

## PLANT DESIGN AND PIPING PROFILE



**AVANT-GARDE SYSTEMS AND CONTROLS (P) LTD**



**(AN ISO 9001:2015 CERTIFIED ORGANISATION & ASME "S" STAMP HOLDER)**

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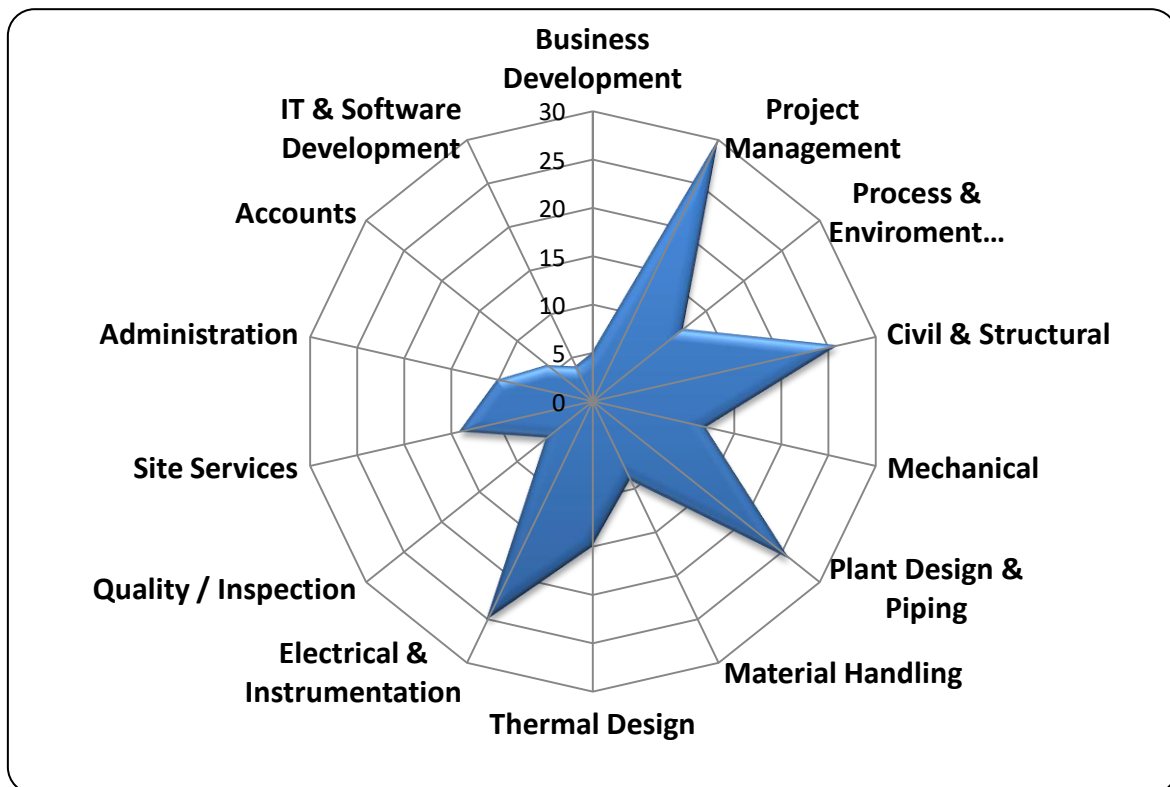
Website: <https://avantgarde-india.com>

## INCEPTION

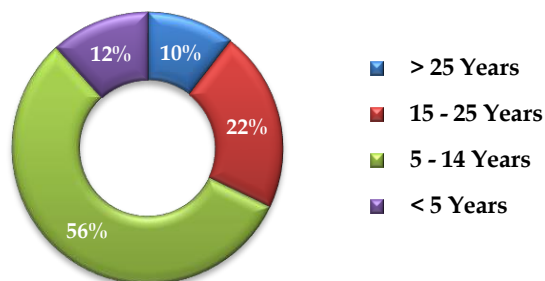
- ❖ ESTABLISHMENT - AVANT-GARDE ENGINEERS AND CONSULTANTS (P) LTD - 1990  
AVANT-GARDE SYSTEMS AND CONTROLS (P) LTD -1995

