

## Avasarala Technologies Limited

COMPANY PROFILE



**Nuclear Power** 

Space

Factory Automation

**Medical Equipment** 

## **Innovating Technology**

www.avasarala.com





# Doing different things and doing things differently

Dared to take the un-trodden path.

Taking challenges and achieving them is Avasarala's strengths and has demonstrated challenging abilities through its technological break-throughs' and achievements.

**P**roducts and services include nuclear power plant equipments, life extension and Engineering Procurement & Construction (EPC) in the energy sector, heat pipes & wave guides for satellites telescopes for scientific research, anaesthesia machines & ventilators for critical patient care in hospitals, factory automation systems ensuring smooth production of automobiles and consumer goods.

### Vision

"To be a globally recognised organisation providing competitive solutions, quality products and services through innovative capabilities" Avasarala was established in 1985 as a Project Consultancy Company to lend technical expertise to the Indian machinery manufacturing industry. The group diversified into precision assembly of electron guns, speciality metals and healthcare equipments.

The indigenous engineering design and technological strengths and capabilities acquired in the industrial automation machinery field enabled Avasarala to enter the sophisticated and complicated field of strategic sectors - nuclear, space, defence and other R&D institutions.

Headquartered in Bangalore, the Company has manufacturing facilities at Bangalore and Pondicherry.

Technical competence, superior products & dedication to ongoing improvement in providing solutions makes us different from others. Alliances with world leaders in different fields enabled Avasarala to deliver high quality solutions and consistently update its processes to meet evolving demands.

Avasarala is backed by ISO 9001:2015 certification, and above all Avasarala's commitment to customer delight is endorsed by its highly energized and motivated employees.



#### Core Values & Beliefs

- Abide by fair business practices and customersatisfaction
- Empower employees by encouraging pro-active learning and care for their welfare
- Foster continuous improvement, innovation and creativity in products and services through aligned thinking, team spirit and a partnering approach
- Lead through inspiration and thereby deliver consistent quality essential for profitability and long-term survival
- Fulfill commitments by always willing to walk the extra mile
- Protect and conserve the company's resources with the same zeal, as one would do with personal resources
- Attend to any matter pertaining to customers on an immediate basis
- Recognise problems and respond in a positive manner



#### Quality

Each of the division is ISO certified and also abides by industry specific norms

Quality Policy of Avasarala ensures, "Building customer confidence by providing consistenty good quality products and excellence in service through continual improvement of its practices and processes".

#### **Quality Objective**

- Continued training of personnel to imbibe quality as a culture in its people.
- Strictly adhering to the quality manual in all its operations.
- To be abreast of the latest technology to become innovative. To be benchmark in customer services and support.
- To create an excellent work environment and maintain good house keeping.





#### AVASARALITES

#### Chronology of Events - Milestones in time

- 1985 Birth of Avasarala
- 1986 Genesis of Consultancy Services
- 1987 Established Process Machinery manufacturing facility
- Won ELCINA AWARD for Indigenisation of Capital Machinery
- 1990 Established Electron Gun facility at Bangalore
- 1996 Won ELECINA AWARD for Indigenisation of Capital Machinery for the Second time
- Entered into strategic alliance with FlexLink, Sweden
- ♦ 1997 First Export of Machinery
- Established Tungsten manufacturing facility at Mysore
- ISO Certification for Electron Gun Unit
- ◆ 1998 Won DSIR (Govt. of India) National Award for Outstanding Achievement in R&D for the Tungsten facility
- 1999 Designed and manufactured Multi Axis Ion Beam Machining System
- ◆ 2000 Tie-Up with Ulco Medical, Australia for Medical Equipment Manufacture Av.Ulco
- ♦ ISO Certification for Group Design Centre
- ISO Certification for Machinery Division
- ♦ 2001 ISO Certification for Tungsten
- Established Healthcare Equipment Manufacturing facility at Pondicherry
- Establishment of Space Products Division
- 2002 Entered Strategic Sector for supply of Machines & Parts
- Established Colour Electron Gun manufacturing facility at Pondicherry
- 2003 Handed over first flight model Heat Pipe to Chairman of ISRO

