

BIO-DATA



1. **Name** DR. KRISHNAN SIVARAMAN
2. **Designation** Associate Dean-R&D and Industrial Liasoning,
Associate Professor-Mechanical Engg
3. **Residential Address** Powai, Mumbai 400072
Email: Krishnan.sivaraman@fcrit.ac.in
4. **Date of birth** 11th April
5. **Total Experience** 22 yrs (Industrial)
Teaching 1.5 yrs
6. **Qualifications**

Exam Passed	Year	Institution/ University	Branch/Specialization
PhD	2016	Indian Institute of Technology, Bombay	Welding/ Mechanical
IWE	2008	International Institute of Welding	International Welding Engineer
ME	2001	PSG College of Technology, Coimbatore	Industrial Metallurgy
B.Tech	1999	Calicut University, Kerala	Mechanical Engineering

7. Employment Record

Institution	Year (From To)	Designation
Larsen & Toubro, Heavy Engineering IC, Powai	March 2001 to Dec 2022	Sr. DGM – Manufacturing Technology, Digital and SCM

- Well-qualified and technically proficient Engineer having more than 21 years of Industrial experience
- Experience in handling fabrication of high-pressure heat exchangers and pressure vessels for Refinery, Petro chemical, Fertilizer and Power plants to various codes/ standards and specifications of various Process Licensors
- Substantial experience in handling various materials, welding metallurgy, sophisticated welding techniques and technologies: welding processes, welding power sources, welding automation, Internal bore welding, orbital welding, weld overlay, PWHT, material testing, mechanical testing, welder training & qualification, failure analysis, weld repair, weld distortion, etc.
- Expertize in trouble shooting and technically guiding the QC and welding team for repair welding at various customer sites (Fertilizer, Petrochemical & Refineries) during plant shut down
- Experience in handling welding documentation and execution for EPC projects

8.0 Undergraduate / Postgraduate Teaching Experience and Subjects Taught

Subjects Taught at UG level

Sr.No.	Name of Subject	Semester
1.	Operations Planning and Control	VIII
2.	Logistics & Supply chain Management	VII

Subjects Taught at PG level

Sr.No.	Name of Subject	Semester
1.		

9. Research and Development Experience

- Developed welding procedures for various grades of Stainless Steel, Duplex & Super Duplex SS for single & double layer weld overlay using ESW (Electro Slag Strip Cladding) process
- Developed Internal Bore welding (IBW) technology for the welding of 2.25 Cr-1Mo and 9 Cr-1Mo steel for critical process plant and Nuclear application
- Established welding procedures for welding of high thickness Cr-Mo steels including Cr-Mo-V, Stainless Steels etc.
- Development, qualification and execution of automatic Tube to Tube sheet welding under Saipem/Toyo/ UreaCasale/ Stami Carbon for various Urea

applications. This Includes the welding of 5 & 17 mm projection bimetallic tubes by automatic orbital welding

- Development and implementation of automatic crevice free tube to tube sheet welding for Waste heat boiler application for the first time in India
- Developed and established large scale automation of tube to tube sheet welding for heat exchanger application involving CS, LAS, SS, Duplex, Super duplex, Inconel, Titanium, Zirconium metallurgy etc.
- Development of welding Technology for welding highly critical materials like 5Cr-0.5 Mo and Mod 9 Cr-1Mo (P91)
- Development of Robotic Stellite 1 + Stellite 6 weld overlay in elbow ID for refinery application using PAW
- Development of welding procedures for modified 9Cr-1Mo material by pulsed GMAW using solid and metal cored wire (PhD project)

10 Research Funding / Consultancy Services:

Sr.No.	Name of the Company	Address	Product	Consulting Service	Consulting Fees	Period
1	KSFL	Shajahanpur	Waste Heat Boiler	Investigation of leakage in Waste Heat Boiler	--	2007
2	GSFC	Vadodara	Hot header	Emergency Repair of hot header	--	2007
3	Ramuniya,	Malaysia	Heavy lift Crane	Investigation of Crack in crane	--	2007
4	GNFC	Bharuch	Waste Heat Boiler	Repair of Waste Heat Boiler	--	2008
5	CFCL	Kota	Urea Reactor	Investigation of Cracks in Titanium liner for Urea Reactor	--	2009
6	CFCL	Kota	CO2 Absorber	Investigation of shell rupture in CO2 Absorber	--	2010
7	CPCL	Chennai	Airfin Cooler	Investigation of leakage in Airfin Cooler	--	2014

