

Author of “Retrofitting the TARDAMS*”, Invention, Robotics, Industrial Automation, Design Engineering, R&D for Defence and Industry are his passion.
**Paper selected and presented by invitation at global MAST Confex 2006 in NICE, France, September 4, 2006)*

He has done projects in the above fields, spanning 43 years and is writing a book on these, titled “108 Engineering Delights”.

TARDAMS*, is invented by him for “Force Exponentiation”, besides overcoming the severe operational limitations and high stresses imposed on helicopters by the existing handling systems on board Frigates/Corvettes and Destroyers. He has been part of the CAE design team as Naval domain Consultant on Helicopter Traverse systems for P-17(“Sea King” Heavy Helicopter), AOPV(Advanced Light Helicopter) and KDX (Lynx Helicopter for Korean Destroyer) projects.

He founded Artec Sriman Controlls Private Limited, in 1981 and is its Managing Director. This company takes on only challenges, pushing the envelope on technological fronts, e.g. TARDAMS*. He had also founded another outstanding export awards winning company in 1969, namely ENGSER India Ltd.

Trained as a marine engineering apprentice in 1960 at the Garden Reach Workshops Ltd., he has served the Indian Navy, as Lt.Commander IN (VR) (1963-1974) on board I.N.S.Venduruthy, I.N.S.Mysore, I.N.S.Delhi, I.N.S. Vikrant, I.N.S.Kakinada (Anti-Mine ship as EXO) and I.N.S.Hooghly. He had been top ranked in all training programs.

He has witnessed the very first keel laying ceremony of the very first indigenous effort of building the Seaward Defence Boats, I.N.S. Ajay, I.N.S. Abhay, and I.N.S. Akshay at GRW (Now, GRSEL).

He is a Doctoral Member of The New York Academy of Science (U.S.A.), Member I.E.E.E. (U.S.A.), Society President invitee to the Industrial Electronics and Controls Society(IEEE), Member Madras Management Association, Life Member Madras Productivity Council and Life Fellow Indian Institution of Plant Engineers.

He has been Chief Guest, Chairman of Technical sessions, Chief Faculty for Summer/Winter Training camps for Engineering Professors at National and International levels on Computer Science, Artificial Intelligence, Machine Intelligence, Robotics, Mechatronics and System Engineering.

Elite Professors of Engineering and Academia acclaim him and he has been recommended to the President of India as a National expert on Robotics and Mechatronics.

He has rendered Industrial consultancy to several overseas industries in U.S.A., U.K., W.Germany, France and Singapore.

Extensive Work EXPERIENCE & INVOLVEMENT Intensity Profile

legend: 1a = Design &

1b = Development engineering

2 = Project planning engineering

3 = Project management

4 = Control system engineering

5 = Total system engineering

6 = Robotics

7 = Seminars/Courses/Guide/Consultant
(Knowledge dissemination)

patentable innovations

✧ not patented as very difficult to protect and too costly a process, beyond affordability

