

## BIO-DATA OF Dr. S. N. SINGH

**Name** :SIDH NATH SINGH  
**Date of Birth** :July 10, 1953.  
**Nationality** :Indian.  
**Present Position** :Professor  
**Present Address** :Department of Applied Mechanics,  
Indian Institute of Technology Delhi  
Hauz khas, New Delhi - 110016, INDIA.  
**Permanent Address** :S/o Late Shri B. M. Singh,  
136, Defence Enclave,  
Vikas Marg, Delhi - 110092.

### Academic Background

Ph.D. (Fluid Engineering)	198 5	Indian Institute of Technology Delhi
M. Tech. (Aeronautical Engineering)	197 7	Indian Institute of Technology Kanpur
B. Tech. (Aeronautical Engineering)	197 5	Indian Institute of Technology Kanpur

**Fields of Interest** : Internal and External Flow, Turbo-Machines, Mixing of Jets, Computational Fluid Dynamics, Instrumentation and Two Phase Flow.

### Professional/ Research/ Teaching Experience

	Years	Months
(1) <b>Professor, Dept. of Applied Mechanics, IIT, Delhi</b>	October 1995 to date	
(2) Associate Professor, Dept. of Applied Mechanics, IIT Delhi (Jan., 1994 to Sept., 1995)	1	9
(3) Assistant Professor, Dept. of Applied Mechanics, IIT Delhi (May, 1990 to Dec., 1993)	3	2
(4) Lecturer, Dept. of Applied Mechanics, IIT Delhi (July 80 - May 90)	9	10
(5) Senior Research Assistant ARDB Project, IIT Delhi (June 79 - June 80)	1	1
(6) Research Engineer, ARDB Project, IIT Kanpur (Oct. 77 - March 79)	1	6
(7) Senior Research Assistant ARDB Project, IIT Kanpur (January 76 - July 77)	1	6

### Professional Training

	Years	Months
(1) British Council Research Assignment under Prof. J.H. Whitelaw and Prof. A.D. Gosman, Imperial College of Science, Technology and Medicine, London (March to may 1995)	0	2
(2) British Council Research Assignment under Prof. J.H. Whitelaw and Prof. A.D. Gosman, Imperial College of Science, Technology and Medicine, London (March 1991 - Aug 1991)	0	5
(3) British Council Research Assignment under Prof. J.H. Whitelaw, Imperial College of Science, Technology and	0	9

## Honours, Awards and Prizes

- (1) **RINA's Medal of Distinction** for the Best technical paper "Manoeuvring Studies of Underwater Vehicles - A Review", published in the RINA Transactions in 2009.
- (2) **Shri Sam Dotiwala Medal** for the Best technical paper "Smoke Nuisance Problem for Naval Vessels-Research at IIT" presented to Institution of Naval Architects (Delhi Chapter) 2009.
- (3) The **Certificate of Merit** for 2006-2007 for the paper entitled "Flow Characteristics in a Model Can Combustor: Effect of Casing Angle" published in the Journal of Institution of Engineer (India) during 2006-2007.
- (4) **Shri Sam Dotiwala Medal** for the Best technical paper "A Study of the problem of Ingress of Exhaust Smoke into the GT Intakes in Naval Ships "presented to Institution of Naval Architects (Delhi Chapter) 2005.
- (5) **The Hem Prabha – S N Gupta Medal** for the paper entitled " Flow characteristics of Diverging –Converging bends using CFD " published in the journal of Institution of Engineer (India) Feb (2002) on 20<sup>th</sup> December 2002.
- (6) **The certificate of Merit for 2001-2002** for the paper entitled "Effect of solid concentration on velocity field for flow of solid liquid mixture through horizontal pipes" published in the Journal of the Institution of Engineer (India).
- (7) **SVR CET, SURAT prize**, for the best paper from industry-Academic Institution Collaborative Research presented at the 28th National Conference on Fluid Mechanics and Fluid Power, PEC, Chandigarh, 13-15 Dec.2001.
- (8) **Scroll of Honour**, Mechanical Engineering Division, The Institution of Engineers, India, Nov. 2001.
- (9) **President**, National Society of Fluid Mechanics and Fluid Power. 2000 to 2002
- (10) **The Corps of Electrical and Mechanical Engineers Medal** for the paper entitled "Aerodynamics of Gas Turbine Combustors" published in the Journal of Institution of Engineers (India) (1998) on 31<sup>st</sup> January 2000.
- (11) The **Certificate of Merit** for 1995-96 for paper entitled, 'Flow Prediction in Axisymmetric Axial Diffusers' published in the Journal of the Institution of Engineers (India).
- (12) **Rated as Fairly High with Regard to Involvement in Research**, Sponsored Projects and Consultancies in Indian Institute of Technology, Delhi, during the year 1993-94 and 1994-95.
- (13) The **Certificate of Merit** paper entitled, 'Effect of Confinement Expansion on Multi-co-Annular Swirling Jets' published in the Journal of the Institution of Engineers (India), 1993-94.
- (14) Rated among **top fourteen consultants** in the Indian Institute of Technology, Delhi, during the year 1992-93.
- (15) **Dr M G Deshpande Memorial Prize** for the best paper from Academic and research Organisation presented at the 19th National Conference on Fluid Mechanics and Fluid Power, IIT Bombay, 3-5 Dec.'92.
- (16) Rated among top ten consultants in the Indian Institute of Technology, Delhi, during the year 1991-92.

- (17) Assessed as Outstanding Performance in Academic Research and Sponsored Research in Indian Institute of Technology Delhi, for the year 1989, 1990 and 1991.

## Professional Recognition

1. Life Member, Indian Society of Technical Education
2. Life Member, Indian Society of Mechanical Engineers
3. Life Member, National Society of Fluid Mechanics and Fluid Power
4. Fellow, Institution of Engineers
5. Member, Aeronautical Society of India.
6. Life Member, American Institute of Aeronautics and Astronautics (AIAA), USA

## Projects Supervised

Ph.D. Completed/ (Ongoing)	:24/4	(Annex I)
M.S./M. Tech projects Completed/(ongoing)	:94/2	(Annex II)
Projects under U.N. University Training Programme	:06	
B. Tech projects at IIT Delhi/Other Institute	19/0	(Annex III)

## Research : 385+7

### Papers/Reports/Patents

<b>Published/Communicated</b>	<b>International Journal</b>	<b>: 97/2</b>	(Annex IV)
	<b>National Journal</b>	<b>: 48</b>	(Annex V)
	International Conference	: 70	(Annex VI)
	National Conference	: 98	(Annex VII)
	Technical Reports	: 65	(Annex IX)
	Invited Talks	: 6	(Annex VIII)
	Monograph	: 6	(Annex X)
	Patents	: 7	(Annex XI)

## Laboratory Development Under Institutional Network Scheme

- (1) Srinagar Regional Engineering College
- (2) MNREC, Allahabad
- (3) MACT, Bhopal
- (4) REC, Silchar

## Sponsored Research Projects **Completed: 27** (Rs.3.5 Crores) (Annex XII)

**Ongoing: 5** (Rs. 11.3 Crore); Submitted: 3

## Consultancy Completed More than 1200 Jobs; Rs.5.20 Crores (Annex XIII)

## Laboratory Development:

1. 1.5m x 1.5m x 10m subsonic closed circuit wind tunnel
2. Air jet for calibration of cross wire probes and tube probes
3. Modification in 45cm x 75cm open circuit wind tunnel
4. Set up of LDV system for measurement in sudden expansion
5. Design and fabrication of 2' x 2' low turbulence wind tunnel
6. Design, fabrication and set up of 2' x 2' low turbulence wind tunnel at SREC, Srinagar under Institution Network Scheme
7. Design, fabrication of 1' x 1' open circuit wind tunnel for SREC, under Institution Network Scheme

8. Instrumentation for 1' x 1' wind tunnel namely Manometers, Traversing mechanism and Special probes for SREC, Srinagar under Institutional Network Scheme
9. Design and fabrication of Cascade tunnel, for SREC, under Institutional Network Scheme
10. Design, fabrication and instrumentation for 20cm x 15cm wind tunnel for MNREC, Allahabad, under Institutional Network Scheme.
11. Design, fabrication and instrumentation for 30 X 30 cm wind tunnel and blow down tunnel for REC, Silchar.

