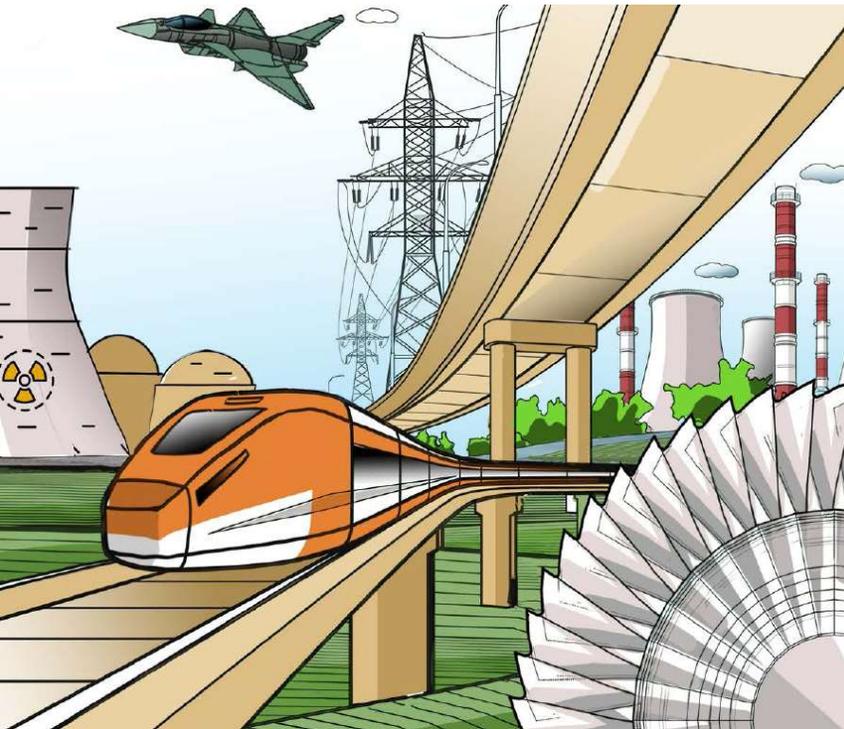




SAMVAAD INTERACTION FOR ELECTRONIC COMPONENTS!

SAMVAAD 3.0



BHEL SAMVAAD 3.0

- सहयोग से सफलता



Indigenization of items & Development of local suppliers

9th Nov 2023

Bharat Mandapam, New Delhi

Session 06– Electrical, Electronics & Solar items, Advanced Propulsion Systems.

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)

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)

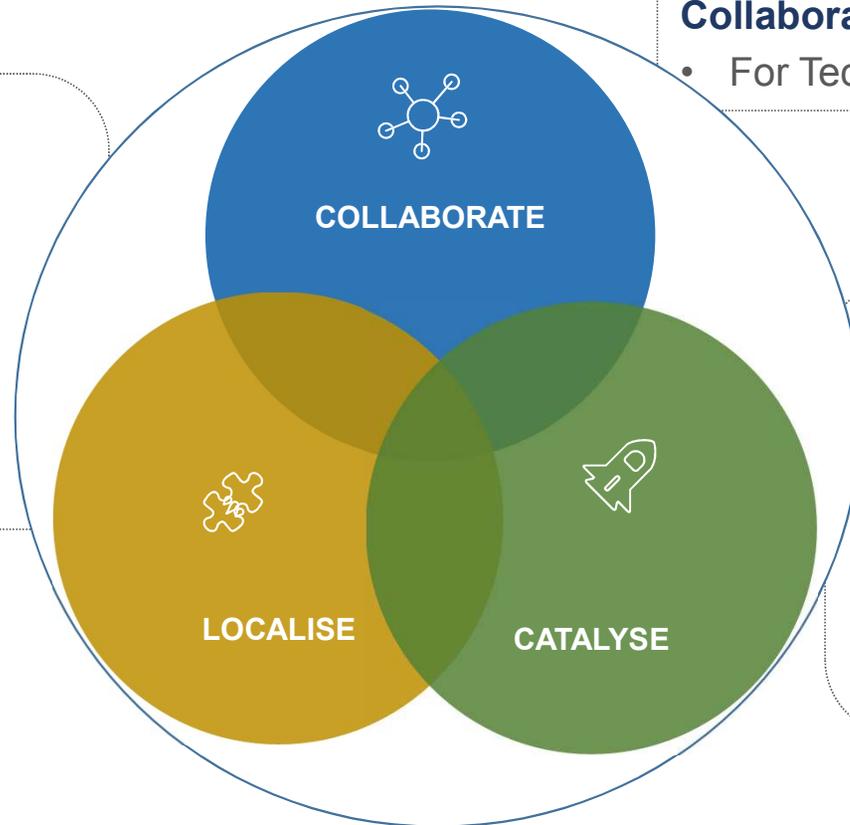
Type	Local content	Price preference
Class I	≥ 50%	✓
Class II	More than 20% but less than 50%	X
Non Local	≤ 20%	X