Si no.	Items and / or work	Year(s)	Profile of Intensity of involvement	
'60s (1960-69)				
1.	Midget solenoid valve	1962	1a-1b-2-3	
2.	Air craft launching sling retrieval	64	1a	✧#
3.	Air droppable one man submarine	64	1a-1b-2-5	✧#
4.	Sea-bed electronic surveillance system	65	1a-1b-2-5	✧#
5.	Air droppable/retrievable sonobouys	66	1a-1b-2-5	✧#
6.	Forged steel weldneck flanges	67	1a-1b-2-3	
7.	Flame arrestors (for volatile liquid tank top)	69	1a-1b-2-3	
8.	Misclns heavy duty gantries	69-83	1a-1b-2-3	
9.	Misclns SPMs/Automats/Tappers	69-83	1a-1b-2-3	✧#
'70s (1970-79)				
10.	Duplex filters / strainers for Thermal powerstn	70	1a-1b-2-3	✧#
11.	Level indicators	70	1a-1b-2-3	
12.	Tank breather valves	70	1a-1b-2-3	
13.	Paper folding machine for continuous Sttionry	71	1a-1b-2-3	
14.	Army foxhole shelters (made 16000 shelters in 6 weeks)	71	1a-1b-2-3	✧#
15.	Stainless steel angles manfg.	71	1a-1b-2-3	✧ #
16.	Haldia fert.project/structurals. (1200 tonnes)	72	1b-2-3	
17.	Conduit lock nuts export project(+extreme high speed (2000 RPM) tapper for this project)	73	1a-1b-2-3	
18.	Fuel oil storage & distribution facility	73	1a-1b-2-3	✧#
19.	Tilting rail wagons for mines	74	1a-1b-2-3	
20.	Transmission towers (production automation)	74	1a-2-3	
21.	Riverine barge repairs (marine engineering)	74	1a-2-3	
22.	Soap drying tunnels	74	1a-2-3	✧#
23.	Floating pump stations	75	1a-2-3	
24.	ISI certification for 5hp diesel engine production	76	1a-2-3	
25.	Maximisation Of Thermic fluid boiler production	1977	1a-1b-2-3	

26.	600 tonne (single-lift) derrick	78	1a-2-3	
27.	Kudremukh iron ore project (14,000 tonnes) plant & equipment Installation & commissioning. Ahead of schedule & below budget costs.	78-80	1a-1b-2-3	
'80s (1980-89)				
28.	Trawlers (sea going FRP type)	80	1b-2-3	
29.	Marine freight containers	81	2	
30.	Conduit locknuts project (ii)	81	1a-1b-2-3	☆#
31.	Fluorides project	82	2	
32.	Hydroelectric dam gates (70M Hydrostatic head, size 15M X 7.5M)	82	1a-2	
33.	200 tonne traveling hoists for above	82	1a-2	
34.	6 mtr. Width plate bending roll machine	82	1a-2	
35.	Dangerous chemical (Weedicide) carboy automatic filling m/c.	82	1a-1b-2-3	
36.	Export promotion-Hannover '82, W.Germany	82	7	
37.	Computerization of Engineering construction	82	7	
38.	Computerization of project engineering. Consultancy	82	7	
39.	Dev. of misc. Engineering Soft ware (incl. design of conveyors, boilers, elec. Panels etc.) outstanding features: CAD/CAE/CAM -> AI (Artificially Intelligent through expert systems.)	82-83	1a-1b-2-3	☆#
40.	2300 dia. refinery chimney (for flue gas at 400°C) + damper valve + remote control	83	1a-1b-2-3	☆
41.	Pressure Vessels revamp & quick (time-bound) turnaround (petrochem. distillation columns.)	83	2-3	
42.	Shipbuilding bays & structures (2500 tonnes)	83	1a	
43.	Rolled /figured glass project	84	2	
44.	FRP mouldings project	84	1a-1b-2	
45.	Paper cones project	84	2-3	
46.	800 dia. gas pipe stress analysis for Steel plant	84	1a	
47.	Piping isometrics- 2000 lines for MRL	84	1a-1b-2	
48.	Spreader beam >> 90 tonne SWL	84	1a	
49.	Conveyor control systems (80,000 tonnes/day throughput Capacity- MPT)	84	1a-1b-2	
50.	Wagon tippler control systems	84	1a-1b-2	
51.	Misc.test rigs for electric. Equip.	84	1a-1b-2-3	
52.	Training. Seminars on real time controls	84	7	
53.	Plant wide Computerization Surveys & system engineering for Fertilizer & Cement plants.	84-85	7	
54.	Insecticides project	85	2	
55.	Rocket assembly platforms & remote control	85	1a-1b	☆
56.	Damper valve (2000 mm dia.) + remote control	85	1a-1b-2-3-4-5-6	
57.	CAD/CAE/CAM software for panel manfg.(expert system)	86	1a-1b-2-3	☆#
58.	CAD/CAE/CAM software for piping manfg.	86	1a-1b-2-3	#