8	RIL	Jamnagar	Coke Drum	Emergency Repair of Coke Drum	--	2018
9	SRF	Dahej	Reactor	Material selection for HF service	--	2018
10	RCF	Thal	Urea Reactor	Investigation of Shell rupture in Urea Reactor	--	2018
11	CFCL	Kota	Urea Reactor	Investigation of Shell rupture in Urea Reactor	--	2019
12	NFL	Vijaipur	Urea Reactor	Investigation of leakage in Urea Reactor	--	2019
13	SRF	Dahej	Tubular Reactor	Repair methodology for Tubular Reactor	--	2019
14	IOCL	Panipat	Coke Drum	Bulge Repair of Coke Drum	--	2019
15	HMEL	Bhatinda	Bath tub	Repair of Bath tub in FCCU plant	--	2019
16	RIL	Hazira	Dissolver Reactor	Repair in Dissolver Reactor	--	2020

Research Grants:

Sr.No.	Name of Funding Organization	Type of Grant	Amount (Rs.)	Year	Name of Research Project
1	DST	Industry Academia	20,00,00	2011	Weld Quality Monitoring by Acoustic Emission Method

Technical Collaboration / Consultancy with Industries

Sr.No.	Name of the Funding Organization	Type of Support	Amount (Rs.)	Year
1	Exacta Fluid Engineering, Ahmedabad	Welding consultancy	--	2023-24
2	Nilkamal Limited, Sinnar	Welding consultancy	--	2023-24
3	Lubrizol, Mumbai	Welding consultancy	--	2023-24
4	Crystal Industrial, Mumbai	Welding consultancy	--	2023-24
5	Kadant, Chennai	Welding consultancy	--	2023-24

- 11 Professional Societies Fellowship / Membership :** Indian Institute of Welding (Life member), Indian welding society (Life member), Indian Institute of Metals (Life member) and Fellow Institution of Engineers

12 Achievements / Awards / Position

- **Vice chairman** of the **Indian Institute of Welding**, Mumbai branch
- Group member of the **consultative committee of young scientists** formed by the Department of Science and Technology (2018-21) – GOI initiative
- Acted as a member of the **Project Review and Monitoring Committee (PRMC)** for establishment of CoE Welding at PSG Tech, Coimbatore - DHI Initiative.
- Received the prestigious **Dynaimc Welding Engineer Award-2022** at National level from WeldFabtech towards significant contribution for Nation building
- Received the prestigious **Dynaimc Welding Engineer Award-2019** at National level from WeldFabtech towards significant contribution for Nation building
- Received the prestigious **Placid Rodriguez memorial lecture award -2015** at National level from IIW as **young scientist** in the field of welding
- Received **Weldman Award for the paper** presented in the National Welding Seminar 2014 held at Jamshedpur
- Received **Young Technologist Award – 2012 at National level from Indian Welding society**
- Received **Best National Welding Engineer award** from Indian Institute of Welding- 2008
- Received **KCP award for the paper** titled "Improvements in Tube to Tube Sheet Welding for Waste Heat Boiler Applications" presented in the IIW IC 2008 held at Chennai in Jan 2008.
- Received **Best paper award** for the paper titled "Automation of Tube to Tube sheet welding using GMAW process for RG/ CG Boilers" presented in the IIW Annual welding seminar held at Mumbai in Jan 2003
- Acted as **Technical committee chairman** in many Seminars/ conferences organized by IIW
- Faculty for the **International Welding Engineer** certification program conducted by the International Institute of Welding
- Acted as Examiner for MS (Welding) program at MS University Baroda
- Expert member of Thesis Advisory Committee (TAC) for PhD in NMIMS
- Examiner for M.Tech (Thesis) at IIT Bombay Mechanical Engineering
- Member of Board of studies – Department of Metallurgy, PSG College of Technology, Coimbatore

13 Projects guided in UG/PG level: 10 ME Projects from the L&T and MS University

- Baroda led ME Welding Program
-PhD – 1No (Undergoing)

14 Short Term Training Programmes attended/ Conducted:

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Sl No	Courses/Workshops/Seminars	Role	Year
1	Annual welding seminar – Indian Institute of welding, Mumbai	Organizing committee member and Technical committee chairman	2013
2	Work shop – Welding Technology - Indian Institute of welding, Mumbai	Organizing committee member and Speaker	2014

3	Annual welding seminar – Indian Institute of welding, Mumbai	Organizing committee member and Technical committee chairman	2015
4	National welding Seminar - IIW	Technical committee member	2015
5	Annual welding seminar – Indian Institute of welding, Mumbai	Organizing committee member and Technical committee chairman	2017
6	Workshop- SS welding made easy	Organizing committee member and speaker	2018
7	Work shop – Low alloy steel welding made easy	Organizing committee member and speaker	2018
8	Annual welding seminar – Indian Institute of welding, Mumbai	Organizing committee member and Technical committee chairman	2019
9	International welding congress 2020-IIW	Organizing & technical committee member	2020