### **Courses Taught**

- Fluid Mechanics (UG)
- Advanced Fluid Mechanics (PG)
- Engineering Mechanics (UG)
- Experimental Methods and Analysis (UG)
- Boundary Layer Theory (PG)
- Advances in Fluid Engineering (PG)
- Turbulent Shear Flow (PG)
- Experiments in Solid and Fluid Mechanics (PG)
- Hydrodynamics (PG)
- Viscous Fluid Flow (PG)
- Numerical Methods in Fluid Flow (PG)
- Introduction to Solid and Fluid Mechanics (UG)
- Computational Fluid Dynamics (PG)
- Product Design I and II (PG)

### **Special Lectures Delivered**

1. 'Erosion in Slurry Pipelines', The Fourth Asian Particle Technology Symposium (APT 2009), The Ashok Convention, New Delhi, September 14-16, 2009.
2. 'Introduction to CFD and Turbulence Modelling' One Day Workshop on Alleviation of Smoke Nuisance Problem in the Naval Ships Using Wind Tunnel Modelling and CFD, Department of Applied Mechanics, IIT Delhi, March 20<sup>th</sup>, 2009.
3. 'Turbines for Wind and Hydro (Mini/Micro) Energy Systems', Short Term Course on Emerging Potential of Bio-fuels and other Renewable Energy Sources, Centre for Energy Studies, IIT Delhi, Dec 15-20, 2008.
4. 'Selection of Slurry Pumps and Erosion in Slurry Pipelines', Short Course on Transportation and Storage of Fly Ash, ITTMEC, IIT Delhi, Dec 3-5, 2008.
5. 'CFD: Design Tool for Flowmeters' University College of Engineering, Osmania University, Hyderabad, July 25<sup>th</sup> 2008.
6. 'CFD: Complex Geometries', CEP course, Dept. of Mechanical Engineering, IIT Delhi, December 20-22, 2007.
7. 'CFD and Flow Meters', National Conference on Optimum & Reliable Product Design, IIT Delhi, December 19-20, 2005.
8. 'CFD: Complex Geometries', SERC School on Computational Fluid Dynamics and Its Application, Dept. of Applied Mechanics, IIT Delhi, August 22-26, 2005.
9. 'Two phase flow: Instrumentation for slurry pipelines', (4 Lectures) July 12-23, 2003, Jadavpur University, Kolkata.
10. Computational Fluid Dynamics "Turbulent Flow calculation in Complex Geometries" Lecture notes on Finite Element Analysis, Proceeding of a training course

sponsored by Central Water Commission, IIT Delhi, New Delhi, Nov2001 to January 2002.

11. 'Pneumatic conveying system and design considerations', ISTE Summer School on Pipe line design and pumping machinery for liquids and solid-liquid mixture, July 12-23, 1993, MACT, Bhopal.
12. 'Design of slurry pipeline transformation', ISTE Summer School on Pipe line design and pumping machinery for liquids and solid-liquid mixture, July 12-23, 1993, MACT, Bhopal.
13. 'Laser-Doppler anemometer: velocity and particle size measurement' ISTE Summer School on Pipe line design and pumping machinery for liquids and solid-liquid mixture, July 12-23, 1993, MACT, Bhopal.
14. 'Two phase flow: Instrumentation for slurry pipelines', ISTE Summer School on Pipe line design and pumping machinery for liquids and solid-liquid mixture, July 12-23, 1993, MACT, Bhopal.
15. 2 Lectures on Finite Volume Methods under a short course on 'Advanced trends in the analysis of fluid flows', Dept. of Appl. Mech.
16. 2 Lectures on Finite Difference Methods under a short course on 'Advanced trends in the analysis of fluid flows', Dept. of Appl. Mech.
17. 2 Lectures on Laser Doppler Anemometry under a short course on 'Advanced trends in the analysis of fluid flows', Dept. of Appl. Mech.
18. Lecture on Laser Doppler Velocimeter at MACT, Bhopal, under Institutional Network Scheme, December 91.
19. Lectures on Fluid Mechanics at MREC, Jaipur under Institutional Network Scheme.
20. 16 lectures on Wind Engineering in Centre of Energy Study under UNU Sponsored programme (regularly).
21. 'Turbulence Measurements by Hot-Wire Anemometer', under a short course on 'Measuring Techniques in Industrial Fluid Flows' Dept. of App. Mech.
22. Use of LDV in Fluid Measurements under a Short Course on 'Measuring Techniques in Industrial Fluid Flows' Dept. of App. Mech.
23. 'Velocity Measurements by LDV' under Q.I.P. Winter School 'Precision measurement techniques' IDDC.
24. 'Laser Doppler Anemometry' under Q.I.P. Winter School on 'Optical measuring techniques' IDDC.
25. 'CFD: Flow meters, Internal Flows and Ship Structures' Chandigarh University.
26. 'Application of CFD in Engineering', ITM University, Gurgaon.

### **Instruments Handled**

- (1) Hot wire Anemometer DISA (A and D Series)
- (2) Laser Doppler Velocimeter for velocity and turbulence measurements
- (3) Wave Analyser and other sophisticated instruments

### **Computational Techniques**

1. 'TEACH\_T' Computer code has been modified and updated for predictions in
  - (i) Conical and Annular Diffusers,
  - (ii) Confined Co-axial Swirling Jets,
  - (iii) Subsonic flows in vane-less radial diffusers and

- (iv) Flow predictions through dump combustors.
- 2. 2D and 3D code in non-orthogonal co-ordinates.
- 3. 3D code in curvilinear orthogonal co-ordinates.
- 4. Commercial code on CFD from FLUENT INDIA LTD, STAR-CD and CFDRC.