	(expert system)			
59.	CAD/CAE/CAM software for conveyor manfg.(expert system)	87	1a-1b-2-3	#
60.	CAD/CAE/CAM software for boiler manfg.(expert system)	87	1a-1b-2-3	☆#
61.	ROVIS-6 Axis Robot with vision (IEEE aerospace recognition.)	88	1a-1b-2-3-4-5-6-7	☆#
62.	Export drive international. Exhibition. Informatics '88 singapore	88	7	
63.	Export drive international. Exhibition CeBit 89 W.Germany	89	7	
64.	Survey for plantwide retrofit of real-time process control (MFL)	88-89	1a-1b-2-6-7	
65.	CAM/ATE system of diesel engine R&D testing (supervisory DCS) engine performance validation & certification.	89-92	1a-1b-2-3-4-5	☆#
'90s (1990-93)				
66.	Auto-On-mains failure multiple genset control with power/load distribution control	90	1a-1b-2-3-4-5	
67.	FETS robot (3 axis for fetch & store operations)	90	1a-1b-2	
68.	Real-time control sys. For fluidised bed boiler operation (direct & supervisory DCS)	90-91	1a-1b-2-3-4-5	☆#
69.	Commng. Of 2 Nos. fluidised bed boilers (25 tph capacity)feeding plant load + 6MW HP/LP steam turbine generator	91	1a-1b-2-3	☆
70.	CNC-VTL system-emergency repair & overhaul	91	1a-1b-2-3-4-5	
71.	Tunnel kiln remote temp. data logging system	91	1a-1b-2-3	
72.	R6ST2J-6 Axis robot (genl. Purp.)	91	1a-1b-2-3-4-5-6-7	
73.	Machine swarf compactor (SPM) + control unit	92	1a-1b-2-3-4-5	
74.	ROBOT ARMS directly acting as vertical turning/ profiling/boring machine + turntable	92	1a-1b-2-6-7	
75.	ROBOT for raw ins. Disk dip & roll glazing	92	1a-1b-2-6-7	
76.	AFPO Robots (gantry mounted for filter press mud cake loading).	93	1a-1b-2-3-4-5-6-7	
77.	Robot Proposals for hot liquid metal pouring, furnace charging , OTR tyre handling , plate hdlg. to turret punch press, milk satchet to stuffing to crates, lightning arrestor block hdlg. and assembly , DC rotor dip soldering (5 – axis + vision, LPG bottle loading on trucks*, marine freight container stuffing	91-93 96	1a-1b-2-3-4-5-6-7 so much of potential yet to fructify * presently claimed to be a world beater	
78.	Guest faculty & Chief guest to engineering colleges of various Universities on Robotics/ /CAD/CAE/CAM/CIM	85-93	1a-1b-4-5-6-7	
79.	In house programmes on computer control to a number of local industries	84-93	1a-1b-4-5-6-7	
80.	Have presented papers on Automation, Control & Diagnostics and conducted full			