- 2004 Execution of Dual Transfer Motion Simulator for Defence Research Centre
- Multipactor High Vacuum Test Chamber for Space Application Centre – SAC
- Supplied Radiation Shielding Windows for NPCIL
- 2005 En-Masse Coolant Channel Replacement for MAPS
- Successful completion of Precision Magnet Positioning System Jacks Export Order to CERN, Geneva
- Amalgamation of all the group companies
- Crossed sales turnover of Rs.100 crore
- 2006 First Fueling Machine Head supply to NPCIL
- Supplied Self Elevating Platform to NPCIL
- Won Indian Nuclear Society "Industrial Excellence Award"
- 2007 AIG private equity investment
- 2007 En-Masse Coolant Channel Replacement and En-Masse Feeder pipes Replacement for NAPS Unit-1
- 2008 En-Masse Feeder pipes Replacement for RAPS Unit-2
- 2009 Substantial infrastructure expansion at Somanahalli, Bangalore
- 2009 En-Masse Coolant Channel Replacement for NAPS Unit-2 & KAPS Unit-1
- 2010 Manufacturing, Pre-assembly and supply of In-Wall Shielding for ITER Vacuum Vessel.
- ♦ 2011 Engine Assembly line for FORD
- 2012 Tyre building machineries for Michelin
- ♦ 2013 Michelin Best Quality supplier Award
- 2015 Completed 30 years
- ♦ 2018 En-Masse Coolant Channel Replacement for KAPS Unit-2 (5th EMCCR for NPCIL)





#### Core business areas comprises of

Nuclear Power – Manufacture of Machinery, Equipments & Components for Nuclear Power Plant and R&D Institutions and Engineering Services for Plant installation and refurbishment

Space - Manufacture of Machinery for Satellite segment and Components for Satellites. Engineering services for Satellite Industry.

Factory Automation – Assembly of Automation Lines & Industrial Conveyors.

Medical Equipment - Manufacture of Operation Theater equipment.

**Outsourced Manufacturing –** Tyre Building Machineries and equipment for Personal care paper products.





Avasarala successfully forayed into Nuclear Power Machinery by meeting the demanding requirements of the customer on a continued basis. Even the most complex parts of the critical nuclear reactor fuel loading systems have been successfully met. The expertise shown in the refurbishing work for the nuclear power reactors have won accolades in the industry. Site installation activities in the realm of engineering procurement & construction through professionally managed site team is another significant contribution breaking all past records.

Avasarala has significant expertise in manufacture and supply of critical Reactor area equipment, including fuel handling systems. On-site services such as installation & plant life extension.

#### Equipment

- Manufacture of Reactor equipment
  - Fuelling Machine
  - Drive Mechanism
  - Radiation Shielding Windows
  - Shielding Plug assembly
  - Sealing Plug assembly
  - Roll-On Shield
  - Tray Loading Bay equipment
  - Self Elevating Platform
  - Material Handling Systems
  - Fuel Bundle assembly line

#### **Site Services**

- Operating Reactors
  - En-Masse Coolant Channel Replacement
  - En-Masse Feeder Pipes Replacement
  - Special tools & equipments for Life Extension Programmes
- New Reactors
  - Installation of
    - Calandria & End Shield
    - Fuel handling Equipment-Column/Bridge
    - Coolant Channel Assemblies
    - Reactivity Mechanisms
    - Fuel Transfer Equipments

![](_page_4_Picture_34.jpeg)

**Fueling Machine** 

![](_page_4_Picture_36.jpeg)

Fueling Machine Head is used to refuel and to remove the spent fuels from the reactor core in nuclear power generating station. This machine operates in the Radiation zone and all the sequence of operations are controlled remotely. The machine weighs about eight tons and most of its components are manufactured out of Stainless Steel and Special Alloy Steels

![](_page_5_Picture_1.jpeg)

Radiation Shielding Window

Radiation Shielding Windows used in nuclear Reactor Building are viewing devices, which allow direct viewing into radioactive area.

![](_page_5_Picture_4.jpeg)

Drive Mechanism

Manufacture, inspection, testing, qualification, packing and delivery of Control Rod Drive Mechanisms (CRDM) required to operate Shut-off Rods (SR) and Absorber Rods (AR) for Nuclear Reactors.