## **Administrative Experience:**

### ***Institute Responsibilities***

<b>(1) Deputy Director (Operations)</b>	Jul'12-Jul'15
<b>(2) Head, Applied Mechanics Department</b>	July '11- March '12
<b>(3) Chairman Estate &amp; Works</b>	Jan.'12-Jun'12
<b>(4) Dean, IRD</b>	Sep.'08-Dec.'11
<b>(5) Chairman, GATE &amp; JAM IIT Delhi</b>	June '07- May 2008
<b>(6) Vice Chairman, GATE &amp; JAM IIT Delhi</b>	June '06- May 2007
<b>(7) Professor In-charge, Accounts and Audit</b>	Sep.'06- August 2008
<b>(8) House Master, Satpura Hostel</b>	Oct 04 - Present
<b>(9) Co-ordinator and Member Organizing Committee for 10<sup>th</sup> ,12<sup>th</sup> , 13<sup>th</sup> ,14<sup>th</sup> &amp; 15<sup>th</sup> inter IIT Staff Sports Meet</b>	2002,2004,2005, 2006,2007,2008,2009
<b>(10) Member BUGS (Departmental Nominee)</b>	Sep.'02- Aug. 04
<b>(11) Associate Dean, IRD</b>	Sep.'00-Aug '01
<b>(12) Professor In-charge, Stores and Accounts</b>	Sept.'99- Aug. 2000
<b>(13) Member BUGS (Senate Nominee)</b>	Sept.'98- Aug.2000
<b>(14) President, Indoor Sports, BRCA, IIT Delhi</b>	Sept.'99- Aug. 2001
<b>(15) President, Lecture Series Committee, BRCA, IIT Delhi</b>	Sept.'97- Aug.'99
<b>(16) Member, Advisory Committee of Central Library, IIT Delhi</b>	Sept.'97 - Aug.'99
<b>(17) Chairman, TRYST'95 &amp; TRYST 96, IIT Delhi</b>	1995, 1996
<b>(18) N.C.C. Co-ordinator</b>	Jan, 95- Sept, 97
<b>(19) Warden, Vindhyachal Hostel, IIT Delhi</b>	Sept 91- 94
<b>(20) Member, Organising Committee for holding II Inter IIT Staff Meet, IIT Delhi.</b>	1986
<b>(21) Member, Steering Committee for holding XXII Inter IIT Sports Meet, IIT Delhi.</b>	1975
<b>(22) President, Volleyball, B.S.A., I.I.T. Delhi.</b>	10 years

### ***Departmental Responsibilities***

<b>(1) Chairman, Department Research Committee</b>	Sep '05-Aug. 08
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(2)	<b>Officer In-charge, Departmental Office, Dept. of App. Mech.</b>	Sep '05-Sep 08
(3)	Liaison Officer for Placement	Sep. 97- Aug 05
(4)	Time Table In-charge, App. Mech. Dept. IIT Delhi	Sep '96- Aug'97
(5)	Member, D.R.C., App. Mech. Dept., IIT Delhi	1987-1989, 1993-1995, sept'08 -Present
(6)	M. Tech. Coordinator (Design), App. Mech. Dept, IIT Delhi	1987-89, 93-95
(7)	Facilities In-charge, App. Mech. Dept., IIT Delhi	89 - 93, 94 - 96, 98 - 99
(8)	Fluid Mechanics Lab. In-charge, IIT Delhi	90 – 93, 95 -96, 2002 - 05
(9)	Officer In-charge, Departmental Workshop, Dept. of App. Mech. IIT Delhi	Dec 88 - Aug 90
(10)	Officer In-charge, Gas Dynamics Laboratory, IIT Delhi	4 years 6 months 2009-2010
)	Officer In-charge, Gas Dynamics Laboratory, IIT Delhi	
(11)	)	
(12)	Officer In-charge, Gas Dynamics Laboratory, IIT Delhi	2013-14
)	)	

### ***Organising Responsibilities for Non Institute Activities***

(1)	Member of Various Selection and Recruitment committees of Different IITs/NITs	
(2)	Member of Finance committee and BoG of NIT Delhi	From 2012
(3)	Organising Secretary, 25 <sup>th</sup> National & 1 <sup>st</sup> International Conference on FM&FP	Dec 98
(4)	Co-ordinator, QIP course on 'Advanced Techniques in the Analysis of Fluid Flows'	June 93
(5)	Co-ordinator, QIP workshop on 'Basic Experiments in Fluid Mechanics'	May 93
(6)	Member, Organising Committee, 8th ISME Conference	March 93
(7)	Member, Organising Committee, 7th ISME Conference	Feb 90
(8)	Organising Secretary, Aerodynamics Panel meeting	March 89
(9)	Organising Secretary, 12 <sup>th</sup> N.C. on FMFP	Dec 82

## List of M. Tech. and Ph.D. Projects (Completed and Ongoing)

### Ph.D. Projects

S. No	Name	Title	Year	Co-supervisor
1.	Mr. M. Ahmed	Investigation of the flow of multisized heterogeneous slurries in straight pipe and pipe bends	1991	Prof. V. Seshadri
2.	Mr. Md. Islam	Studies on flow rate measuring devices	1994	Prof. V. Seshadri
3.	Mr. B. Majumder	Flow investigations in curved diffusers	1994	--
4.	Mr. R. Gupta	Studies on erosion wear in slurry pipeline	1994	Prof. V. Seshadri
5.	Mr. R. Mishra	Flow characteristics for a multisized heterogeneous slurries in straight pipe and pipe bends	1996	Prof. V. Seshadri
6.	Mr. S. Bharani	Isothermal flow studies in a reverse-flow gas turbine combustor	1997	Prof.D.P. Agrawal
7.	Mr. B. K. Gandhi	Studies on the characteristics of centrifugal pump handling multisized particulate slurries	1998	Prof. V. Seshadri
8.	Mr. Umesh Kumar	Flow of solid-liquid mixtures through pipe, pipe bends and valves	2002	Prof. V. Seshadri
9.	Mr. R. B. Anand	Flow through "S" shaped diffusing ducts	2002	Dr Lajpat Rai
10.	Mr. A. Rahim	Flow characteristics in Combustor Models	2003	Dr S. V Veeravalli
11.	Mr. A. K. Verma	Study of High Concentration Ash Slurry Disposal System	2004	Prof. V. Seshadri
12.	Capt. P. R. Kulkarni	Flume Interaction over a Ship	2004	Prof. V. Seshadri
13.	Mr. K. Saha	Parametric Investigation in Bifurcated Diffuser	2007	Prof. V. Seshadri
14.	Mr. S. K. Gupta	Fluidized Motion Conveying Systems for Solid Materials	2008	Prof. V. Seshadri Dr V. K. Agarwal
15.	Mr. Parminder Singh	Flow through slotted non Circular diffuser	2009	Prof. V. Seshadri
16.	Capt. Saibal Sen	Flow through Boundary controlled conical Diffuser	2009	Prof. V. Seshadri
17.	Mr. R. S. Tarnacha	Flow Characteristics of Double Concentric Jets	2009	Dr Lajpat Rai
18.	Lt. Cdr. R. VijayKumar	A Study on the Interaction of Exhaust smoke with the Superstructure and Gas Turbine intakes in Naval Ships	2009	Prof. V. Seshadri
19.	Mr. Anurag Mudgal	Multiple Effect Water Distillation System for Ruler Micro enterprises	2009	Prof. P K Sen Prof. Padma. V. Sen
20.	Mr. Sunil Chandel	Studies on the Flow of High Concentration Coal Ash Slurry Through Pipelines	2010	Prof. V. Seshadri
21.	Cdr. Amit Ray	Analysis of Maneuvering	2010	Prof. V. Seshadri



		Hydrodynamics of Underwater Vehicles		
22.	V V Deshpande	CFD of Compressible Flows	2012	Prof.S.Sanghi Dr.B. Eshpuniyani
23.	Arun Ku. Pradhan	Studies on Multicomponent Fibrous Filter for Air Filtration	2013	Dr. Dipayan Das
24.	Vivek Kumar Patel	Flow Characteristics of Heated Coaxial and Multicoaxial Jets	2014	Prof. V. Seshadri
25.	Anubhav Rawat	Transportation Characteristics Of High Concentration Coal Ash Slurries Through Pipelines.	Ongoing	Prof. V. Seshadri
26.	B Praveen	Flow Characteristics over Helo Decks	Ongoing	Prof. V. Seshadri Cdr.(Dr.) R. Vijay Kumar
27.	Ishaq S Makkar	Ship- Helicopter Aerodynamics Interaction	Ongoing	Prof. V. Seshadri Cdr.(Dr.) R. Vijay Kumar
28.	Lakhvinder Singh		Ongoing	Dr. Sawan Suman

