	HEEP Haridwar	45	85030090, 85030010	L&T Siemens India
Forgings	Turbo-Generator	HY19471	HPEP Hyderabad	15		
Special Features of the job		Material Grade: 26NiCrMoV145 / 26NiCrMoV115 Dimension 1: Dia.: 1080 – 1256 mm; Length: 9000 – 13635 mm; Wt: 35.0 – 85.0 Ton Dimension 2: OD: 1080 MM, Length: 10,000 MM, Weight: 35-42 MT				

Sl.	Requirements of the job	Facility /Technology	Whether available in India (Yes / No)
1	Steel Melting & Refining Facility for ingot making	Steel Melting & Forging	
2	Forging Large size rotor	Open Die Forging Press ($\geq 12000T$)	
3	Heat Treatment in vertical position or in horizontal position with rotation	Heat treatment Furnace	
4	Machining including axial core trepanning	Machining & core trepan	
5	Mechanical & Non Destructive Testing	Testing	

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Rotor Forgings



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IP Rotor Shaft Forgings

BHEL					HSN Code	Details of other clients in India who require the job
Classification	Application	Specification	Unit	Requirement p.a. (Rs Cr)		
Alloy Steel Forging	IP Rotor of Steam Turbine	X12CrMoVWNB N10-1-1	HEEP Haridwar	35	84069000	
Special Features of the job		Chemical Composition: C: 0.11 – 0.13; Mn: 0.4 – 0.5; Cr: 10.2 – 10.6; Mo: 1.0 – 1.1; W: 0.95 – 1.05; N: 0.045-0.060, Nb: 0.04-0.06, V: 0.15-0.25; Si: 0.12max; P: 0.012max; S: 0.005max Dimension: IP Rotor 1: Dia 1110mmX 3545mmX 5907mm; Delivery Weight: 27.5 Ton IP Rotor 2: Dia 1160mmX 3895mmX 6257mm; Delivery Weight: 36.3 Ton				

Sl.	Requirements of the job	Facility /Technology	Whether available in India (Yes / No)
1.	Steel melting and secondary refining facility, Forging Press, Manipulator, Handling Capacity	Steel Melting & Forging	
2.	Vertical heat treatment facility	Vertical heat treatment	
3.	Testing facility	Testing	
4	Creep test as part of vendor qualification	Long Term testing	

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IP Rotor Shaft Forgings



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HP Rotor Shaft Forgings

BHEL					HSN Code	Details of other clients in India who require the job
Classification	Application	Specification	Unit	Requirement p.a. (Rs Cr)		
Alloy Steel Forging	HP Rotor for Steam Turbine	X12CrMoVWNb N10-1-1	HEEP Haridwar	27	84069000	Siemens India
Special Features of the job		Chemical Composition: C: 0.11 – 0.13; Mn: 0.4 – 0.5; Cr: 10.2 – 10.6; Mo: 1.0 – 1.1; W: 0.95 – 1.05; N: 0.045-0.060, Nb: 0.04-0.06, V: 0.15-0.25; Si: 0.12max; P: 0.012max; S: 0.005max				
		Dimension (Rotor Dia X Barrel Length X Rotor Length): 800mm X 2765mm X 5475mm Delivery Weight: 15.9 Ton				
Sl.	Requirements of the job			Facility /Technology		Whether available in India (Yes / No)
1.	Steel melting and secondary refining facility, Forging Press, Manipulator, Handling Capacity					
2.	Vertical heat treatment facility					
3.	Testing facility					
4	Creep test as part of vendor qualification					

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HP Rotor Shaft Forgings



LP Rotor Shaft Forgings

BHEL					HSN Code	Details of other clients in India who require the job
Classification	Application	Specification	Unit	Requirement p.a. (Rs Cr)		
Alloy Steel Forging	LP Rotor for Steam Turbine	26NiCrMoV145 /26NiCrMoV115	HEEP Haridwar	55	84069000	Siemens
Special Features of the job		<u>Chemical Composition:</u> C: ≤ 0.28 ; Ni: 3.4 – 3.8 (2.8 – 3.3); Cr: 1.4 – 1.8; Mo: 0.30 – 0.45, S & P: ≤ 0.010 <u>Dimension & Weight:</u> Diameter: 1400 – 1910mm; Rotor Length: ≥ 6500 ; Weight: 50 – 97 Ton				