BHEL's Framework for AtmaNirbharBharat

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

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

BHEL SAMVAAD conducted till date

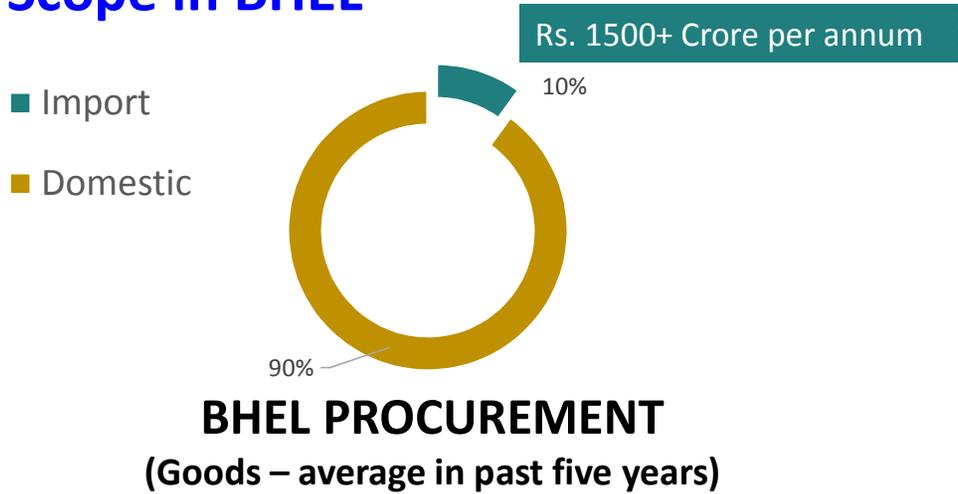
SN	Category of Material	BHEL Unit	Date
1	Raw Materials-Special/ Alloy/ Electrical Steel	Corporate Office	29.12.2020
2	Consumables for Foundry Applications	Hardwar	01.01.2021
3	Welding Consumables of Special Grade	Trichy	05.01.2021
4	Castings & Forgings	Hardwar	08.01.2021
5	Components-Mechanical	Hyderabad	12.01.2021
6	Insulating Materials	Bhopal	15.01.2021
7	Components - Electrical & Electronics	Bangalore	19.01.2021
8	Components – Solar	Bangalore	22.01.2021
9	Systems, Packages & BOPs	Noida	27.01.2021
10	Components - Electrical & Electronics (with IEEMA)	Bhopal	11.02.2022
11	Alloy Steel Pipes for supercritical projects	Trichy	08.06.2022
12	Castings & Forgings	Hardwar	26.08.2022
13	Mechanical & Electrical components/ Non-Ferrous items	Hardwar	05.09.2022
14	Insulating materials	Hardwar	09.09.2022
15	BQ plates of thickness >= 150 mm and SS plates of width 1500-2500mm	Hardwar	12.10.2022
16	Fibre Optic Generator End Winding VMS, Blade VMS, Calibrated Flow nozzle	Hardwar	14.10.2022

BHEL SAMVAAD conducted till date

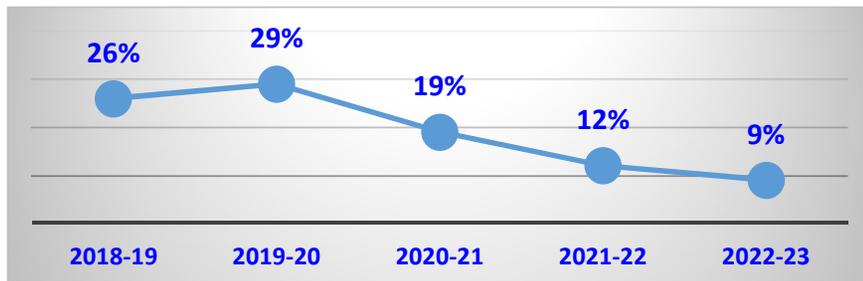
SN	Category of Material	BHEL Unit	Date
17	Castings & Forgings	Hardwar	28.10.2022
18	Bearings	Bhopal	04.11.2022
19	Pipes, Tubes, Special steels	Trichy	09.11.2022
20	Items for Flue Gas Desulphurization (FGD)	Ranipet	11.11.2022
21	Electrical insulating materials	Bhopal	15.11.2022
22	Quality first in supplies	Corporate Office	19.11.2022
23	Electronics & Solar Items	Corporate Office	21.11.2022
24	Castings & Forgings	Corporate Office	12.05.2023
25	Seamless Pipes & Tubes (High Alloy steel Tubes/ Pipes, Alloy steel Pipes , Carbon steel Pipes)	Trichy	17.08.2023
26	Seamless Pipes (High Alloy steel, Alloy steel, Carbon steel)	Trichy	26.10.2023