## Annexure II

### M. Tech Projects

S. No	Name	Title	Year	Co-supervisor
1	V. K.Choudhary	Swirl decay in a constant area annulus	June '86	--
2	Surender Kumar	Effect of symmetric cavity on the flow over a downstream cylindrical body	Mar '87	Dr A. K.Raghava
3	S. Bharadwaj	Some investigations of mixing of confined multi-annular swirling jets	Dec'87	Prof. D. P. Agrawal
4	H.C. Agrawal	Some investigations mixing of confined multi- co-axial jets	April '87	-Do
5	B. Dak	Velocity characteristics of confined non-swirling co-axial jets	July '88	-Do
6	A. Kesari	Turbulence characteristics of confined co-axial swirling jets	June '89	-Do
7	Md. Islam	A study on the methods to improve the linear range of small turbine flow meters	Dec' 89	Prof. V Seshadri
8	N. T. Tung	Studies on particle velocity measurement in pneumatic transportation of food grains	April'90	-Do-
9	S. Bhargava	Design and development of wedge flowmeter	Dec. '90	-Do-
10	R. Kumar	Flow through S-bend	Dec. '90	-Do-
11	A. Swaroop	Design features of vortex flowmeter	Dec. '90	-Do-
12	R. Jain	Development of computer code in curvilinear co-ordinates	May' 91	-Do-
13	A. Agrawal	Performance characteristics of an annubar	Dec. '91	-Do-
14	N. Kumar	Performance of wedge flowmeter at low Reynolds number	Dec.'91	-Do-

15	D. Kumar	Some experimental and computational studies on varied radial diffusers	Dec.'91	Prof. D. P. Agrawal
16	S. Mukherjee	Development of computer code for predicting velocity and concentration profiles in slurry flows	Dec. '92	Prof. V Seshadri
17	S. Khan	Computer code for predicting velocity of solid particles in pneumo-transport	Dec. '92	-Do-
18	N. M. Prasad	Design of a multistage restriction orifice plate for pressure reduction in pipes	Nov. '93	-Do-
19	A.K. Jha	Development of software package for design and performance prediction of centrifugal slurry pumps	Dec.'94	Prof. V Seshadri
20	B. K. Tripathy	Studies on the effect of upstream flow conditions on the performance characteristics of vortex flow meter	Dec.'94	-Do-
21	P. K. Mathpal	Some aerodynamic studies in S-shaped diffusers	May'96	-Do-
22	C. S. Reddy	Design and flow analysis of vortex flowmeter	May'97	-Do-
23	G. S. Kulkarni	Design for optimized performance of diffuser to reduce pressure losses in the inlet header of Automatic Catalytic Convertor	Dec.'97	
24	Anirban Biswas	Properties of Coal Ash and their effect on Design of Ash disposal pipelines in Thermal Power Plants	Dec.'97	Prof. V. Seshadri
25	C. Kamalakar	3D CFD calculations in 90° Curved diffusing ducts	Mar '98	-Do-
26	B. S. Reddy (MS)	Analysis of Flow in Diverging Converging 90° turning ducts and development of CFD capability for solid-liquid mixtures	June'98	-Do-
27	Ch. Kanna Babu	Erosion performance of Divergent Convergent bends in Pneumatic conveying systems	Dec.'98	Dr V. K. Agarwal
28	V. Sreenivasa Rao	Development of a Computer programme for a Dense Phase Pneumatic conveying system Design	Dec.'98	-Do -
29	Rajneesh Devpura	3-D Flow Analysis in S Shaped Diffusers using CFD	Dec.'99	Prof. V. Seshadri
30	Pankaj Shukla	3-D Flow Analysis in Combustors using CFD	Dec.'99	Dr S. Sanghi
31	Jaspreet Singh Puri	Design and Development of Adjustable Orifice Plate using CFD	Dec.'99	-Do-
32	Ms. Swati	Flow analysis through convergent-divergent erosion resistant bends using CFD	Dec.'99	Prof. V. Seshadri
33	S. P. Mishra	Analysis of Transient Flow in Pipelines	Dec.'99	-Do-
34	R. Agrawal	Study of Erosion of Brittle Material under Accelerated Pot Tester	Dec.'99	Dr V. K. Agarwal
35	Subodh Kumar	Performance and Flow Prediction of a Rectangular Conical Diffuser used in a Power Plant (between LP Turbines Condenser)	Dec.'99	Dr Lajpat Rai

36	Pankaj Tiwari	Study of Flow Characteristics in Kenics Static Mixer at Higher Reynolds number	Dec.'99	Dr K. D. P. Nigam
37	Pramod Kumar Banchhor	Performance characteristics of Wedge Element using CFD	Dec. 2000	Prof. V. Seshadri
38	Rajat Kumar Dey	3-D flow analysis in S-shaped diffusers using CFD	Dec. 2000	Prof. V. Seshadri
39	Gaurav Garg	3-D flow analysis in annular gas turbine combustor using CFD	Dec. 2000	Prof. V. Seshadri
40	H. S. Sondh	Experimental and computational study to optimise the shape of a bluff body for annular orifice meter	Dec. 2000	Prof. V. Seshadri
41	B. S. Kumar	Shape optimisation of Bluff body in an annular orifice for flow rate measurement with constant pressure	Dec. 2001	Prof. V. Seshadri
42	J. Singh	Shape optimisation of Bluff body used in vortex flow meter using CFD	Dec. 2001	Prof. V. Seshadri
43	R. K. Pandey	Effect of shape and pressure measuring locations on the performance of annular using CFD	Dec. 2001	Prof. V. Seshadri
44	V. S. Chauhan	Development of an annular orifice with an optimised shape	Dec. 2001	Prof. V. Seshadri
45	R. Chandramauli	Flow characteristics of wide angle annular diffusers using CFD	Dec. 2001	Prof. V. Seshadri
46	P. V. K Kumar	Prediction of flow characteristics of pipe and island diffusers at high Mach numbers	Dec. 2001	Prof. V. Seshadri
47	B. Sampath Kumar	CFD Analysis for the Design of Target Flowmeter	Dec. 2001	Prof. V. Seshadri
48	Piyush sharma	Flow prediction through rectilinear cascade of impulse type turbine blades using CFD	Dec. 2001	Dr Lajpat Rai
49	T. Mishra	Prediction of reacting flows in combustors	May 2002	Prof. V. Seshadri
50	Amit Shrivastava	Performance characteristics of flow meters for low Reynolds number flows	Dec. 2002	Prof. V. Seshadri
51	Manish Khare	Flow analysis in rectangular ducts for prediction of annubar factor	Dec. 2002	Prof. V. Seshadri
52	T. Patel	Flow performance in Y shaped non circular branching ducts	Dec. 2002	Prof. V. Seshadri
53	S. S. Sahu	CFD prediction of Flow through a Rectangular Cascade of turbine reaction steam Blade 5530	Dec. 2002	Dr. Lajpat Rai
54	Ramesh Ganmani	Flow Analysis for the Design of Restriction Orifice Assemblies	May 2004	Prof. V. Seshadri
55	S. Srinivas	Flow Analysis through Boundary Layer Controlled Conical Diffuser	May 2004	Prof. V. Seshadri
56	Renu Verma	Compressible Flow through Diffuser	May 2004	Prof. V. Seshadri
57	V. K. Tripathi	Performance Characteristics of Annubar for Non- Circular Duct	May 2004	Prof. V. Seshadri
58	S. L. Sahu	Prediction of Pump Turbine Characteristics using CFD	May 2004	Prof. V. Seshadri
59	M. Divakar	Influence of Surface hardness on	May 2004	Dr. V. K.