Sl.	Requirements of the job	Facility /Technology	Whether available in India (Yes / No)
1	Steel Melting & Refining Facility for ingot making	Steel Melting & Forging	
2	Forging Large size rotor	Open Die Forging Press ($\geq 12000T$)	
3	Heat Treatment	Heat treatment Furnace	
4	Machining including axial core trepanning	Machining & core trepan	
5	Mechanical & Non Destructive Testing	Testing	

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LP Rotor Shaft Forgings



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Hydro Generator Shaft Forgings

BHEL					HSN Code	Details of other clients in India who require the job
Classification	Application	Specification	Unit	Requirement p.a. (Rs Cr)		
Bottom Shaft Forgings	Hydro generator / LIS Motors	ASTM A668 GR-E / HG10035	HEP Bhopal	10 (approx.)	-	Voith Hydro, Andritz Hydro, GE
Special Features of the job		<p>Weight : 32 T – 70 T (approx.)</p> <p>Dimension- Length : 4 M- 5 M (approx.)</p> <p>Diameter (Max. at bearing) : 2 M – 3.5 M (approx.)</p> <p>Shaft diameter : 0.8 M – 1.2 M (approx.)</p>				

Sl.	Requirements of the job	Facility /Technology	Whether available in India (Yes / No)
1.	Forging facility as per specification/ drawing	Forging Facilities	Yes

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Hydro Generator Shaft Forging



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Castings of IP Outer Casing – Nodular Iron Grade

BHEL					HSN Code	Details of other clients in India who require the job
Classification	Application	Specification	Unit	Requirement p.a. (Rs Cr)		
Nodular Cast Iron Casting	IP Outer Casing for Steam Turbine	GGG – 40.3	HEEP Haridwar	30	84069000	Siemens India
Special Features of the job		Material Grade: GGG, EN-GJS-400-18-RT Delivery Weight: 29 – 42 Ton (weight of one half)				

Sl.	Requirements of the job	Facility /Technology	Whether available in India (Yes / No)
1.	Melting	Melting	Yes (size limitation)
2.	Pouring & Casting (Handling)	Tundish Ladle	Yes (size limitation)
3.	Testing	Mech & NDT	Yes

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Castings of IP Outer Casing – Nodular Grade



Centrifugal Castings

BHEL					HSN Code	Details of other clients in India who require the job
Classification	Application	Specification	Unit	Requirement p.a. (Rs Cr)		
Retaining Ring Casting	Generators of LEM	BP19989	HEP Bhopal	0.5	85030090, 85030010	Competitors - Siemens, TDPS
Special Features of the job		Material Grade: Cu Al Castings Dimension (Outer Diameter X Inner Diameter X Height X Weight): 1050 mm X 995 mm X 280 mm X 188 Kg				

Sl.	Requirements of the job	Facility /Technology	Whether available in India (Yes / No)
1.	Centrifugally cast Copper Aluminum Alloy is to be used. Rings are to be Centrifugally cast and rough machined.	Centrifugal Casting, Mechanical testing / NDT	Yes (with Size limitations)

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Retaining Ring casting (Non-Ferrous) by Centrifugal Castings



Copper Forging

BHEL					HSN Code	Details of other clients in India who require the job
Classification	Application	Specification	Unit	Requirement p.a. (Rs Cr)		
Forging	Generators	CuAl11Ni6Fe5, F74	HEEP Haridwar	1	74099000	Siemens India
Special Features of the job		Material Grade: CuAl11Ni6Fe5 Dimension (Outer Diameter X Inner Diameter X Height) : 547mm X 402mm X 395mm; Weight: 315.00 kg 695mm X 532mm X 390 mm; Weight: 483.40 kg				

Sl.	Requirements of the job	Facility /Technology	Whether available in India (Yes / No)
1.	Availability of Raw Material of grade CuAl11Ni6Fe5	Melting	Yes
2	Ring Forging	Forging	Yes (Size Limitation)

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Copper – Aluminum Forging



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Casing Forging for BCL Compressor

