

BIO-DATA



1. **Name** DR. KRISHNAN SIVARAMAN
2. **Designation** Associate Professor
Powai, Mumbai 400072
3. **Residential Address** Email: Krishnan.sivaraman@fcrit.ac.in
Ph; 9920735865
4. **Date of birth** 11th April
5. **Total Experience** 22 yrs (Industrial)
Teaching 1 yr
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)
- Designed & Developed welding machine and procedure for performing weld overlay using temper bead technique for Coke Drum (**Patent Filed**)

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

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