		erosion of Metals		Agrawal
60	S. P. Kamble	Flow analysis through annular Diffuser for Equivalent Cone Angle	June 2004	Prof. V. Seshadri
61	G. RaviKant	Design, development and fabrication of Cone flow meter	May 2005	Prof. V. Seshadri
62	M. Gopaliya	Flow analysis in Y-shaped duct	May 2005	Prof. V. Seshadri
63	G. Nagababu	Flow characteristics on submerged body	May 2005	Prof. V. Seshadri
64	Jain K. K.	Design Fabrication and performance evaluation on High concentration slurry disposal system	May 2005	Prof. V. Seshadri
65	Singh R. K	Flow Characteristics of Aircraft Intake Duct: Double Offset S and Y (Twin Intake) Diffusing Intake Duct	Dec 2006	Prof. V. Seshadri
66	Jambagi Sunil B	Transient Flow Analysis in Pipeline Network	May 2007	Prof. V. Seshadri
67	Mahendra Gaikwad	Performance Improvement of 2D curved diffuser using boundary layer control methods	May 2007	Prof. V. Seshadri
68	S. Siva Sankar	Prediction of Characteristics of Orifice Meter at Off design conditions using CFD	May 2007	Prof. V. Seshadri
69	Gaurav Nigam	Study on the Effect of gas turbine intake and exhaust temperature on the funnel exhaust-ship superstructure interaction on a ship	Dec 2007	Prof. V. Seshadri
70	Ajeet Sharma	Mixing Characteristic of Transverse Jet in presence of Cross flow	May 2008	Prof. V. Seshadri
71	M. Sreedhar	Design, Fabrication and Testing of Coriolis wear test rig	May 2008	Prof. V. Seshadri
72	B.V. Reddy	Boundary Element method modelling of cardiovascular bubble dynamics	May 2008	Dr. Brijesh Eshpuniyani
73	Atanu Bhattacharyya	Studies on the Hydrodynamic Drag Characteristics of Fabric Surface	May 2009	Prof. R Chattopadhyay
74	Amarakshar V. M.	Studies on Jet Ejector Refrigeration System	May 2009	Prof. Sanjeev Jain
75	Satish K. Bonthu	Analysis of Compressibility Effects in the Flow through Obstruction type flow meters using CFD	July 2009	Prof. V. Seshadri
76	Lakhvinder Singh	Optimization of Exhaust Nozzle Geometry for the best Performance of Self entraining Diffusers using CFD	May 2010	Prof. V. Seshadri
77	Desh Deepak	Analysis of Manoeuvrability Characteristics of Underwater Vehicles using CFD	May 2010	Prof. V. Seshadri
78	Chandrabhan Prajapati	Effect of Flowmeter selection on the permanent Pressure loss in Industrial pipelines using CFD	May 2010	Prof. V. Seshadri
79	Abhishek Dewangan	Design of wedge element for balancing flow in the pulverized coal pipelines in a Thermal Power Plant	May 2010	Prof. V. Seshadri
80	Amit Gupta	To Study the Air Flow in Blow	May 2010	Prof. <a href="#">S.M.</a>

		Room Duct Using CFD		<a href="#">Ishtiaque</a>
81	Dadhish Kumar	Performance Characteristics of Noncircular Self Entraining Diffusers using Experimental and CFD	June 2011	Prof. V. Seshadri
82	Prem Shankar Yadav	Modifications in Geometry of Mast to Alleviate Smoke Ingress Problem in Ships	June 2011	Prof. V. Seshadri
83	Amit Kumar	Design and Flow Control Mechanism in The Pulverized Coal Pipe Lines in the Thermal Power Plants	June 2011	Prof. V. Seshadri
84	Manish Kakkar (MS)	Effect of Transverse Jets on flow characteristics of Gas Turbine Combustor	June 2012	Prof. V. Seshadri
85	S Naidu Velagala	Design of Dual Plate Check Valve for Optimum Performance using CFD	June 2012	Prof. V. Seshadri
86	Vijindra Kumar Verma	Prediction of Characteristics of Integral Orifice Assemblies Using CFD and Experiments	June 2012	Prof. V. Seshadri
87	Anvesh Chandrakar	Numerical simulation of Dual Plate Check Valve using Gambit & Fluent Software.	June 2013	-----
88	Mehtab Alam	Flow Charachtersitics over Helo-Deck of Simple Brigate Ship-2	June 2014	-----
89	Tousif Ahmad	Effect of Outer Jet Inclination and Cross Flow in a Confinement for Co-Axial and Multi-Axial Jets	Ongoing	-----
90	Dilip Kumar	Parametric Study of Erosion Wear Due to Solid-Liquid Mixture in Rotating wear Test rig.	June 2014	-----
91	Pankaj Kumar	Development of a 3-layer pressure drop prediction model for heterogeneous slurries.	June 2014	-----
92	Shrish Shukla (MS)	Analysis of Flow Characteristics over Helo-Deck of Simple Brigate Ship	Synopsys Submitted	-----
93	Sumit Kumar	Effect of Downwash on the flow Characteristics on a Helo Deck	June 2015	-----
94	Rajneesh Prasad	Study Characteristics of Flow through Restriction Orifice Plates	June 2015	-----
95	Pileshwar	Design of Pipeline Network for Flow distribution in High rise Buildings	June 2015	-----
96	Vikas Sonkar	Effect of Flow Suction on the flow distribution in a room	June 2015	-----

### List of M. Tech Projects under UNUTP/ Other Projects

S No	Name	Title	Year	Co-supervisor
1.	L.N.Phakaysone	Use of small horse-power centrifugal pumps (single stage)	May'91	Prof. V. Seshadri

		and double stage) as hydraulic turbines		
2.	S. M. Senorio	Study on the design modifications in the savonius rotor to withstand high velocities	Aug.'92	-Do-
3.	A. Banda	Correlation between the characteristics of a centrifugal pump and its parameters when operated in turbine mode	Apl.'94	-Do-
4.	T. R. Bajrcharya	Effect of size and geometry on the performance of micro Pelton turbine	Oct.'95	Prof. V. Seshadri
5.	B. A. Yihune	Design of micro hydro systems	Oct.'95	-Do-
6.	Fabean Charu	Study of hold-up and settling behaviour of multisized particulate slurry	Feb.'96	-Do-

### Annexure III

#### List of B. Tech Projects

S No	Name	Title	Year	Co-supervisor
1.	O. P. M. Puria	Effect of back pressure on mixing of coaxial jets		Dr. Lajpat Rai
2.	N. C. Paul	Flow through a 45° equiangular annular diffuser	1985	---
3.	R. Singh & R. Kumar	Characteristics of a low speed wind tunnel (5' x5'x32')	1987	Dr D. P. Agrawal
4.	V. K. Singh & R. Jha	Performance characteristics of a variable pitch axial flow fan of a 5'x5' closed circuit low speed wind tunnel	1987	-Do-
5.	R. A. Kawoor & S. K. Sharma	Investigation of low Reynolds number flow in suddenly expanding confinements	1988	-Do-
6.	A. Farooq	Flow prediction in GT combustor models	1989	-Do-
7.	L. R. Meena	Drag reductions on railway wagons	1990	-Do-
8.	R. Mittal & A. Ali	Aerodynamics of railway wagons	1991	-Do-
9.	A. Agrawal & Mittal	Application of laser anemometry to co-axial jet mixing	1992	-Do-