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Sealing Plugs

![](_page_5_Picture_9.jpeg)

**Shielding Plugs** 

Sealing Plugs & Shielding Plugs are the critical sub assemblies in Pressurised Heavy Water Reactor (PHWR), which are used to protect fuel bundles in the core of nuclear reactors.

**Sealing Plug assembly** is to close both ends of Reactor coolant channels and prevent escape of heavy water from the end fittings, which are located at both ends of each coolant channel assembly.

**Shielding Plug assembly** to provide Shielding at both ends of the coolant channel and also to provide a means of locating and stopping the fuel columns from moving when Sealing plugs are withdrawn during fuel changing.

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Self-Elevating Platform

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Self-Elevating Platform is a fabricated structure for use in Fueling Machine vault during removal and reinstallation phase of En-Masse Coolant Channel Replacement work.

- Compatibility for flask handling in restricted space
- Heavy tonnage 80 tons of IS 2062 Gr B Material
- Ball screw drive for precision movement
- Electrical Synchronization of all four motors

#### **R&D** Institutions

Avasarala caters to the prestigious institutional needs by building sophisticated equipments and machinery for various research organizations.

Avasarala provide custom equipment for R&D and other industries. Solutions to these sectors are met by specific system integration capabilities and a thorough understanding of the processes involved.

![](_page_6_Picture_8.jpeg)

Precision Magnet Positioning System Jack

CERN is the world's largest particle physics research centre building. Large Hadron Collider (LHC) Particle Accelerator near Swiss-France.

High Precision Mechanical Jacks for supporting and aligning Magnets located along 27 KM circumference in a tunnel 100 m underground in corrosive environment.

- Manufactured and Delivered 4,750 Nos of Precision Magnet Positioning System Jacks.
- Three nos. are used for supporting and aligning each magnet.
- High load carrying capacity of 32 Tonnes in vertical and 7 Tonnes in transverse direction.
- Anti-backlash precision screw drive with 0.05mm resolution.

![](_page_6_Picture_16.jpeg)

Gamma Ray Telescope

Gamma Ray Telescope also called as HAGAR (High Altitude Gamma Ray) Telescope is used to detect Celestial gamma rays of high energy. A cluster of 6 + 1 Telescopes arranged in a circular array of hexagon form with 7 mirrors in each constitute one ground based observatory

Incorporation of improvements observed during 2 Nos prototypes built by IIA and supply of 5 Nos Telescopes to Hanle in Ladakh at 4200 m altitude

Integration of Optics and Drives supplied as Free Issue Material and installation at site

![](_page_6_Picture_21.jpeg)

Vacuum Vessel In Wall Shields for ITER Organization

Vacuum vessel in ITER Nuclear reactor is double walled toroidal container chamber for creation and sustenance of plasma needed for fusion reaction. VV-IWS Blocks are built / assembled between the outer shell and inner shell of the vacuum vessel. The functionality of these blocks is to ensure the stoppage of neutrons from Nuclear reactor plasma zone and reduction in Toroidal magnetic field ripples.

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![](_page_7_Picture_0.jpeg)

VVIWS blocks are made of borated stainless steel plates and each block is pre-assembled with required number of plates by means of brackets and bolts. Each plate of IWS block is typically 0.4m x 0.3m and 40mm Thick. There are around 8000 blocks/56000 of different size plates are to be manufactured for the reactor.

#### **SPACE**

With the successful establishment of critical heat pipes for satellites, Avasarala enjoys a unique distinction of having achieved space quality certification process for its processes and components. The products have found its way into satellites and a continued long term commitment from customer enhances the confidence of the customer. Avasarala supplied critical machinery for the space launch program and other critical equipment.

Avasarala has been actively associated with Space Sector since 1998 and has worked on a variety of critical and technologically challenging projects

#### **Products and Services**

- Custom built machinery for manufacture and testing for space applications
- Design and Fabrication of Thermal and Vacuum test chambers for satellite sub-systems
- Systems for Solid propellant handling, NDT facilities for launch vehicles
- Heat Pipes for satellites

![](_page_7_Picture_10.jpeg)

Heat Pipes

Heat pipe is a passive heat transfer device with an extremely high effective thermal conductivity.