Opportunity for Indigenization

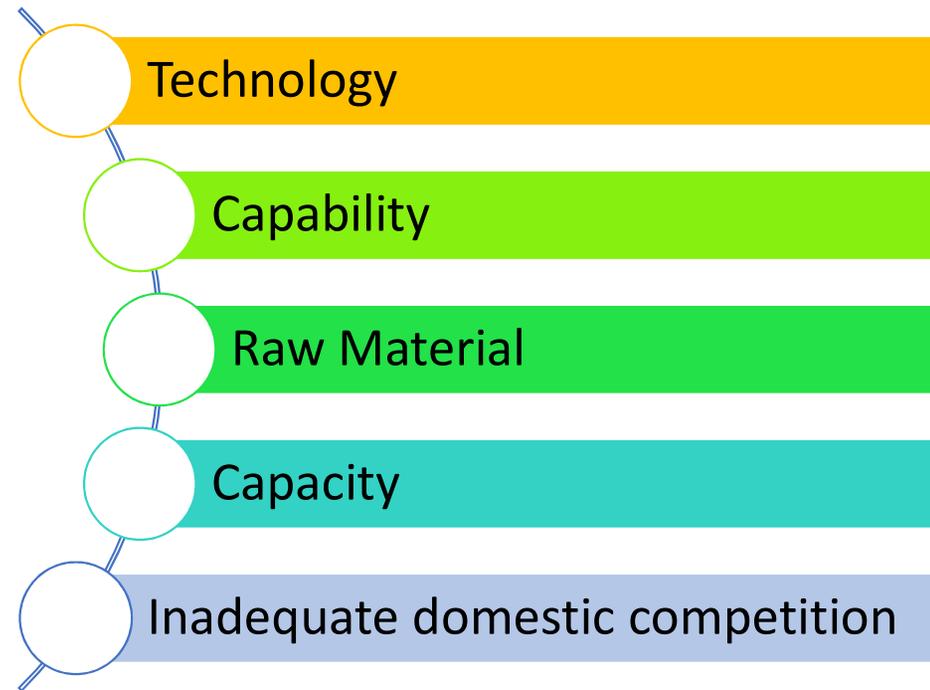
Scope in BHEL



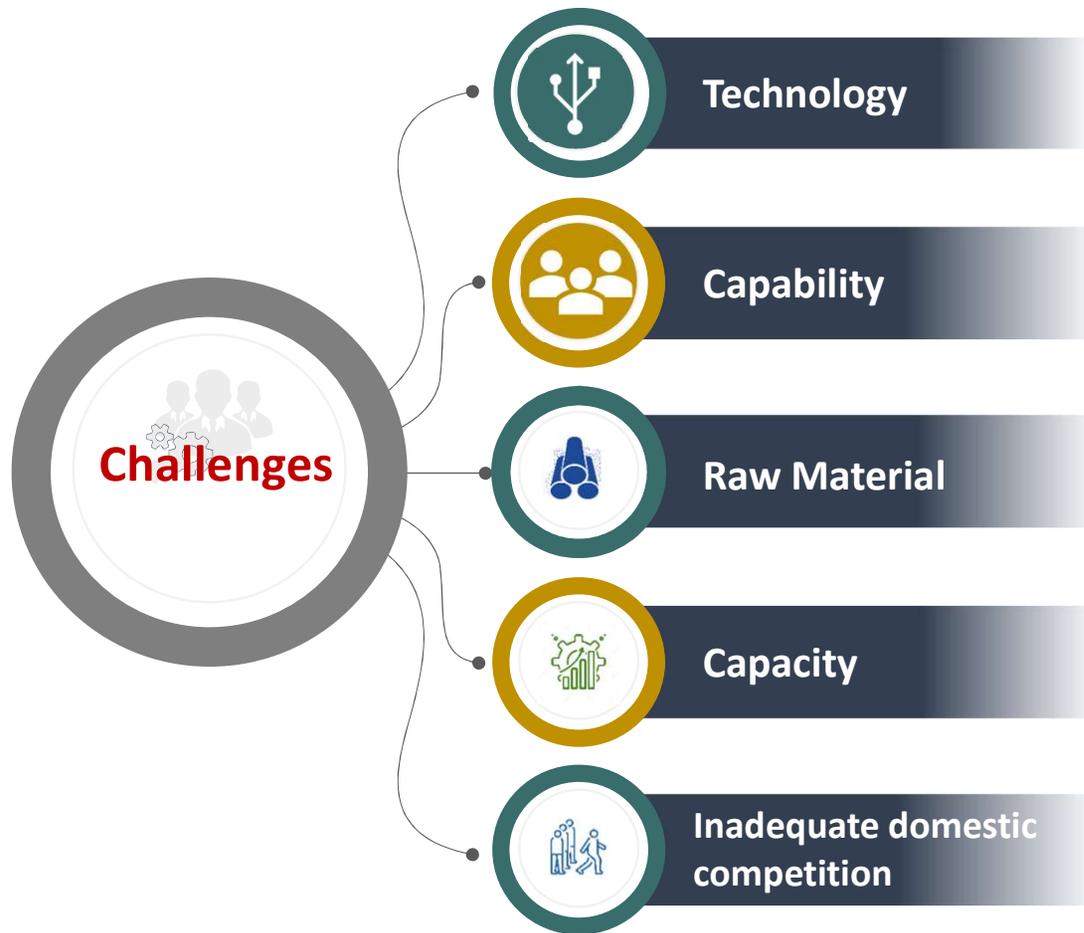
Trend of Imports in BHEL during the last few years



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, C276 sheets, Titanium Sheets

Nickel, Chromite Sand

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

Pressurization system for Motors, Armature Reversing Contactor, Mono PERC solar cells, Slurry Pumps, Gypsum Dewatering System, FGD Agitators, Mist Eliminators

BHEL SAMVAAD

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

9

Categories

300+

Items

16

Manufacturing Units

2000+

Crores per annum

- Raw materials – Special / Alloy / Electrical Steel
- Consumables for Foundry Applications
- Welding Consumables of Special Grade
- Castings & Forgings
- Mechanical components
- Insulating Materials
- Electrical & Electronic components
- Components – Solar
- Systems/ Packages

What's new in SAMVAAD 2.0



1.

Focus

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



2.

Collaborate

Invite ideas from the
domestic industry on
how, as part of a joint
effort with BHEL, one can
minimize the imports in
the Country



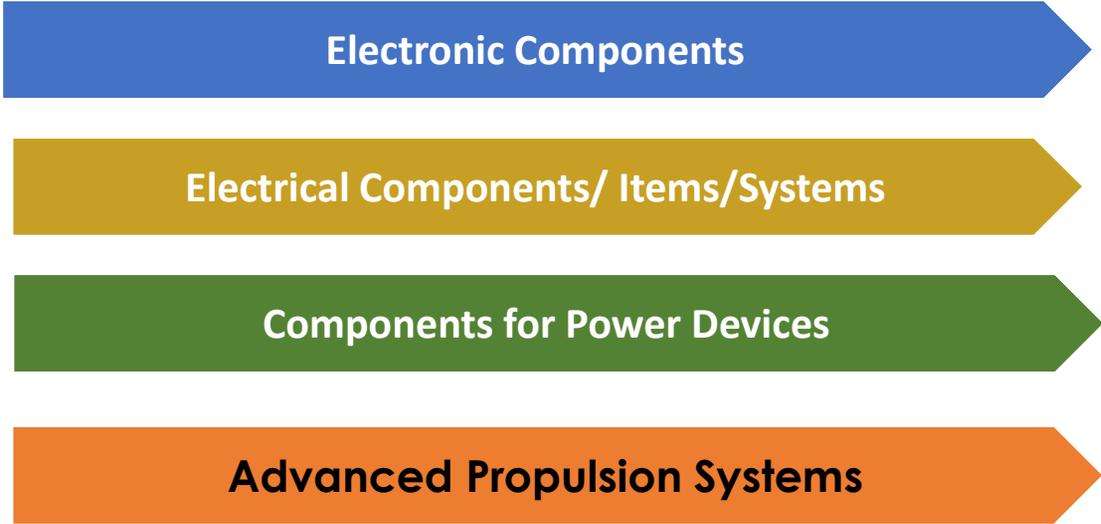
3.