## STAFFING

- ❖ MULTI DISCIPLINARY TEAM COMPRISE OF MORE THAN 200 WORKFORCE



## YEARS OF EXPERIENCE



## CONTACT PERSON

- ❖ P.S. SANKARANARAYANAN, MANAGING DIRECTOR

## **AREAS OF OPERATION**

- Captive power plant
- Cogeneration plant
- Steam generator design and engineering
- Waste heat recovery systems
- Mini Hydroelectric power plants
- Combined cycle power plants
- Solar Thermal & Solar PV power plants
- Sugar plant consultancy
- Distillery Plants
- Water and Waste Water treatment plants
- Industrial Effluent Treatment plants
- Process piping
- Equipment design
- Detailed engineering of Electrical, Mechanical, Instrumentation, Civil & Structures
- Procurement & site supervision
- Third party inspection services
- Residual Life Assessment
- Energy Audit
- Engineering Software Development

### **2.0 AVANT-GARDE'S CAPABILITIES IN PLANT DESIGN AND PIPING**

2.1 **AVANT-GARDE** provides engineering services for piping basic design and detailed engineering. **AVANT-GARDE** also undertakes developing the basic design provided by customers for power plant and chemical and petro-chemical projects.

2.2 **AVANT-GARDE** provides the following basic and detailed engineering services for piping and plant design:

- Mechanical system engineering and preparation of P & I Diagrams for power and chemical and petro-chemical project piping system.
- Sizing of critical and non-critical piping including pressure drop calculations.
- Preparation of piping schedule, valve schedule, instrument schedule and insulation schedule
- Sizing and selection of pumps, control valve, safety valve, steam traps etc.
- Selection of expansion bellows.
- Piping material selection and preparation of piping specification.

- Selection of valves for various applications.
  - Preparation of overall plot plan and unit plot plan.
  - Preparation of equipment layout plan and elevation.
  - Preparation of piping layout.
  - Preparation of BOM for the piping systems.
  - Piping stress analysis and code calculations.
  - Pipe support and restraint selection
  - Piping support engineering and preparation of pipe support detailed arrangement drawings with bill of material
  - Preparation of isometric drawings with BOM.
  - Inspection services for piping system components.
  - Preparation of tender specification for piping system erection and commissioning.
  - Supervision of piping system erection and commissioning.
  - Providing assistance for floating the piping system and providing services for alignment of the piping with rotating equipment
  - Trouble shooting of piping system problems.
- 2.3 **AVANT-GARDE** provides detailed technical specifications for the procurement of valves, control valves, safety valves, expansion bellows, steam trap, strainers, spring hangers, pipes & pipe fittings and other specialities.
- 2.4 **AVANT-GARDE** has designed and engineered piping for a variety of fluids like steam, condensate, oil, compressed air, acids, thermic fluid, chemicals, organic compounds, fuel gases, carbon-di-oxide, nitrogen, alkalies, pesticides, flammable liquids, etc.
- 2.5 **AVANT-GARDE** Engineers have handled cryogenic piping system in their earlier assignments.
- 2.6 **AVANT-GARDE** has engineered piping of different material like carbon steel, alloy steel, stainless steel, titanium, Nickel Monel, Inconel, lined piping, PVC piping, HDPE piping, jacketed piping, etc.
- 2.7 **AVANT-GARDE** have the capability to engineer underground piping system including fire fighting system piping.
- 2.8 **AVANT-GARDE** also provides site services for supervision of erection and commissioning of the piping system.
- 2.9 **AVANT-GARDE** have a thorough knowledge of requirements of Statutory Authority like Tariff Advisory Committee (TAC), Directorate of Explosives, Petroleum Act, Indian Boiler Regulation (IBR), etc.,
- 2.10 **AVANT-GARDE** can engineer piping systems for different statutory Codes like ANSI / ASME, BS, IBR, DIN, etc.