15. List of Journal Papers Published

- i. Krishnan, S., Kulkarni, D.V., De, A., 2015. Probing pulsed current gas metal arc welding for modified 9Cr-1Mo Steel. J. Mater. Eng. Perform. 24, 1462-1470. (ISSN: 1059-9495)
- ii. Krishnan, S., Kulkarni, D.V., De, A., 2015. Pulsed current gas metal arc welding of P91 steels using metal cored wires. J. Mater. Process Tech. 229, 826-833. (ISSN: 0924-0136)
- iii. Krishnan, S., Kulkarni, D.V., De, A., 2016. Multipass pulsed current gas metal arc welding of P91 steel. Sci. Technol. Weld. Joining. 21, 171-177. (ISSN: 1362-1718)
- iv. Sivaraman, K., Kulkarni, D., 2013. Welding of Stainless Steel - A Heavy Engineering Perspective, Advanced Materials Research, Vol. 794, pp. 380-390, 2013 (ISSN: 1662-8985)
- v. Dr. Krishnan Sivaraman, Abhishek Singh, 2021. Influence on Weldability of P91 Steel with change in composition of Shielding Gas in GMAW Process. International Journal of Mechanical Engineering. Special issue, Volume 6, pp 1201-1207 (ISSN: 0974-5823)
- vi. Dr. Krishnan Sivaraman, Abhishek Singh., 2022. Welding automation for materials used in high corrosive service. Industrial Engineering Journal, Indian Institution of Industrial Engineering VOLUME XV & ISSUE NO.05, pp 29-33 (ISSN: 0970-2555) [UGC CARE LIST]
- vii. Dr. Krishnan Sivaraman, Manish Bhamare, 2022. Stainless steel pipe to pipe weld automation using activated GTAW process. Stochastic Modelling and Applications. Vol. 26 No. 3 (January - June, Special Issue 2022 Part - 9), pp 71-77 (ISSN: 0972-3641) [UGC CARE LIST]
- viii. Dr. Krishnan Sivaraman, Abhishek Singh, 2022. Failure Analysis – An Overview with Case Study. SAMRIDDHI: A Journal of Physical Sciences, Engineering and Technology (ISSN: 2229-7111) [UGC CARE LIST]
- ix. Dr. Krishnan Sivaraman, Karthik Iyer, Abhishek Singh, 2022. Robotic welding applications in pressure vessel manufacturing. Industrial Engineering Journal, Indian Institution of Industrial Engineering (ISSN - 0970-2555) [UGC CARE LIST]

- x. Dr. Krishnan Sivaraman, Ravinder Singh, Abhishek Singh, 2022. Failure Analysis and Field Repair of Urea Reactor, SAMRIDDHI: A Journal of Physical Sciences, Engineering and Technology (ISSN: 2229-7111) [UGC CARE LIST]
- xi. Dr. Krishnan Sivaraman and Abhishek Singh, 2023. A Case study on Lamellar Tearing, VOLUME XVI & ISSUE NO.01. Industrial Engineering Journal, Indian Institution of Industrial Engineering (ISSN - 0970-2555) [UGC CARE LIST]

16. List of Papers Published in National and International Conferences

- i. Automation in tube to tube sheet welding for Boiler & Heat Exchanger in severe service conditions: Krishnan Sivaraman, M.K.Mukherjee, & V Chinnasamy, Larsen & Toubro, India. Annual Welding assembly, Commission XI of the International Institute of Welding, Chennai, 2011.
- ii. An Investigation on Effect of Process Parameters on Weld Bead Profile of Modified 9Cr-1Mo Steel by Pulsed GMAW: Krishnan Sivaraman, Dileep Kulkarni & A.De, 67th Annual Welding Assembly Seoul, South Korea, 2014.
- iii. Failure Analysis and Field Repair of Urea Reactor Shell Rupture by Ravinder Singh, Dr. Krishnan Sivaraman and Tushar Bhagwat in the 2021 AIChE Safety in Ammonia Plants Symposium, August 29 – September 2 2021 in San Diego, California
- iv. Finite element modeling to determine stresses in Quenched and Tempered steel: V. Balusamy, S.Jayakant, S.Krishnan, S S Ramakrishnan. IIM Annual seminar, Bhilai, 2001.
- v. Automation of Tube to Tube sheet welding using GMAW process for RG/ CG Boilers: Krishnan Sivaraman & Kishor Khochare, Larsen & Toubro, India. IIW Annual welding seminar, Mumbai, 2003.
- vi. Automation of crevice free Tube to Tube sheet welds on thin wall tube sheets using GTAW process for waste heat Boilers: Krishnan Sivaraman & Kishor Khochare, Larsen & Toubro, India. international welding seminar, Hyderabad, 2005.
- vii. Effect of sulphur in weldability of autogeneous weld joints: Krishnan Sivaraman & M.K.Mukherjee, Larsen & Toubro, India. Design Symposium, Mumbai, 2007.
- viii. Improvements in Tube to Tube Sheet Welding for Waste Heat Boiler Applications: Krishnan Sivaraman, M.K. Mukherjee & R. Ramanujan, Larsen & Toubro, India. IIW IC, Chennai, 2008.
- ix. Lamellar Tearing – Causes & Prevention: Krishnan Sivaraman, Rahul Kulkarni & Jayadeep Joshi, Larsen & Toubro, India. Design Symposium, Mumbai, 2008.
- x. Development of welding procedures for 5Cr ½ Mo materials for High pressure Exchangers: Krishnan Sivaraman, M.K. Mukherjee & Prashant Chubachi, Larsen & Toubro, India. National Welding Seminar, Mumbai, 2009.
- xi. Automation of Crevice free tube to tube sheet joints for Waste Heat boiler applications: Krishnan Sivaraman, M.K. Mukherjee, R. Ramanujan & Pravin Koli. National Welding Seminar, Kolkata, 2010.