Deliberate

on inputs w.r.t.
technical
alternatives



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



Electronic Components

Electrical Components/ Items/Systems

Components for Power Devices

Advanced Propulsion Systems

Electronic Components

CONSTRAINTS FACED

Non availability of the following in India:

- Semiconductor wafer / solar wafer/ chip fab facility
- Semiconductor IC manufacturing facility
- Surface Mount Device manufacturing facility

BHEL EDN semiconductor components requirement

SI No	Item description	Types	Value in Rs. Cr.
1	High power IGBTs	10+ types	75
2	Integrated circuits SMD/through hole	1500+ Types	40
3	Passive SMD components	2200+ types	10
4	Fibre Optic components	15+ types	10
5	Discrete semiconductors	550+ types	4
6	Misc components semiconductors, connectors etc	500+ types	20
Total		4775+ types	159

Electronic Components

EFFORTS & STATUS OF INDIGENIZATION

Number of indigenous vendors under approved category	Number of indigenous vendor under trial/development category	Status of indigenization
Approx. 20 indigenous vendors developed and approved.	6 indigenous vendors are under development	Open tenders had been floated in 2021 Feb and 2023 May seeking vendors who have a local content more than 20 %. SAMVVAD was conducted in 2021 Jan and 2022 Nov for these components. Except for some components vendors are not able to give local content for electronic components. Open tenders will be floated again this month (2023 Nov).

Items imported hitherto where local suppliers have been developed

Local Supplies developed in past 2-3 Years

Sl.	Item description	Supplier, M/s
1	HEAT SINK WATER COOLED for 6000HP LOCO /DV0688170744	M/s Thermovac , Blore
2	COMPOSITE WATER COOLED COLD PLATE /DV0688161146	M/s Thermovac , Blore
3	FEMALE COUPLINGS COMPOSITE /DV0688161405	M/s Ritra , Bhopal
4	WCPM SHIELD MULTIPLE CODES (DV0688172717, DV0688172725, DV0688172733, DV0688172709)	VA CORP (Indigenous OEM for Raw material)
5	CAP MATL POLY PROP 8uF, 440Vac, 4PIN PAC used in HLC module /DV0692391410	Vishay India with Local Content
6	84 Pin connector used in all VFD Semrack Regulation modules /CU7433390901	Protectron India

Items imported hitherto where local suppliers have been developed

Local Supplies developed in past 2-3 Years

Sl.	Item description	Supplier, M/s
7	HEATSINK 13C/W CLIP MOUNTED SW25-2G/DV0692400834	Aavid Thermalloy Perfect Machining Centre
8	RES WW 2R 5% 4W 50 PPM/ DV0692420266	Vishay Intertechnology MFR Electronics manufacturing Corp
9	HEAT SINK M/C (Induction Heating) /DV0689153546	Junior (Germany) Perfect machining Centre.
10	MBM 120 FRONT PLATE ASSY/ DV0692354940	Indian Vendors Sigma Punch ; Megha Punch were existing. One more Indian Vendor , Sri M Industries was developed.
11	CAP POLYPROP MTL 0.22MF 10% 850V /CN9753418312 (CN9061582121)	Electronicon (Germany) Advance Capacitors
12	Fiber optic cable assembly used in EMU/LOCO power modules /DV0688172877 & DV0688172869	M/s Huber+suhner , India
13	FEMALE COUPLING 6000 HP/ DV0688171710	m/s ADL hydraulics, Chennai

Items imported hitherto where local suppliers have been developed

Local Supplies developed in past 2-3 Years

Sl.	Item description	Supplier, M/s
14	FEMALE COUPLING 6000 HP/ DV0688171710	m/s ADL hydraulics, Chennai
15	Current transducer 1000A/250mA / DV0688160027	Electrohms, India
16	Laminated Busbar /DV068816	Ingresol India
17	DPUMR HEAT SINK /DV0692351110	Pooja Associates
18	DV0692351123 /DPUMR 2 heat spreader	Vinayaka CNC
19	DV0692332901 /HEAT SPREADER	Vinayaka CNC
20	DV0692334001 /HEAT SPREADER FOR M106 Q7 IN DPU MR V2	Vinayaka CNC

Items imported hitherto where local suppliers have been developed

Items Under development with Indian Vendors

Sl.	Item description	Supplier, M/s
1	TRANSDUCER SHUNT 750V/50MA 12/24VDC / DV0688170943	Electrohms
2	CURRENT TRANSDUCER 1:4000 / DV0688172741	Electrohms
3	CAPACITOR 1200MF 10% 800V /DV0688171400	Vishay India .
4	Fiber optic cable assembly used in EMU/LOCO power modules /DV0688172877 & DV0688172869	M/s HTL, India and M/s Amphenol, India
5	Silicone wire 20AWG 20kV / DV0688171214	M/s Thermo cables, India
6	CAPACITOR 1300MF 10% 2200V /DV0688160551	Vishay, India