10	Ashish & Puja	Test facility for gas turbine combustors	1992	-Do-
11	Amit & Mohit	Analysis of flow in turbo machinery passages using CFD code	1994	-Do-
12	A. Chandola & A. Mishra	Design and fabrication of computer controlled 3-D traverse mechanism	1997 Adjudged as Best B. Tech Project	Prof. D.P. Agrawal
13	Shikhar Ranjan	Analysis of flow using CFD (Minor Project)		Prof. D.P. Agrawal
14	Sidharth Chodhary & Abhishek Jain	Analysis of flow Can-type gas turbine combustor through Experimental and numerical method	2003	Dr. Lajpat Rai
15	Abhinav Bhatnagar & Puneesh Puri	Application of momentum injection to reduce aerodynamic drag on trucks	2003 Adjudged as Best B. Tech Project	Dr. Lajpat Rai
16	Ayush Sharma & Saurabh Taneja	Designing of transport duct for DREFIII	2007	Dr S.M.Ishtiaque
17	Shruti Mittal & Vibhor Dave	Designing a new Transport Duct for DREF 3 Friction Spinning Machine	2008	Dr S.M.Ishtiaque
18	Mohit Chandra, Rachit Kumar & Karamveer Singh	Development of Wedge type Flow Regulating Valve	2008	Sangeeta Kohli
19	Ashok Benjamin	Analysis of Manoeuvring of Characteristics of Underwater Vehicle using CFD	2010	Prof. V Seshadri

## B. Tech Projects in Jamia Millia Islamia

S. No	Name	Title	Year	Co-supervisor
1.	S. Singh & V. Kumar	Flow characteristics in transit ducts: effect of swirl	Jul.'94	Dr. Md. Islam
2.	V. Gupta & P. Prabhakar	Some studies on swirl decay in an annular space	Jul.'94	Dr. Md. Islam

### Research Papers/Reports Published/Communicated

#### INTERNATIONAL JOURNALS

1. Singh S.N., Agrawal D.P., Malhotra R.C. and Raghava A.K., 'Velocity predictions of contra swirling jets in a suddenly expanding confinement', AIAA, Jan. 87.
2. Singh S.N., Agrawal D.P., Malhotra R.C. and Raghava A.K., 'Flow separation in dump combustor', Forum on Unsteady Flow Separation, Cincinnati, Ohio, ASME Paper No. 87 FE- 16, June 15-17, 1987.
3. Singh S.N., Agrawal D.P., Malhotra R.C. and Raghava A.K., 'Mean flow measurements of contra swirling co-axial jets mixing in a dump confinement', Experiments in Fluid Mechanics, 7, July 1989.
4. Singh S.N., Mukhtar Ahmed and Seshadri V., 'Prediction of pressure drop in the flow of multisided particulate slurries through pipe line', Solid-Liquid Flow, 1992.
5. Singh S.N., Mukhtar Ahmad and Seshadri V., 'Distribution of solid particles in the flow of multisided particulate slurries through a 90° pipe bend located in the horizontal plane', Bulk Solids Handling, May 1993.
6. Singh S.N. and Agrawal D.P., 'Effect of swirl and dump expansion on reverse flow structure and multi-annular jets', Int. Journal of Turbo and Jet Engines, Vol. 11, 1994, pp 293-299.
7. Singh S.N. and Agrawal D.P., 'Turbulence characteristics of swirling jets in a dump combustor model', Journal of Mechanical Engineering Research and Development, Bangladesh, Vol. 18, 1995, pp. 53-67.
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## **Annexure V**

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58. Chandel S., Singh S. N. and Seshadri, V., "High Concentration Slurry Disposal of Fly Ash in Thermal Power Plants", Proc. International O&M (Operation and Maintenance) Conference 2010, 13-15 Feb 2010, PMI, Noida, India.
59. Chandel S., Singh S. N. and Seshadri, V., "Pilot Plant Test Loop Facility for Performance Characteristics of Centrifugal Slurry Pumps at High Concentrations", Proc. International Conference on Emerging Trends in Engineering and Technology (IETET 2010), 14-16 Oct 2010, Kurukshetra, India, pp. 86-9261.
61. Amit Ray, Singh S.N. and Seshadri V., "Underwater Gliders – Force Multipliers for Naval Roles" at the RINA Conference 'Warship 2011: Naval Submarines and UUVs', 29-30 June, 2011 at the Guildhall, Bath, UK.
62. A. K. Pradhan, D. Das, R. Chattopadhyay and S. N. Singh, "Optimization of quality factor of nonwoven filters by DOE-RSM approach", **Accepted** for oral presentation on 'The 11<sup>th</sup> Asian Textile Conference'-November 1-4, 2011, Daegu, Korea.
63. A. K. Pradhan, D. Das, R. Chattopadhyay and S. N. Singh, "Mixed fibrous filter media for separation of most penetrating particles", **Accepted** for oral presentation on 'International Congress of Environmental Research' - December 15-17, 2011, Surat, India.
64. B Praveen, R Vijayakumar, Sn Singh And V Seshadri,"A Review Of The Problem Of Warship Helo Interaction And Effortsunderway For Possible Solution",Page-163, *Icsot: Technical Innovation In Shipbuilding, 12-13 December 2013, Kharagpur, India,,Rina.*
65. Parminder Singh,S N SINGH,V Seshadri "Effect of number of slots and overlap on the performance of Non-circular Ejector Air Diffuser",AIAA Aviation,16-20 June 2014, Atlanta, GA,32nd AIAA Applied Aerodynamics Conference.
66. B Praveen, R Vijayakumar, SN Singh And V Seshadri," Numerical Investigation of Ship Airwake Over Helodeck for Different Variants of Hanger Shapes of a Generic Warship", **International Conference on Computational and Experimetal Marine Hydrodynamics, MARHY 2014, 3-4 December 2014, Chennai, India.**
67. S. Shukla, S N Singh, Balaji Srinivasan,'RANS Study of Flow characteristics over flight deck of Simplified frigate ship', **DFD14, APS,L34.**
- 67.A. Rawat, S N Singh, V. Seshadri,'CFD Analysis of the Alow of High Concentration Coal Ash Slurries through Pipeline in both Laminar and Turbulent Regimes', **Paper No.138, Proc. 5th International and 41<sup>st</sup> National Conference on Fluid Mechanics & Fluid Power, 12-14 Dec 2014, IIT Kanpur, India.**
68. Patel V.K., S N Singh, V. Seshdri,' Effect of Blockage and its Location on flow Characteristics of Heated Swirling Coaxial Jets in a Non-expanding Confinement',

69. A. Rawat, S N Singh, V. Seshadri,' **Rheological Characteristics of Indian Coal Ash Slurries in Relevance to High Concentration Slurry Disposal Systems**', Ref No.112, *The 8th International Conference for Conveying and Handling of Particulate Solids(CHOPS-2015), 3-7th May 2015, Tel Aviv, Israel.*
70. A. Rawat, S N Singh, V. Seshadri,' **Effect of Radius Ratio on Pressure Drop across 90° Bend for High Concentration Coal Ash Slurries**', Accepted for Oral presentation at **38th International Conference on Boundary Elements and Other Mesh Reduction Methods,21-23Sept, New Forest, UK.**