- Design, Develop & Manufacture different types of heat pipes for space
- Product jointly developed with ISRO Scientists.
- Dedicated facility to manufacture and supply of Heat Pipes.
- Over 4000 Nos heat pipes were delivered to Space Industry since 2003.
- Both Single Core and Dual Core versions used.
- Custom designs to individual requirements.

![](_page_7_Picture_19.jpeg)

**CNC** Perforating Machine

CNC PERFORATING MACHINE is meant for Perforating holes on Aluminized Mylar & Kapton films developed for Indian Space Research Organization. It punches holes, which are burr free.

Diameter of the hole to be perforated -1.1mm to 1.4mm

Hole Centers -	length wise 20.5 $\pm$ 0.2 & width wise 35.25 $\pm$ 0.2
Hole pattern -	Staggered
Material to be perforated -	Polyester (Mylar) film, Aluminized b o t h s i d e s Polyamide (Kapton) film, Aluminized both sides
Thickness of film - Polyester -	0.006mm
Thickness of film - Polyamide -	0.025 & 0.050mm

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Vacuum Chamber

Thermo vacuum chamber is equipment designed and developed to simulate the space environment and supplied to SAC, Ahmedabad.

- Material of construction SS 304 L (Austenitic Non-Magnetic SS)
- Size: Diameter 1750 mm and Length 3015 mm
- ♦ Vacuum: 1X10<sup>-7</sup> mbar
- Thermal cycling: 100 to + 100<sup>°</sup> C

![](_page_8_Picture_7.jpeg)

Ion Beam Milling System (IBMS)

IBMS used for Polishing large diameter Mirror up to 1Mtr. Supplied and Installed at LEOS, Bangalore

- Material: SS-304L
- ♦ Chamber Size: Diameter 3200 mm and 2000 mm long
- ♦ Vacuum 10<sup>-6</sup> mbar
- Low energy lon guns 16 cm
- Vacuum compatible 5 axes Robot
- Software for Laser Interferometer output
- Data Acquisition system

Ground equipments for Mark-III program to SHAR-Sriharikota

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Casting Facility

![](_page_8_Picture_20.jpeg)

Hardware Surface Preparation System

![](_page_8_Picture_22.jpeg)

NDT Facility

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Vestibule System

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**Bowl Cleaning Machines** 

#### FACTORY AUTOMATION

The Factory Automation division partners with the automotive industry to provide high quality, easy transmission solutions in critical areas including Engine Assembly, Seat Handling, Fail Safe Assembly Systems and Sub-system Assembly etc.

The Factory Automation division provides solutions to industries including Automotive, Consumer, amongst others.

Automation systems from Avasarala are characterised by compact and modular design, that match specific needs of different industries. Customised, turnkey solutions are provided following an in-depth study of industry specific requirements and implementation from the concept to commissioning stage.

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#### Automotive

Engine Assembly Line

Transmission Assembly Line

**Component Handling Systems** 

Main and Sub-system Assembly Automation

Fail Safe Assembly System

Auto Components

#### Consumer

Electrical & Electronics Consumer Durables FMCG Glass Tobacco

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Fail Safe Assembly System

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**Pallet Handling Systems** 

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**Engine Assembly Line** 

![](_page_10_Picture_4.jpeg)

Handling Solution

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**Tyre Handling Line** 

Automation solutions from Avasarala are sought after by a variety of Consumer driven industries such as Consumer Durables & Electronics (Home Appliances), Electrical Switchgear & Allied Products, Electronic Components and FMCG segments.

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#### Product range

- Flat Belt Conveyors
- Roller Conveyors
- Flexible Roller Conveyor
- Free Flow Conveyor
- Slat Conveyor
- FlexLink Conveyor Systems
- PCB Insertion Conveyors
- Wire Mesh Conveyor
- Chain Conveyor
- Pick & place Systems / Robots
- Assembly Automation
- Tyre Manufacturing Equipment
- Engine Assembly line

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![](_page_10_Picture_26.jpeg)

![](_page_11_Picture_0.jpeg)

![](_page_11_Picture_1.jpeg)

![](_page_11_Picture_2.jpeg)

![](_page_11_Picture_3.jpeg)

Petrol & Diesel Engine Assembly Line

![](_page_11_Picture_5.jpeg)

**Engine Storage Line** 

### **Medical Equipment**

#### Healthcare

Avasarala entered into a technical collaboration with Ulco Medical, Australia in 2003 to provide world class equipment and health care machinery in India. The unit currently supplies Anaesthesia Machines, Ventilators and a range of other medical products for the Healthcare industry.