Components - Electronic

Category	Application	Description	Requirement per annum (Rs. Cr.)	BHEL Unit	HSN Code	Required by any other clients	Photograph
Integrated Circuits (ICs)	For Railways and C&I products	PFGA,DSP, Microcontrollers Comparators Multiplexers Timers Memory chips Regulators ADC, DAC, opto couplers PCB mountable DC DC converters	38.95	EDN	85235100 85437099 85415000 85044010	Electronic module manufacturers	<p>SMD INTEGRATED CIRCUIT PACKAGE</p> <p>www.kitsunrise.com.my</p>

INTEGRATED CIRCUITS : 1510

Components - Electronic

Category	Application	Description	Requirement per annum (Rs. Cr.)	BHEL Unit	HSN Code	Required by any other clients	Photograph
IGBT	For Railways	IGBTs: Up to 1500 A and Up to 4500 V	75	EDN	8541 3010	Power electronic module manufacturers	

IGBT : 14

Components - Electronic

Category	Application	Description	Requirement per annum (Rs. Cr.)	BHEL Unit	HSN Code	Required by any other clients	Photograph
Fibre optic components	For Railways and C&I products	Fibre optic Transmitters and receivers	10	EDN	9001 1000	Power electronic module manufacturers	

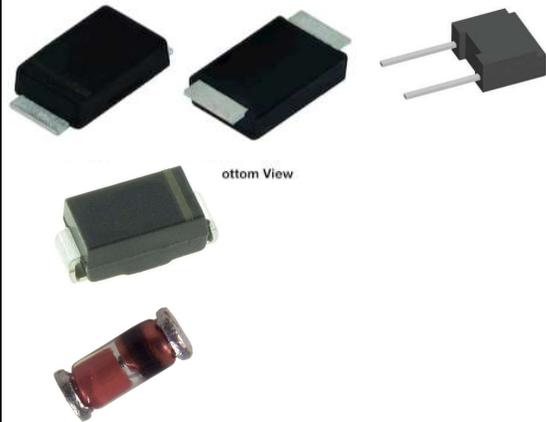
FIBER OPTIC COMPONENT : 14

Components - Electronic

Category	Application	Description	Requirement per annum (Rs. Cr.)	BHEL Unit	HSN Code	Required by any other clients	Photograph
TRANSISTOR	For Railways and C&I products	TRANSISTOR, Mosfet, FET, FOR POWER CONTROL APPLICATIONS	0.52	EDN	8541 2900	Electronic module manufacturers	

TRANSISTOR: 181

Components - Electronic

Category	Application	Description	Requirement per annum (Rs. Cr.)	BHEL Unit	HSN Code	Required by any other clients	Photograph
Diode	For Railways and C&I products	Rectifiers : SMT and Through hole	1.92	EDN	8541 1000	Electronic module manufacturers	 <p>ottom View</p>

DIODE SMT / through hole: 286

Components - Electronic

Category	Application	Description	Requirement per annum (Rs. Cr.)	BHEL Unit	HSN Code	Required by any other clients	Photograph
INDUCTIVE COMPONENTS	For Railways and C&I products	HF CHOKE, TRANSFORMER PCB MOUNTABLE : SMT and Through hole	5.61	EDN	8504 5090 8504 9010	Electronic module manufacturers	

INDUCTIVE COMPONENTS : 182

Components - Electronic

Category	Application	Description	Requirement per annum (Rs. Cr.)	BHEL Unit	HSN Code	Required by any other clients	Photograph
Battery and accesories	For Railways and C&I products	Batteries: Lithium cells and its accessories	0.06	EDN	8507 1000	Electronic module manufacturers	

BATTERY & ACCESORIES : 11

Components - Electronic

Category	Application	Description	Requirement per annum (Rs. Cr.)	BHEL Unit	HSN Code	Required by any other clients	Photograph
Cable	For Railways and C&I products	Cables: Halogen free high voltage cables, Fibre Optic Cables, Fibre optic cable assemblies for power electronics	3.76	EDN	8536 9090	Electronic module manufacturers	

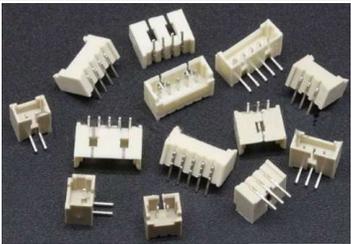
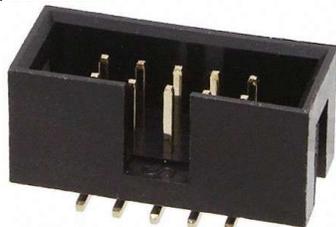
CABLE : 59