### 3.0 PLANT DESIGN AND PIPING REFERENCE LIST

Avant-Garde have provided Plant Design and Piping Engineering Services for more than 500 projects. However, the Major Projects are indicated below:

S.No	Job Description	Client / Ultimate Client
1.	Plant design, engineering for 600 TPA Santex-Matt Resin Plant	Killick Nixon Ltd Bombay / Fabriken, Chennai
2.	Detailed and Engineering of 32 TPH & 64 TPH bagasse fired sugar plant boiler for 450 PSIG and 600 PSIG cycles for different sugar plants	Binny Ltd Engineering Division, Chennai
3.	Piping design and engineering for a Chlor Phyrphos 300 TPA capacity plant	Vantech Pesticides Ltd Hyderabad
4.	Detailed engineering services for Phosphoric Acid Plant	EID Parry (I) Ltd, Ennore
5.	Piping engineering for Sinarmas Projects 1 x 30 MW	Gec Slsthom Triven Ltd
6.	Piping engineering for Amarkantak Thermal Power Plant	BHEL, Bhopal
7.	Piping stress analysis and pipe support engineering for UKAI 120 MW turbine	Myricks Piping Systems (P) Ltd
8.	Pipe stress analysis and pipe support engineering for JOCIL and ASML	Pipe Supports India (P) Ltd
9.	Pipe support engineering for Redhawik Power Plant Unit 1 & 2	Pipe Supports, U.S.A
10.	Pipe Support engineering for Carville Project	Pipe Supports, U.S.A
11.	Pipe Support engineering for High Desert Power Plant	Pipe Supports, U.S.A
12.	Pipe support engineering for high desert power project - LPS System	Pipe Supports, U.S.A
13.	Pipe support engineering for boiler feed system of high desert power project	Pipe Supports, U.S.A
14.	Additional supports in steam turbine area - high desert power project	Pipe Supports, U.S.A
15.	Pipe support engineering for low pressure steam system (STG area) of high desert power project	Pipe Supports U.S.A
16.	Pipe support engineering for critical & non critical piping system of Siemens Westinghouse Power Corporation (Wasnsley cc unit #8)	Pipe Supports, U.S.A, Inc

<b>S.No</b>	<b>Job Description</b>	<b>Client / Ultimate Client</b>
17.	Engineering services for 2 x 40 MW power plant	Bhushan Ltd
18.	Consultancy services for Phase IA - 60 MW CPP implementation	Bhushan Ltd
19.	Piping engineering for 1 x 33 MW and 1 x 77 MW power plant project	Bhushan Steel & Strips Limited
20.	Piping engineering within TG building A/c. Aarti Steels	Demag Delaval Industrial Turbomachinery
21.	2 D offloading of engineering services for piping for Bhushan Ltd - 1 x 60 MW STG	BHEL, Hyderabad
22.	Steam condensate & cooling water piping engineering for 200 TPD solvent extraction plant	Veeraiah Non-Conventional Power Projects
23.	Piping engineering services A/c. Alexandria Project	Demag Delaval Industrial Turbomachinery Ltd
24.	Providing engineering services for 2 x 30 MW captive power plant	Monnet Ispat Ltd
25.	Engineering services for piping from 40/60 MW to turbo blower	Bhushan Steel & Power Ltd
26.	Providing piping engineering services Kakira Sugar Works - Uganda	T.D.Power Systems Ltd
27.	Piping engineering services for 2 x 150 MW balance of plant piping	Bhushan Steels & Strips Limited
28.	Providing piping isometric drawings - Bhushan 2 x 150 MW	Siemens Ltd
29.	Consultancy for designing the civil, structural & BOP, steam piping and slurry pipe line of ash handling system and services for execution of 1 x 130 MW power plant	Bhushan Power & Steel Ltd
30.	Providing engineering services for piping Facor Power 23 x 155 TPH boiler	Thyssenkrupp Industries Ltd
31.	Engineering services for 1 x 336 TPH CFB Boiler piping, 1 x 80 TPH A/c. Monnet Ispat site Raigarh,	Thyssenkrupp Industries Ltd
32.	HP Piping engineering for Integrated steel plant at Meramandali, Orissa	Bhushan Steel & Strips Ltd
33.	Providing engineering services for HP piping for 1 x 165 MW Power Plant at Meramandali site, Orissa	Bhushan Steel Ltd