	Seminars under M.P.C, I.I.P.E. & I.E.E.E banners	82-93	1a-1b-4-5-6-7	
81	Fire alarm systems for Nuclear power station	93	1a-1b-2-3-4-5-6-7	☆#
82	Extreme high speed special purpose machine accessory to Dobby press exported to Singapore.	94	1a-1b-2-3-4-5-6-7	☆#
83	5 axis robot for armature soldering (420°C)	95-96	1a-1b-2-3-4-5-6-7	☆#
84	Weighing system for pins @ high speed production	97	1a-1b-2-3-4-5-6-7	☆#
85	Automation of cracker manufacture	97	1a-1b-2-3-4-5-6-7	☆#
86	Automation of I.C. Engine production & testing	97	1a-1b-2-3-4-5-6-7	☆#
87	Design analysis for ISRO solid propellant filling device	97	1a-1b-2-3-4-5-6-7	☆#
88	Automation of LPG cylinder “check” weighment (1900cyls./Hr.)	98	1a-1b-2-3-4-5-6-7	☆#
89	Automation of LPG cylinder valve leak testing on-line @ 1200cyls./Hr.(0.5 gm/hr sensitivity)	98-99		☆#
90	Automation (robotic loader) of LPG cylinder loading to trucks at the hazard zone of filling plants	98 to 4.6.2001	1a-1b-2-3-4-5-6-7	☆#
YEAR 2000 ONWARDS				
91	Design of 6-axis robot & overhead support crane for DAE (Dept. of Atomic Energy) (100kg payload for the jointed arm robot, 3-tonne weight telescopic traveling mount for robot, 8 metre span for crane, to be operated in radio-active zone	2001	1a-1b-2-3-4-5-6-7	☆#
92	Fundamentally intelligent robot	2001	1a-1b-2-3-4-5-6-7	☆#
93	Homing trolleys for airports	2001	1a-1b-2-3-4-5-6-7	☆#
94	Four legged robot with vision(ALIEN)	2002	1a-1b-2-3-4-5-6-7	☆#
95	AGV(a leaf picking mobile robot)(LEAFMAN) (Autonomous Guided Vehicle)	2002	1a-1b-2-3-4-5-6-7	☆#
96	Maritime HELICOPTER securing & traversing robot with vision	2002	1a-1b-2-3-4-5-6-7	☆#
97	TARDAMS (The Artec Robotic Docking And Movement System) for handling CONCURRENTLY 9 Heavy Helicopters on board Frigates. Also useful for “Search and Rescue” operations in sea state 6 (C6).Result of deep R&D, based on personal experience of the maritime environment. Please refer a research paper “Retrofitting the TARDAMS”, PRESENTED at MAST 2006 BY D.R.NAIDU Continuing...on to ANDROIDS.....>>>>>	2003>>>>> 2007>>>>>	1a-1b-2-3-4-5-6-7 * presently claimed to be a world beater	☆#

ACADEMIC INVOLVEMENT

Besides the fore going, D.Ramakrishna Naidu has acted as **External guide** to Engineering UG/PG/PhD students on their Degree relevant Mandatory Robotics projects. **Over 360 students** have benefited over the past **19 years** and are well placed, some with **Research Assistantships, Tuition waivers** and other privileges in many well known Engineering colleges abroad, particularly the U.S.A. on his recommendations based on authentic observation and Certifications.

Robots and accessories worth Rs.2.5 Lakhs have been donated to AU-MIT Campus.(Pl.ref.Dr.Rajmohan)

EXTRACTS FROM LETTERS ADDRESSED TO D.RAMAKRISHNA NAIDU,MANAGING DIRECTOR,ARTEC SRIMAN CONTROLLS PRIVATE LIMITED, BY ACADEMIC INSTITUTIONS.

1)Prof.M.R.Krishnamoorthy, Dean, Research and Extension, Regional Engineering College, Trichy, India July 29, 1988.

“At the outset, I must express my grateful thanks to you by guiding and helping my students towards completing the “Robot with vision” project satisfactorily. I hope to be there on 6th August to see its working personally.....

Thanks again for your patience and co-operation.....We are planning to arrange an official function presided over by a V.I.P. for demonstration soon thereafter inviting Mr.Chauhan, Mr.Kalyanasundaram and your kind self.”

2).Dr.S.R.Paranjothi, Prof. Power System Engineering Division, College of Engineering, Guindy, Madras, India, January 9, 1992.

“Sir, Sub: Guest lecture on Robotics and Control, under the auspices of Society of Electrical and Electronics Engineering, and Institute of Engineers (India). We have been organizing guest lectures on various topics. May I invite you to deliver a special lecture on “Robotics and Control” on 22nd of January 1992 A.N. Looking forward to your acceptance.”