Components - Electronic

Category	Application	Description	Requirement per annum (Rs. Cr.)	BHEL Unit	HSN Code	Required by any other clients	Photograph																																																																																																																																																																		
Passive components: Capacitor SMD and Through hole	For Railways and C&I products	Capacitors: MLCC, Al electrolytic, ceramic, tantalum etc	7.82	EDN	8532 1000	Electronic module manufacturers	<p>MARKING A, B, C, D, E, G, H, K, S, T, V, W, X, Y CASE</p> <p>CASE DIMENSIONS: millimeters (inches)</p> <table border="1"> <thead> <tr> <th>Code</th> <th>EIA Code</th> <th>EIA Metric</th> <th>L±0.20 (0.008)</th> <th>W±0.20 (0.008)</th> <th>H±0.20 (0.008)</th> <th>W±0.20 (0.008)</th> <th>A±0.30 (0.012)</th> <th>S Min.</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>1208</td> <td>3216-16</td> <td>3.20 (0.126)</td> <td>1.60 (0.063)</td> <td>1.20 (0.047)</td> <td>1.20 (0.047)</td> <td>0.80 (0.031)</td> <td>1.10 (0.043)</td> </tr> <tr> <td>B</td> <td>1210</td> <td>3628-21</td> <td>3.50 (0.138)</td> <td>2.80 (0.110)</td> <td>1.90 (0.075)</td> <td>2.20 (0.087)</td> <td>0.80 (0.031)</td> <td>1.40 (0.055)</td> </tr> <tr> <td>C</td> <td>2312</td> <td>6032-28</td> <td>6.00 (0.236)</td> <td>3.20 (0.126)</td> <td>2.60 (0.102)</td> <td>2.20 (0.087)</td> <td>1.30 (0.051)</td> <td>2.90 (0.114)</td> </tr> <tr> <td>D</td> <td>2917</td> <td>7343-31</td> <td>7.30 (0.287)</td> <td>4.30 (0.169)</td> <td>2.90 (0.114)</td> <td>2.40 (0.094)</td> <td>1.30 (0.051)</td> <td>4.40 (0.173)</td> </tr> <tr> <td>E</td> <td>2917</td> <td>7343-43</td> <td>7.30 (0.287)</td> <td>4.30 (0.169)</td> <td>4.10 (0.162)</td> <td>2.40 (0.094)</td> <td>1.30 (0.051)</td> <td>4.40 (0.173)</td> </tr> <tr> <td>G</td> <td>1208</td> <td>3216-15</td> <td>3.20 (0.126)</td> <td>1.60 (0.063)</td> <td>1.50 (0.059) max</td> <td>1.20 (0.047)</td> <td>0.80 (0.031)</td> <td>1.10 (0.043)</td> </tr> <tr> <td>H</td> <td>1210</td> <td>3628-15</td> <td>3.50 (0.138)</td> <td>2.80 (0.110)</td> <td>1.50 (0.059) max</td> <td>2.20 (0.087)</td> <td>0.80 (0.031)</td> <td>1.40 (0.055)</td> </tr> <tr> <td>K</td> <td>1208</td> <td>3216-10</td> <td>3.20 (0.126)</td> <td>1.60 (0.063)</td> <td>1.00 (0.039) max</td> <td>1.20 (0.047)</td> <td>0.80 (0.031)</td> <td>1.10 (0.043)</td> </tr> <tr> <td>N</td> <td>0805</td> <td>2012-10</td> <td>2.05 (0.081)</td> <td>1.35 (0.053)</td> <td>1.00 (0.039) max</td> <td>1.00 (0.039)</td> <td>0.50 (0.020)</td> <td>0.85 (0.033)</td> </tr> <tr> <td>P</td> <td>0805</td> <td>2012-15</td> <td>2.05 (0.081)</td> <td>1.35 (0.053)</td> <td>1.50 (0.059) max</td> <td>1.20±0.10 (0.039±0.004)</td> <td>0.50 (0.020)</td> <td>0.85 (0.033)</td> </tr> <tr> <td>R</td> <td>0805</td> <td>2012-12</td> <td>2.05 (0.081)</td> <td>1.30 (0.051)</td> <td>1.20 (0.047) max</td> <td>1.00±0.10 (0.039±0.004)</td> <td>0.50 (0.020)</td> <td>0.85 (0.033)</td> </tr> <tr> <td>S</td> <td>1208</td> <td>3216-12</td> <td>3.20 (0.126)</td> <td>1.60 (0.063)</td> <td>1.20 (0.047) max</td> <td>1.20 (0.047)</td> <td>0.80 (0.031)</td> <td>1.10 (0.043)</td> </tr> <tr> <td>T</td> <td>1210</td> <td>3628-12</td> <td>3.50 (0.138)</td> <td>2.80 (0.110)</td> <td>1.20 (0.047) max</td> <td>2.20 (0.087)</td> <td>0.80 (0.031)</td> <td>1.40 (0.055)</td> </tr> <tr> <td>V</td> <td>2924</td> <td>7381-38</td> <td>7.30 (0.287)</td> <td>6.10 (0.240)</td> <td>3.55 (0.140)</td> <td>3.10 (0.123)</td> <td>1.30 (0.051)</td> <td>4.40 (0.173)</td> </tr> <tr> <td>W</td> <td>2312</td> <td>6032-15</td> <td>6.00 (0.236)</td> <td>3.20 (0.126)</td> <td>1.50 (0.059) max</td> <td>2.20 (0.087)</td> <td>1.30 (0.051)</td> <td>2.90 (0.114)</td> </tr> <tr> <td>X</td> <td>2917</td> <td>7343-15</td> <td>7.30 (0.287)</td> <td>4.30 (0.169)</td> <td>1.50 (0.059) max</td> <td>2.40 (0.094)</td> <td>1.30 (0.051)</td> <td>4.40 (0.173)</td> </tr> <tr> <td>Y</td> <td>2917</td> <td>7343-20</td> <td>7.30 (0.287)</td> <td>4.30 (0.169)</td> <td>2.00 (0.079) max</td> <td>2.40 (0.094)</td> <td>1.30 (0.051)</td> <td>4.40 (0.173)</td> </tr> </tbody> </table> <p>W1 dimension applies to the termination width for A dimensional area only.</p>	Code	EIA Code	EIA Metric	L±0.20 (0.008)	W±0.20 (0.008)	H±0.20 (0.008)	W±0.20 (0.008)	A±0.30 (0.012)	S Min.	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CAPACITOR SMD /Through Hole : 834

Components - Electronic

Category	Application	Description	Requirement per annum (Rs. Cr.)	BHEL Unit	HSN Code	Required by any other clients	Photograph
Connectors	For Railways and C&I products	PCB mountable SMT and through hole connectors	9.40	EDN	8536 9090	Electronic module manufacturers	 