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34.	Engineering Services for piping of Anrak BTG package boiler no.1 & 2	Thyssenkrupp Industries Ltd
35.	Providing Engineering Services for HP piping engineering for 1 x 165 MW power plant along with 2 x 425 TPH CFBC boilers, based on coal washery projects & char at Meramandali Site, Orissa	Bhushan Energy Ltd
36.	Engineering services for electrical to BTG package of 2x74.6 MW power plant for Anrak Aluminium Ltd Rachapally	Thyssenkrupp Industries Ltd
37.	Piping Engineering of Bhushan Steel Ltd, 1x165 MW	Siemens
38.	Piping Engineering of Bhushan Energy Ltd, 1x165 MW	Siemens
39.	Technical consultancy for detailed design, engineering of high pressure and low-pressure piping at Meramandalli Orissa	Bhushan Steel Ltd,
40.	Engineering services for Interconnection of steam piping from new CFBC 390 TPH to Uni#3 Headers	Bhushan Steel & Power Ltd, Kolkata
41.	Engineering services for Interconnection of steam piping from new CFBC 160 TPH & BF Boiler 200 TPH	Bhushan Steel & Power Ltd, Kolkata
42.	Piping Engineering Services for Isometric Drawing for Coke Oven area at Meramandalli, Orissa.	Bhushan Energy Limited, New Delhi
43.	Piping Engineering Services for 800 MW A/c. Doosan Heavy Industries	Pipe Hangers & Supports Pvt Ltd
44.	Piping Engineering services for Boiler CDQ II Meramandalli Orissa	Bhushan Steels Limited
45.	Detailed Engineering services for addition of 60 MW TG with Piping	Bhushan Steel & Power Ltd
46.	Engineering Services for Piping of WHRSG No. 13 &14 and the revised Engineering work of CFBC 340TPH Boiler at Rengali	Bhushan Steel & Power Ltd
47.	Piping Engineering Services A/c. Green Power	ISGEC Heavy Engineering Limited
48.	Providing Piping Engineering Services A/c. Ingenio Panuco Sapi De CV, Mexico Project	ISGEC Heavy Engineering Limited
49.	Detailed Engineering of Piping for M/s. Nawanshahr Power Private Ltd - 1 X 15 MW	Siemens Ltd