## **Annexure VII**

### **National Conferences**

1. Singh S.N. and Gupta A.K., 'Studies in the near wake of annular vane swirlers', GTRE<sup>1</sup> Conference, Dec '77.
2. Singh S.N., Agrawal D.P., Raghava A.K. and Malhotra R.C., 'Effect of back pressure on mixing of annular jets in a constant area duct', Proceedings of 13th NCFMFP<sup>2</sup>, Trichi, Madras, Dec.'84.
3. Singh S.N., Hussain A.K., Agrawal D.P., Raghava A.K. and Malhotra R.C., 'Effect of swirl and Reynolds number on the performance of wide angle equiangular annular diffuser', Proceedings of 13th NCFMFP, Trichi, Madras, Dec.'84.
4. Singh S.N., Hussain A.K., Agrawal D.P., Raghava A.K. and Malhotra R.C., 'Swirl decay in a constant area annular duct', Proceedings of 6th ISME<sup>3</sup> Conference, Delhi College of Engineering, Jan.'85.
5. Singh S.N., Agrawal D.P., Malhotra R.C. and Raghava A.K., 'Prediction of confined swirling flow', National Conference of Aerodynamics, IIT, Madras, Oct.'85.
6. Singh S.N., Agrawal D.P., Raghava A.K. and Malhotra R.C., 'Effect of confinement length on the development of contra co- axial swirling jet flow', Proceedings of 14th NCFMFP, Roorkee, Jan.'86.
7. Singh S.N., Reddy D.N., Agrawal D.P. and Yahya S.M., 'Prediction through vaneless diffusers for high Mach number flows', Proceedings of 14th NCFMFP, Roorkee, Jan.' 86.
8. Singh S.N., Sapre R.N., Agrawal D.P. and Malhotra R.C., 'Flow through equiangular wide angle annular diffusers', Proceedings of 15th NCFMFP, Srinagar, July '87.
9. Singh S.N., Agrawal D.P., Malhotra R.C. and Raghava A.K., 'Influence of downstream contraction on velocity characteristics of confined co-axial swirling jets', Proceedings of 15th NCFMFP, Srinagar, July '87.
10. Singh S.N., Basharat S., Agrawal D.P. and Malhotra R.C., 'Exit flow studies on centrifugal compressor rotor', Proceedings of 15th NCFMFP, Srinagar, July '87.
11. Singh S.N. and Agrawal D.P., 'Co-axial swirling jets', Annual Aeronautical Conference, Delhi, March 10-13, '88.
12. Singh S.N., Basharat S., Agrawal D.P. and Malhotra R.C., 'Performance of centrifugal compressor with free entry at inlet', Proceedings of 16th NCFMFP, Kanpur, Dec. '88
13. Singh S.N., Seshadri V., Agrawal D.P. and Sachan N.K., 'Effect of inlet pressure on the performance of gas turbine meter', Proceedings of 16th NCFMFP, Kanpur, Dec.'88.

14. Singh S.N., Choudhary K.K. and Raghava A.K., 'Experimental investigation of the performance characteristics of the air canon', Proceedings of 16th NCFMFP, Kanpur, Dec.'88.
15. Singh S.N., Basharat S., Agrawal D.P. and Malhotra R.C., 'Study of centrifugal compressors as affected by inlet configurations', Proceedings of 7th ISME Conference, Delhi, Feb.'90. Also see Advances in Mech. Engg., Tata McGrawhill Publication, Delhi.
16. Singh S.N. and Agrawal D.P., 'Application of Laser 2 focus velocimeter for flow investigations in centrifugal compressor', Workshop on Applications of LDV to Flow Measurements, May 29-31, 1990, NAL Bangalore, India.
17. Singh S.N., Agrawal D.P. and Whitelaw J.H., 'Laser Doppler velocimeter measurements in axisymmetric diffusers and sudden expansions', Workshop on Applications of LDV to Flow Measurement, May 29-31, 1990, NAL, Bangalore, India.
18. Singh S.N., Ahmad, Mukhtar and Seshadri V., 'Flow of solid liquid mixtures in a horizontal pipe bend', Proceedings of 17th NCFMFP, Warangal, Dec.'90.
19. Singh S.N., Agrawal D.P. and Malhotra R.C., 'Performance characteristics of a 5' x 5' x 32' closed circuit low speed wind tunnel', Proceedings of 17th NCFMFP, Warangal, Dec.'90.
20. Singh S.N., Seshadri V. and Islam Md., 'Parametric study for increasing the linear range of small gas turbine flowmeter', Proceedings of 17th NCFMFP, Warangal, Dec.'90.
21. Singh S.N., Basharat S., Agrawal D.P. and Malhotra R.C., 'Flow at the exit of a centrifugal compressor impeller', Proceedings of 17th NCFMFP, Warangal, Dec.'90.
22. Singh S.N. and Agrawal D.P., 'Flow characteristics for confined jet mixing with and without separating conditions', 6th National Conference of Aero Engineers, Bombay, Jan. 91. Also in Aerothermodynamics of Internal Flow, Tata McGrawhill.
23. Singh S.N., Basharat S. Agrawal D.P. and Malhotra R.C., 'Flow distribution at the inlet of a vaneless diffuser', 6th National Conference of Aero Engineers, Bombay, Jan., 91.
24. Singh S.N., Joshi C.B. and Seshadri V., 'Experimental investigations of the performance of a micro Pelton wheel, Proceedings of 18th NCFMFP, Indore, Dec. '91.
25. Singh S.N., Seshadri V. and Tung T.N., 'Measurement of particle velocity in pneumotransport of solid materials', Proceedings of 18th NCFMFP, Indore, Dec.'91.
26. Singh S.N., Islam Md. and Seshadri V., 'Effect of velocity profile on the performance of small gas turbine meter', Proceedings of 18th NCFMFP, Indore, Dec.'91.
27. Singh S.N. and Agrawal D.P., 'Flow characteristics in a stalled curved diffuser', Proceedings of 18th NCFMFP, Indore, Dec.'91.
28. Singh S.N., Agrawal D.P. and Malhotra R.C., 'Swirling flow in a dump confinement', 1st NCABE<sup>4</sup>, Bangalore, Dec.'92.
29. Singh S.N., Gupta R. and Seshadri V., 'Accelerated wear rate test rig for the predicting of erosion in slurry pipe lines', Proceedings of 19th NCFMFP, Bombay, Dec.'92.
30. Singh S.N., Majumdar B. and Agrawal D.P., 'Mean flow measurement in large area ratio curved diffuser', Proceedings of 19th NCFMFP, Bombay, Dec.'92.
31. Singh S.N., Mukhtar A., Seshadri V., 'Pressure drop and concentration distribution in the flow of heterogeneous slurry through a horizontal pipe bend', Proceedings of