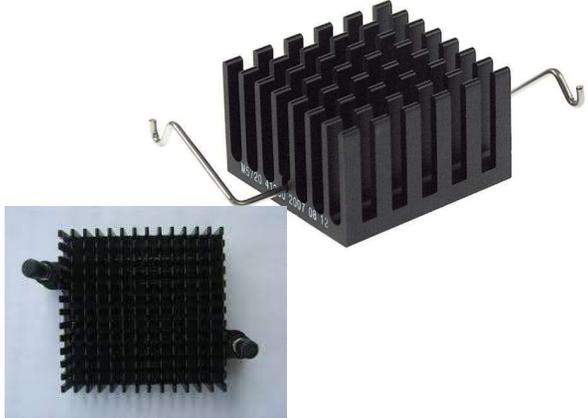
CONNECTOR_PCB MOUNTED : 749

Components - Electronic

Classification	Application	Description	Requirement per annum (Rs. Cr.)	BHEL Unit	HSN Code	Required by any other clients	Photograph
FUSE	For Railways and C&I products	PCB mountable SMT and through hole FUSE	0.57	EDN	8536 1030	Electronic module manufacturers	

FUSE : 80

Components - Electronic

Category	Application	Description	Requirement per annum (Rs. Cr.)	BHEL Unit	HSN Code	Required by any other clients	Photograph
HEATSINK	For Railways and C&I products	Heatsink for cooling electronic components such as FPGA, DSP, Microcontrollers etc Heatsink for very high power applications.	1.34	EDN	7318 2990	Electronic module manufacturers	

HEAT SINK : 25

Components - Electronic

Category	Application	Description	Requirement per annum (Rs. Cr.)	BHEL Unit	HSN Code	Required by any other clients	Photograph
LED components	For Railways and C&I products	LED: SMT and through hole of industrial grade Light pipes	0.94	EDN	8539 5000	Power electronic module manufacturers	

LED components : 91

Components - Electronic

Category	Application	Description	Requirement per annum (Rs. Cr.)	BHEL Unit	HSN Code	Required by any other clients	Photograph
OSCILLATOR	For Railways and C&I products	Crystal and Oscillators	0.29	EDN	8533 3100	Electronic module manufacturers	

OSCILLATOR : 57

Components - Electronic

Category	Application	Description	Requirement per annum (Rs. Cr.)	BHEL Unit	HSN Code	Required by any other clients	Photograph
POTENTIOMETER	For Railways and C&I products	Potentiometer, PCB mountable: SMT and through hole.	0.32	EDN	8533 4010	Electronic module manufacturers	

POTENTIOMETER SMD : 101

Components - Electronic

Category	Application	Description	Requirement per annum (Rs. Cr.)	BHEL Unit	HSN Code	Required by any other clients	Photograph
Quick Coupling	For Railways and C&I products	Traction grade quick couplings	0.86	EDN	7307 9990	Power Electronic module manufacturers	

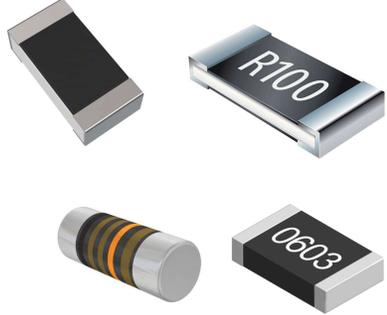
QUICK COUPLING : 1

Components - Electronic

Category	Application	Description	Requirement per annum (Rs. Cr.)	BHEL Unit	HSN Code	Required by any other clients	Photograph
RELAY	For Railways and C&I products	PHOTOMOS RELAY	3.05	EDN	8536 4900	Electronic module manufacturers	

RELAY : 74

Components - Electronic

Category	Application	Description	Requirement per annum (Rs. Cr.)	BHEL Unit	HSN Code	Required by any other clients	Photograph
RESISTOR SMD RESISTOR THROUGH HOLE	For Railways and C&I products	SMD resistors: Metal film, wirewound, precision resistors, power resistors etc	4.05	EDN	8533 1000	Electronic module manufacturers	

RESISTOR SMD : 1593

Components - Electronic

Category	Application	Description	Requirement per annum (Rs. Cr.)	BHEL Unit	HSN Code	Required by any other clients	Photograph
SD Memory CARD	For Railways and C&I products	SD MEMORY CARD : INDUSTRIAL GRADE	0.17	EDN	8523 5220	Electronic module manufacturers	

SD CARD : 6

Components - Electronic

Category	Application	Description	Requirement per annum (Rs. Cr.)	BHEL Unit	HSN Code	Required by any other clients	Photograph
SURGE SUPPRESSOR	For Railways and C&I products	Surge Suppressors	0.42	EDN	8535 4030	Electronic module manufacturers	

SURGE SUPPRESSOR : 45

Components - Electronic

Category	Application	Description	Requirement per annum (Rs. Cr.)	BHEL Unit	HSN Code	Required by any other clients	Photograph
SWITCH	For Railways and C&I products	Switches: SMT and through hole	0.74	EDN	8536 5005	Electronic module manufacturers	

Switches: 56

Components - Electronic

Category	Application	Description	Requirement per annum (Rs. Cr.)	BHEL Unit	HSN Code	Required by any other clients	Photograph
VARISTOR	For Railways and C&I products	Varistors for power application	0.30	EDN	8533 4090	Electronic module manufacturers	

VARISTOR: 28

Components - Electronic

Category	Application	Description	Requirement per annum (Rs. Cr.)	BHEL Unit	HSN Code	Required by any other clients	Photograph
Electronic Modules with embedded controllers	For Railways and C&I products	The electronic module with embedded controllers, protocol converters.	8.97	EDN	8504 4090	Electronic module manufacturers	