3) Dr.T.R.Jagadeesan, Director, Anna University, College of Engineering, Guindy, Madras, India, January 3, 1992.

“Sir, Sub: Interdisciplinary Project work, Design-Development and Fabrication of a Training Robot by VIII semester students of Mech. and EEE Departments- requested for your guidance- regarding.....as a part of the Bi-centenary celebrations of the College of Engineering, Guindy, we are going to have a open house exhibition during March 1992. This project will be a demonstration piece for the same.....we are grateful for interest shown by you in our project and I request you to share your experience with our students. Honorary external guide for this project. We are very much pleased to acknowledge your co-operation in this regard.”

4) Dr.S.Ganapathy, Prof. and Head, Department of Production Technology, Madras Institute of Technology, Anna University, Madras, India, April 1, 1993.

“Dear Sir, thank you very much for the Special lecture delivered by you on ‘ROBOTICS’ to our B.Tech. Students on March 31 A.N. As gathered from my students and my colleagues, the lecture was very much interesting, quite informative, inspiring and useful. We look forward to similar lectures in future and your confirmed co-operation.’

5) Dr.M.C.Ramaswamy, H.O.D. Mech. Engg., College of Engineering, Anna University , Madras, India, September 20, 1993.

“Dear Mr. Naidu, my sincere thanks to you for your kind lecture in our Mech.Engg. Dept. on 4 August 1993 on “CONCEPTS OF SYSTEM ENGINEERING”. Your lecture was very useful and was well received by our Mech. Engg. Students. On behalf of the students and Faculty of the Mech. Dept., I convey our sincere appreciation. I look forward to more such useful interactions with you...”

6) Prof. Dr.A.Mathialagan, Dean M.I.T. Campus, Anna University, Madras, India, September 20 , 1994.

“Sub. Draft syllabi for Mechatronics- Committee- constituted-Reg. As instructed by the Vice-Chancellor, Anna University. The Dean of Engineering, MIT Campus, Anna University, is pleased to nominate a Committee consisting of the following members to draft the detailed syllabi for the proposed M.E. Course in Mechatronics:

- 1. Dr S. Ganapathy, Prof. and Head, Dept. of Prodn. Tech.,MIT Campus Anna University, Convener.*
- 2. Thiru D.Ramakrishna Naidu, managing Director, ARTEC SRMAN CONTROLS PRIVATE LIMITED,25 Vijayaraghava Road, Madras-17 Member.The Convener is requested to convey the first meeting at the earliest and discuss the curriculum structure of MECHATRONICS approved by the 32nd meeting of the Academic council held on September 17, 1994 for the purpose of drafting the detailed syllabi.”*

7) Dr.V.Ganapathy, School of Computer Science & Engineering, coordinator, ISTE, Winter School on Artificial Intelligence and Robotics, Anna University, Madras, India , December 5, 1994.

“Dear Mr. Ramakrishna Naidu.... We are glad to invite you for the special lecture on “ELEMENTS OF DESIGN OF ROBOT” on December 21,1994,at 3-30 P.M. to the participants of the Winter school on “Artificial Intelligence & Robotics”. The participants are the teachers of Electrical, Electronics and Computer Engineering Departments of various Engineering Colleges.”

8) Dr.P.R.Nakkeeran, Th.T.V. Moorthy, Coordinators, NATIONAL SEMINAR ON COMPUTER INTEGRATED MANUFACTURING, MANUFACTURING ENGINEERING DIVISION, Mechanical engineering Department, Anna University (Main Campus), Madras, India, March 5, 1995.

“Sir, Sub: Special Lecture-National Seminar on Computer Integrated manufacturing- Reg.... Participants from Educational Institutions, Research organizations and Industries are expected to attend this seminar. In this connection may we request you to kindly deliver a special lecture on the topic given below and share your expertise with the participants? Topic “Current scene in Industrial Robotics”