The major range of Healthcare products and services includes

- Anaesthesia Workstation
- Anaesthesia Machines
- Anaesthesia Ventilators
- Emergency Ventilators

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Anaesthesia Workstation Signet 515 Elite 915 Elite 918 I-ADS 10

Anaesthesia Machine Elite 215 Elite 415 Elite 615

![](_page_11_Picture_18.jpeg)

![](_page_11_Picture_19.jpeg)

Anaesthesia Ventilator EV-600 Plus

Emergency Ventilator EM-Vent

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## **Quality System Certificates**

Certified for QMS & Medical Equipments

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ISO 9001: 2015

## ITC

Management Systems Certification Body Institute for Testing and Certification, Inc. 17ida Tomáše Bati 299, Louky, 703 02 Zlin, Czech Republic

## CERTIFICATE

No. 15 0181 SJ

We centre on the back of a continued audi the company Avasarala Technologies Limited Healthcare Division Block 3, R.S. No. 542 & 544, Villianur - Bahour Road, Korkadu, Puducherry – 65110, India Company Reg. No.: 34150039652

has implemented and documented a functional quality management system in compliance with the requirements of the standard

#### EN ISO 13485:2012

Covering the following activities:

Manufacture and Supply of Anesthesia Machines, Ventilators and Operation Theatre Tables

The Cantillagy is stated on the basis of the results mentioned in Aurill Report No 233040477(2016). The Cantillage validity is constituented by positive results of surveillance public which the entropy constitute committee to entropy.

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EN ISO 13485 : 2012

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#### Somanahalli Facility

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Total Built up Area	: 15,000 sq.mtrs		
Height Max	: 25 mtrs		
Crane Capacity Max: 50 Tonnes			
Total Land Area	: 50,000 sq.mtrs		

Building	Description	Length (meters)	Width (meters)	Height (meters)	Crane Capacity (Tons)
1	Export Oriented Unit	83	24	9.5	10
2	Factory Automation	83	24	9.5	10
3	Fabrication – Carbon Steel & Stainless Steel	76	25	15	20
4	Heavy Machining	76	25	15	20
5	Nuclear Power	76	30	25	50

#### **Bommasandra - Bangalore**

![](_page_13_Picture_5.jpeg)

Total Land Area: 7001 sq.mtrsTotal Built up Area: 1555.5 sq.mtrs

#### **Mettupalayam - Pondichery**

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Total Land Area : 1000 sq.mtrs Total Built up Area : 1365.5 sq.mtrs

#### **HUMAN RESOURCE**

Avasarala has a strong technically competent workforce on its rolls apart from sufficient number of workforce taken on contract basis to meet various project execution requirements. Out of the total strength, Engineers constitute more than 30% and Design Engineers constitute more than 10%.

#### **INFRASTRUCTURE**

Avasarala has ample manufacturing space to meet all kinds of engineering executions. The manufacturing plant is equipped with world class machineries.

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## RECOGNITION

Recognitions for Avasarala's technical excellence have come from different quarters including the Govt. of India CSIR award in process industry category.

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Indian Nuclear Society "Industrial Excellence Award"

![](_page_14_Picture_5.jpeg)

ELCINA Award Indigenisation of Capital Machinery 1987 & 1996

![](_page_14_Picture_7.jpeg)

SIATI Award for Excellence in Aerospace Indigenisation 2001

![](_page_14_Picture_9.jpeg)

National Award R & D efforts in Tungsten Manufacturing 1998

![](_page_14_Picture_11.jpeg)

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Somanahalli, Bangalore

![](_page_15_Picture_2.jpeg)

Bommasandra, Bangalore

![](_page_15_Picture_4.jpeg)

Avasarala Technologies Limited

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