ELECTRONIC MODULE : 23

Components - Electronic

Category	Application	Description	Requirement per annum (Rs. Cr.)	BHEL Unit	HSN Code	Required by any other clients	Photograph
THYRISTOR	For Railways and C&I products	HV thyristors and Fast recovery diodes up to 1000 A and 4500 V	3.0	EDN	8541 3010	Power electronic module manufacturers	

THYRISTOR: 13

Components - Electronic

Category	Application	Description	Requirement per annum (Rs. Cr.)	BHEL Unit	HSN Code	Required by any other clients	Photograph
TRANSDUCER	For Railways and C&I products	Voltage sensors up to 3 kv and current sensors up to 5000 A	6.02	EDN	8504 9090	Electronic module manufacturers	

TRANSDUCER: 19

Item Type	Number of indigenous vendors under approved category	Number of indigenous vendor under trial/ development category	Status of indigenization
Integrated Circuits	NIL	NIL	As on today , there is no manufacturing facility within the country.
IGBTs & Thyristors	NIL	NIL	As on today , there is no manufacturing facility within the country.
Fibre Optic Components	NIL	NIL	As on today , there is no manufacturing facility within the country.
Transistors	(2)Master Instruments Corp , CDIL	Nil	Few parts required by SA are offered by the Vendors. Majority of the types, especially Surface Mount Devices are not manufactured within the Country.
Diodes	(2)Master Instrument Corp & CDIL	NIL	Few parts required by SA are offered by the Vendors. Majority of the types , especially Surface Mount Devices are not manufactured within the Country.

Item Type	Number of indigenous vendors under approved category	Number of indigenous vendor under trial/ development category	Status of indigenization
Inductive Components	(6)Vetril , Raleema , Delco , Hi-Tech magnetics , Salzer	Nil	Many parts required by SA are offered by the Vendors. Other items, especially Surface Mount Devices , are not manufactured within the Country.
Coin Batteries	Nil	Nil	As on today , there is no manufacturing facility within the country.
Fibre Optic Cables, HV Cables.	(1) Huber & Schuner India,	(2) HTL, Amphenol	Indigenous Sources have been developed for the Item.
Capacitors	(5)Gujrat Poly Electronics Ltd , JBS Capacitors, Advance Components , CTR , Desai Electronics	Advance Components for more Parts	Few parts required by SA are offered by the Vendors. Majority of the Types , especially Surface Mount Devices are not manufactured within the Country.

Item Type	Number of indigenous vendors under approved category	Number of indigenous vendor under trial/ development category	Status of indigenization
Connectors	1(Protectron Electro Mech Pvt Ltd)	Nil	Few parts required by SA are offered by the Vendor. Majority of the Types are not manufactured within the Country. For some items , Foreign Vendors themselves have in-house manufacturing within India for some of their lines. For such items They are able to provide local content.
Fuses	1(Protectron Electro Mech Pvt Ltd)	Nil	Few parts required by SA are offered by the Vendor. Majority of the Types & especially Surface Mount Fuses are not manufactured within the Country.
HeatSinks	(4)Dhathu Nirman , Manucho Machines , Vinayaka CNC , Perfect machining Centre	Perfect machining Centre for more Parts and Incresol India.	Indigenous Sources have been developed for the items.

Item Type	Number of indigenous vendors under approved category	Number of indigenous vendor under trial/ development category	Status of indigenization
LEDs	3(Southern Opto Electronics , Master Instrument Corp , Kwality Electronics)	NIL	Few parts required by SA are offered by the Vendor. Majority of the Types are not manufactured within the Country.
Crystals & Oscillators	1 (Andhra Electronics)	Nil	Few parts required by SA are offered by the Vendor. Many of the Types are not manufactured within the Country.
Potentiometers	Nil	Nil	Vendors , PEC & Hi-Tech Resistors manufacture Potentiometers . However The range of items required by SA are not manufactured by these Vendors.
Traction Grade Quick Couplings	1 (ADL Hydarulics)	United Tyrecraft	Indigenous Source has been developed for the items. More Vendors will be explored.
Relays	1(Paramount Industries)	Nil	Some Parts , especially Through Hole Electro Mechanical Relays are in the Vendor's manufacturing Range. Most of the other Electro-mechanical & Solid State Relays are not manufactured in India.

Item Type	Number of indigenous vendors under approved category	Number of indigenous vendor under trial/ development category	Status of indigenization
Resistors	(6) MFR electronic Comps & Precision electronic Comps Hi Tech Resistors , Kiyosh Electronics , Variturn , Omega Products	Nil	Few parts required by SA are offered by these Vendors. Many of the Types, especially Surface Mount Resistors & precision Resistors meeting SA Spec are not manufactured within the Country.
SD Card	Nil	Nil	Manufacturing facility does not exist within the country for SD Cards
Surge Suppressors	Nil	Nil	Manufacturing facility does not exist within the country for Surge Suppressors.
Switches	2(Elico Switches , Integral Systems & Comps)	Nil	Some Parts required by SA are in the Vendor's manufacturing Range. Other parts do not have manufacturing facility in India.

Item Type	Number of indigenous vendors under approved category	Number of indigenous vendor under trial/ development category	Status of indigenization
Varistors	Nil	Nil	Manufacturing facility does not exist within the country for Varistors.
Electronic Modules for Embedded control application		NIL	Electronic Modules are made for specific applications. These are selected at the time of Design by Collaborator.
Current & Voltage Sensors.	(1)Electrohm	Electrohm for More parts	Indigenous Source has been developed for the items. More Transducer Varieties will be explored with the Vendor. More Vendors also will be explored.



Thank You

THANK YOU

Write to samvaad@bhel.in to convey your interest