<b>S.No</b>	<b>Job Description</b>	<b>Client / Ultimate Client</b>
50.	Piping Engineering Services for 1 x 50 TPH Travelling Grate Boiler for Nakoranpet Greenergy Limited, Thailand	ISGEC Heavy Engineering Limited
51.	Piping Engineering of MITR PHOL Job (PB 1371	Thermax Limited
52.	Detailed Engineering Services of 23 TPH SLOP Fired Boiler A/c. V.V.Sugars, Perambalur.	Fives Cail KCP Limited
53.	Engineering Services for Piping Stress Analysis & Piping layout engineering A/c. Dangote Industries (Tanzania) Limited	Thermax Limited
54.	Piping engineering Services for 24TPH Boiler for M/s. Madhucon Sugar	ISGEC Heavy Engineering Limited
55.	Piping Engineering Services for M/s. Rajarambapu Patil	ISGEC Heavy Engineering Limited
56.	Detailed Engineering Services of 45 TPH SLOP Fired Boiler A/c. Babhnan Mills	Fives Cail KCP Limited
57.	Detailed Engineering Services of 45 TPH SLOP Fired Boiler A/c. Mankapur	Fives Cail KCP Limited
58.	Piping Engineering Services for 1X20MW CPP, MWV India Paper Board Project	Thermax Limited
59.	Piping Engineering Services for A/c. Mitr Phol Bio Power, Thailand	ISGEC Heavy Engineering Limited
60.	Piping Engineering Services for A/c. Bilagi Sugar Mills	ISGEC Heavy Engineering Limited
61.	Piping Engineering services for 1 x 410 TPH CFBC boiler (JB0963) for Nirma Limited	ISGEC Heavy Engineering Limited
62.	Order for providing Piping Engineering Services for 1 X 100 TPH Travelling Grate Boiler for M/s. Sri Chamundeswari Sugars	ISGEC Heavy Engineering Limited
63.	Design Engineering services of 1 X 75 TPH, 45 ata, 400°C Slop Fired Boiler to be installed in Dhampur Sugar Mills	Fives Cail KCP Limited
64.	Design Engineering services of 1 X 35 TPH, 45 ata, 400°C Slop Fired Boiler to be installed in Dhampur Sugar Mills	Fives Cail KCP Limited
65.	Detailed engineering services for piping for Rungta Mines Limited, Chaliyama	Thermax Limited
66.	Piping Engineering Services for 1 x 160 TPH Boiler for Seksaria Biswan Sugars	ISGEC Heavy Engineering Limited
67.	Detailed Engineering Services for Piping A/c. Balkeshwar Sugar	Fives Cail-KCP Limited
68.	Design Engineering services of 1 X 55 TPH, 45 ata, 400°C Slop Fired Boiler to be installed in Maharashtra	Fives Cail-KCP Limited
69.	Piping Detailed Engineering Services for 20 MW TG at Rungta Mines Limited, Chaliyama	Siemens Limited



<b>S.No</b>	<b>Job Description</b>	<b>Client / Ultimate Client</b>
70.	Design Engineering services of 80 /96 TPH, 22 ata, 325°C Bagasse Fired Boiler to be installed in Indonesia	Fives Cail-KCP Limited
71.	Design Engineering services of 1 X 35 TPH, 45 ata, 400°C Slop Fired Boiler to be installed in Swaraj Agro	Fives Cail-KCP Limited
72.	Piping engineering services for 1 x 55 TPH slop fired TG boiler (JB1018) for DSCL Sugar, Hariawan	ISGEC Heavy Engineering Limited
73.	Detailed Engineering Services for Piping A/c. L.H. Sugar	Fives Cail-KCP Limited
74.	Piping engineering services for 2 x 190 TPH travelling grate boiler (JB1013) for Etihad Power Limited project at Pakistan	ISGEC Heavy Engineering Limited
75.	Pipe stress analysis engineering Services for 1 x 12.25 MW Cement WHRB CPP, Reliance Cement Co. Pvt. Ltd., Maihar	Thermax limited
76.	Piping Detailed Engineering Services for 1x40MW coal based captive power plant, Sharjah Cement Factory, Sharjah	Thermax limited
77.	Piping Engineering Services for 1 X 27.5 TPH, Bi Drum, Bottom Supported, Water Tube, TG Boiler (JB1044) for M/s. Khemani Distilleries	ISGEC Heavy Engineering Limited
78.	Providing detailed engineering services for piping A/c.Gobind Sugars	Fives Cail KCP Limited
79.	Providing detailed engineering services for piping A/c.Rajalaxmi Petrochem	Fives Cail KCP Limited
80.	Providing piping engineering and preparation of piping drawings A/c. Dalmia Bharat Sugar	Isgec Heavy Engineering Ltd
81.	Providing piping engineering and preparation of piping drawings A/c. DSCL Sugars, Hariawan	Isgec Heavy Engineering Ltd
82.	Detailed engineering services of piping - Majhulai Sugar Industries	Fives Cail KCP Limited
83.	Providing Design Engineering Services for 1 X 60TPH, 45 ata, 400°C Slop Fired Boiler A/c. Sabitgarh	Fives Cail KCP Limited
84.	Providing Design Engineering Services for 1 x 60 TPH 45 ata, 400°C Slop Fired Boiler A/c. Muzaffarnagar	Fives Cail KCP Limited
85.	Providing detailed engineering services for piping A/c. Renuka Sugars, Athani	Fives Cail KCP Limited
86.	Providing detailed engineering services for piping A/c. Renuka Sugars, Karnataka	Fives Cail KCP Limited
87.	Providing detailed engineering services for piping A/c Gularia Chini Mills	Fives Cail KCP Limited
88.	Providing detailed engineering services for piping A/c KPR Sugar Mills	Fives Cail KCP Limited