BHEL					HSN Code	Details of other clients in India who require the job
Classification	Application	Specification	Unit	Requirement p.a. (Rs Cr)		
Forging	Centrifugal Compressor	HY19364	HPEP Hyd	1.1	73261990	Not Available
Special Features of the job		Material Grade: Carbon Steel Forging Dimension (Outer Diameter X Inner Diameter X Height X Weight): 1930 mm X 1660 mm X 3650 mm X 21.5 Tons				

Sl.	Requirements of the job	Facility /Technology	Whether available in India (Yes / No)
1.	Carbon Steel Forging with large diameter and Length of 3.65 Meters.	Capability of handling large size forgings with dimensions as mentioned above	Yes (with Size and weight limitations)

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Casing Forging for BCL Compressor



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Casing Forging for BCL Compressor

EFFORTS & STATUS OF INDIGENIZATION

Number of indigenous vendors under approved category	Number of indigenous vendor under trial/ development category	Status of indigenization
7	1# (Please see the remark)	1) M/s L&TSSHF Is capable Limitation:- -L&T melt size is 50 Tons. BHEL forging is max, about 25.0 Tons. BHEL requirement of single forging doesn't meet L&T melt capacity of 50.0 Tons. L&T needs another casing forging of similar weight, along with it to meet melt capacity, which is not possible.



Small Castings for Industrial steam Turbines (Steam Chamber/GB Carriers/ valve block/ intermediate piece/ valve cover/ Bearing Pedestals)

BHEL					HSN Code	Details of other clients in India who require the job
Classification	Application	Specification	Unit	Requirement p.a. (Rs Cr)		
Steel Castings (Steam Chamber/GB Carriers/ valve block/ intermediate piece/ valve cover/ Bearing Pedestals)	Industrial Steam Turbines	HY19569/ HY19570/ HY19571/Hy19572 /Hy19573	HPEP Hyderabad	20	73259999	Siemens
Special Features of the job		Material Grade: GP240GH+N/G20Mo5/ G17CrMo55/ G17CrMoV510 Weight 300Kg to 2000Kg				

Sl.	Requirements of the job	Facility /Technology	Whether available in India (Yes / No)
1.	Electric melting process or Any other process involving secondary refining. Creep test as part of vendor qualification	Casting/Welding/ Mechanical testing / NDT (Radiography)	Yes

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Small Castings for Industrial steam Turbines (Steam Chamber/GB Carriers/ valve block/ intermediate piece/ valve cover/ Bearing Pedestals)



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Rotor Forging for Industrial Steam Turbines

BHEL					HSN Code	Details of other clients in India who require the job
Classification	Application	Specification	Unit	Requirement p.a. (Rs Cr)		
Alloy Steel Forging	Rotor for Industrial Steam Turbine	HY19473	HPEP Hyderabad	40	84069000	Siemens India
Special Features of the job		Chemical Composition: 30CrMoNiV511 C: 0.27 – 0.31; Mn: 0.3 – 0.8; Cr: 1.1 – 1.4; Mo: 1.0 – 1.2; V: 0.25-0.35; Si: 0.2max; P: 0.007max; S: 0.005max Dimension: Dia upto 1500 mm Delivery Weight: 2 to 40 Tons				

Sl.	Requirements of the job	Facility /Technology	Whether available in India (Yes / No)
1.	Steel melting and secondary refining facility, Forging Press, Manipulator, Handling Capacity	Steel Melting & Forging	Yes
2.	Vertical/ Horizontal heat treatment facility	Vertical/ Horizontal heat treatment	
3.	Testing facility	Mechanical testing & NDT	
4.	Creep test as part of vendor qualification		
5.	Thermal stability test & RSM		

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Rotor Forging for Industrial Steam Turbines



Bar blade profiles

BHEL					HSN Code	Details of other clients in India who require the job
Classification	Application	Specification	Unit	Requirement p.a. (Rs Cr)		
Cold drawn	Steam Turbine blades	HY10798	HPEP Hyderabad	2.5	72224020	Siemens
Special Features of the job		Matl. Grade: X20CrMo13V Profile sizes: T1-20, T1-25, T1-32, T1-40, etc Profile sizes: T4-20, T4-25, T4-32, T4-40, etc				

Sl.	Requirements of the job	Facility /Technology	Whether available in India (Yes / No)
1.	Cold drawn facility for blade profiles .	Cold drawn facility	No
2.	Hardened, tempered & finally Strees relief condition	Heat treatment facility	Yes

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Bar blade profiles



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