- xii. Development of Narrow groove Tandem SAW for Multi-Wall vessels: Krishnan Sivaraman, M.K. Mukherjee, Biswajit Paul, R Ramanujan & Amit Mokashi, Larsen & Toubro, India. National welding Seminar, Visakhapattanam, 2010.
- xiii. Application of high productivity welding processes in pressure vessel manufacturing: Krishnan Sivaraman, Larsen & Toubro, India. International Conference on Challenges in Quality Fabrication of Pressure Vessels & Piping, Indian Welding Society, Delhi, 2011.
- xiv. Development of welding automation for liner welds in Urea Equipments: Krishnan Sivaraman, M.K.Mukherjee, Biswajit Paul, Kaustubh Gune & Amit Mokashi Larsen & Toubro, India. National welding Seminar, Bhilai, 2011.
- xv. Latest trends in Welding and NDT of Boilers & Pressure Vessels: Krishnan Sivaraman, Larsen & Toubro, India. Boiler Awareness programme, Indian Boiler Regulation, Mumbai, 2011.
- xvi. Application of High Productive GTAW in Pressure Vessel Fabrication: Krishnan Sivaraman, M.K.Mukherjee, V.Guruprasad & KarthikIyer, Larsen & Toubro, India. IIW Welding seminar, 2012
- xvii. Failure Analysis & Investigation Methods – An Overview: Surendra Patle, R. Rajkumar & Krishnan Sivaraman, Larsen & Toubro, India. International Welding Symposium (IWS-12K), Mumbai, 2012.
- xviii. Lamellar Tearing – A Case Study: Krishnan Sivaraman & Surendra Patle, Larsen & Toubro, India. Technology Conclave, Mumbai, 2013.
- xix. A Study on Influence of Shielding Gas Composition on Weldability of P91 Steel by GMAW Process: S. Krishnan, B. Gondalia, D.V. Kulkarni (Larsen & Toubro, India) and A. De (IIT-Mumbai). National Welding Seminar, Bangalore, 2013.
- xx. Metal Dusting – Case Study: Surendra Patle, R. Rajkumar & Krishnan Sivaraman Larsen & Toubro, India. OPE Symposium (IWS-12K), Chennai, 2013.
- xxi. Application of semiautomatic welding process for attachment welds: Amit Kadam, Karthik Iyer & Krishnan Sivaraman, L&T. IWS 2K14 symposium, Mumbai, 2014.
- xxii. Failure analysis of Waste Heat Boiler during service: Surendra Patle, Krishnan Sivaraman and R. Rajkumar. NMD ATM, Pune, 2014.
- xxiii. Automation of stainless-steel pipe to pipe welds using activated GTAW process: Manish Bhamare, Krishnan Sivaraman, Deepak Poojary and Deepak Gupta, L&T. National Welding Seminar, Jamshedpur, 2015.
- xxiv. Welding Techniques for boilers and recent trends: Krishnan Sivaraman, Larsen & Toubro, India. Boiler Awareness programme, Indian Boiler Regulation, Sholapur, 2015.
- xxv. Use of Temper Bead Gas Metal Arc Welding (GMAW) for In-situ Repair of Coke Drums by Krishnan Sivaraman in the National welding meet 2020 held at Jamshedpur October 2020

17. Books/Reports/General articles etc.

Practical aspects of Industrial Welding Processes, Taylor and Francis Books India
Pvt Ltd (Book under editing)

18. Invited Lectures in FDP/ STTP

19. International Conference Technical Program Committee Member / Reviewer :

International welding congress 2020 conducted by Indian Institute of welding – Technical
committee member