<b>S.No</b>	<b>Job Description</b>	<b>Client / Ultimate Client</b>
89.	Providing detailed engineering services for piping A/c Twenty One Sugars	Isgec Heavy Engineering Ltd
90.	Providing detailed engineering services for piping A/c. Bajaj power equipment Ltd	Fives Cail - KCP Limited
91.	Providing detailed engineering services for piping A/c. The Seksaria Biswan Sugar Factory	Fives Cail - KCP Limited
92.	Providing detailed engineering services for piping A/c. Tikaula distillery	Fives Cail - KCP Limited
93.	Providing piping detailed engineering for 1 x 18 MW coal based Captive Power Plant A/c. Ramco Cements. AP.	Thermax Limited
94.	Providing piping stress analysis engineering Services for 1 x 65MW ITC Ltd	Siemens Ltd
95.	Offer for providing piping detailed engineering services for 1 X 110TPH CFBC boiler of Grasim Industries Limited - Indian Rayon unit, Veraval, Gujarat.	Thyssenkrupp Industries India Private Limited
96.	Providing detailed engineering services for piping A/c. RML Chaliyama	Siemens Ltd
97.	Technical Feasibility Study for Piping interconnection for utilizing 110MW & BEL unit #1 interconnection	TATA Steel BSL Limited
98.	Providing detailed engineering services for piping A/c. Rungta Dhenkanal Unit-2	Siemens Ltd
99.	Providing detailed engineering Services for 1x500 MW Bokaro 'A' TPS wet FGD plant package being put up by M/s.DVS at Bokaro	Techno Electric
100.	Engineering services for 32 MW and 3.5 MW Turbine piping interconnection. Piping Engineering for installation of normal NRVs in turbine bleed & extraction lines and replacing butterfly valve with gate valve. Piping Engineering services for Main Steam piping flow nozzle replacement	The Seksaria Biswan Sugar Factory Ltd

## GROUP COMPANY

- Avant-Garde Engineers and Consultants (P) Ltd, Chennai.
- Avant-Garde Engineers & Consultants FZC, Sharjah, U.A.E

## AFFILIATIONS & MEMBERSHIP

- CEAI - Consulting Engineers Association of India (CEAI is member of **FIDIC International Federation of Consulting Engineers**)
- Registered with Indian Renewable Energy Development Agency (IREDA)
- Enlisted with Power Finance Corporation of India and Asian Development Bank
- IIT, Chennai - Industrial Associateship Scheme (IAS) Membership and Library Membership
- Anna University - Industrial Associateship Scheme (IAS) Membership and Library Membership
- BIS - Bureau of Indian Standards Library Membership
- Institute of Engineers Fellow Membership - Directors (Chartered Engineers)
- Indian Chamber of Commerce and Industry (ICCI)
- Madras Chamber of Commerce and Industry (MCCI)
- Indian Wind Power Association
- Indian Welding Society
- Institute of Fire Engineers
- Bureau of Energy Efficiency (BEE)
- Maharashtra Energy Development Agency
- South Indian Sugarcane and Sugar Technologists Association
- Sugar Technologist Association of India (STAI)
- Engineering Export Promotion Council (EEPC)

## SOFTWARES

1. Pipe Stress Analysis
  - a. CAESAR-II
  - b. CAEPIPE
2. AutoCad Plant 3D
3. AutoCad
4. AVEVA - E3D

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