- 19th NCFMFP, Bombay, Dec.'92. (Awarded **M.C. Deshpande Memorial prize** by The National Society of Fluid Mechanics and Fluid Power)
32. Singh S.N., Joshi C.B. and Seshadri V., 'Estimation of losses in cross flow turbine', Proceedings of 19th NCFMFP, Bombay, Dec.'92.
  33. Singh S.N., Islam Md. and Seshadri V., 'Effect of upstream swirl on the performance of small gas turbine flow meter', Proceedings of 19th NCFMFP, Bombay, Dec. '92.
  34. Singh S.N., Agrawal D.P., Basharat S. and Malhotra R.C., 'An experimental study of asymmetric flow in a centrifugal compressor', Proceedings of 8th ISME Conference, IIT, Delhi, March '93.
  35. Singh S.N., Islam Md. and Seshadri V., 'Development of analytical model for the prediction of turbine flowmeter performance', Proceedings of 8th ISME Conference, IIT Delhi, March '93.
  36. Singh S.N., Seshadri V., Agrawal D.P. and Singh R.K., 'Flow development in an 'S' bend: influence of upstream disturbance', Proceedings of 8th ISME Conference, IIT Delhi, March '93.
  37. Singh S.N., Majumdar B. and Agrawal D.P., 'Effectiveness of deflector plates in improving the performance of large area ratio curved diffuser', Proceedings of 20th NCFMFP, Palghat, Dec. '93.
  38. Singh S.N., Islam Md and Seshadri V., 'Effectiveness of different types of flow straightener for turbine flow meter', Proceedings 20th NCFMFP, Palghat, Dec. '93.
  39. Singh S.N., Seshadri V. and Swaroop A., 'Effect of size and shape of the bluff body on Strouhal number in pipe flow', Proceedings of 20th NCFMFP, Palghat, Dec. '93.
  40. Islam Mohd., Seshadri V. and Singh S.N., 'Parametric investigation on the performance of a turbine flow meter', Proceedings of 9th ISME Conference, Roorkee, Nov. 10-11,'94.
  41. Ratan Mohan, Agrawal D.P. and Singh S.N., 'Performance of wall contoured diffusers', 2nd NCABE, Trivendrum, Dec.'94.
  42. Mishra R., Singh S.N. and Seshadri V., 'Prediction of pressure drop in a pipeline transporting multisized particulate slurries', Proceedings of 21th NCFMFP, Hyderabad, Dec. 27-29,'94.
  43. Majumdar B., Singh S.N. and Agrawal D.P., 'Wall pressure distribution in rectangular curved diffusers', Proceedings of 21th NCFMFP, Hyderabad, Dec. 27-29,'94.
  44. Singh S.N., Reddy D.N., Agrawal D.P. and Yahya S.M., 'Compressible flow predictions in vane less radial diffuser', Proceedings of 21st NCFMFP, Hyderabad, Dec. 27-29,'94.
  45. Islam Mohd., Seshadri V. and Singh S.N., 'Turbine flow meter performance under distorted upstream conditions: Effectiveness of flow Straighteners', Proceedings of 21<sup>st</sup> NCFMFP, Hyderabad, Dec. 27-29,'94.
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  47. Mohan R, Singh S N and Agrawal D P, 'Flow split in a reverse flow combustor', Proceedings of 22nd NCFMFP, I.I.T. Madras, Dec. 13-15,'95.
  48. Mishra R, Singh S N and Seshadri V, 'Loss coefficient of diverging-converging bends', Proceedings of 22nd NCFMFP, I.I.T. Madras, Dec.13-15,'95.

49. Kaushal D, Seshadri V and Singh S N, 'Estimation of deposition velocity in the flow of multisized particulate slurries based on concentration profile prediction', Proceedings of 22nd NCFMFP, I.I.T. Madras, Dec. 13-15,'95.
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54. Kaushal, D R, Seshadri, V and Singh, S N, 'Solid distribution in the flow of multi-sized particulate slurry through horizontal pipe', Proceedings 24th NCFMFP, Calcutta, Dec. 26-28,'97.
55. Gandhi, B K, Singh, S N and Seshadri, V, 'Development of test facility for the study of cutting wear in solid-liquid flows', Proceedings 24th NCFMFP, Calcutta, Dec. 26-28, '97.
56. Mohan R, Bharani, S, Agrawal, D P & Singh, S N, 'CFD calculation for Flow splits in a Reverse Flow Combustor', Proceedings 24th NCFMFP, Calcutta, Dec. 26-28, '97.
57. Kumar, U., Singh, S.N. and Seshadri, V. 'Pressure drop prediction for multi-sized particulate slurries at higher concentrations through horizontal circular pipes, Proceedings of the 11<sup>th</sup> ISME conference, IIT Delhi, Delhi, Feb.1999, pp. 400-409.
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  68. Singh S N, "Design of differential pressure flow-meter using CFD", Proc. 17<sup>th</sup> National Convention of Mechanical Engineers, The Institution of Engineers (India), Indore, Nov. 2001, pp. 18-30.
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  70. V Prakash, Mohan, Singh S N and Seshadri V, "Enhancement of flow capacity of calibration testing facility ensuring same levels of accuracy", Proc. 28<sup>th</sup> Nat. Conference on Fluid Mechanics and Fluid Power, PEC, Chandigarh, 13-15 Dec. 2001, pp. 269-275. **(Best Paper Award)**
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  74. R B Anand, Lajpat Rai & S N Singh "Performance Characteristics of Miniature S - Shaped Circular Diffusers" Proc. FLUENT CFD Conference Pune, Nov 18-20 2003, TP:21.
  75. Abhai Kumar Verma, S N Singh and V Seshadri " Pressure Drop Prediction for the Flow of Fly Ash Slurries through pipes at High Concentrations" Proc. 30<sup>th</sup> National conference on Fluid Mechanics and Fluid Power, NITK Surathkal (kar), Dec 11-13, 2003 pp 192-199.
  76. R Mishra, S N Singh and V Seshadri " Velocity and Concentration Field in a Solid Liquid Mixture Regime Flow in A Horizontal Pipeline" Proc. 30<sup>th</sup> National conference on Fluid Mechanics and Fluid Power, NITK Surathkal (kar), Dec 11-13, 2003 pp 235-242.
  77. S N Singh and V Seshadri "Analysis of Phenomenon of Drag Reduction in Turbulent Boundary layer over a flat plate Using CFD" Proc. 30<sup>th</sup> National conference on Fluid Mechanics and Fluid Power, NITK Surathkal (kar), Dec 11-13, 2003 pp 281-287
  78. Abdur Rahim, S N Singh, S V Veeravalli & R B Anand "Numerical Simulation of Flow Characteristics in a Combustor Model" Proc. 30<sup>th</sup> National conference on Fluid Mechanics and Fluid Power, NITK Surathkal (kar), Dec 11-13, 2003 pp 392-396.
  79. P. R. Kulkarni, S. N. Singh and V. Seshadri "Design of Super Structure of ships

- Using CFD”, Proc. 17<sup>th</sup> National Convention of marine Engineer, Mangalore, 13-14 Feb 2004, pp 126-132.
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  81. Cdr. Sen, Singh R. K., Singh S. N. and Seshadri V., “Effect of Reynolds Number on Flow through Slots for a Slotted Conical Diffuser Using CFD” Proc. 31<sup>st</sup> NCFMFP, 16-18 Dec 2004, Jadavpur university Kolkata, India, pp 296-303.
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  83. Abhai Kumar Verma, S N Singh and V Seshadri “Effect of Additives on Rheological Properties of Fly Ash Slurry at High Concentrations”, Proc. 31<sup>st</sup> NCFMFP, 16-18 Dec 2004, Jadavpur university Kolkata, India, pp 882-889.
  84. S. K. Gupta, V. Seshadri, S. N. Singh and V. K. Agarwal, ”Effect of Conveying Distance on the Characteristics of Fluidized Motion Conveying System” Proc. 31<sup>st</sup> NCFMFP, 16-18 Dec 2004, Jadavpur university Kolkata, India, pp 903-910,
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  86. Abdur Rahim, Srinivas V. Veeravalli & S. N. Singh “Measurements in Swirling Flow through Combustor model”, Proc. 31<sup>st</sup> NCFMFP, 16-18 Dec 2004, Jadavpur university Kolkata, India, pp 771-778.
  87. Chandel S., Singh S. N. and Seshadri, V. “Pilot Plant Test Loop Facility for High Concentration Slurry Transportation” Proc. 34<sup>th</sup> NCFMFP, 10-12 Dec 2007, BIT Ranchi, India, pp 301-306.
  88. Singh, R.K., Sivashankar, S., Singh S. N. and Seshadri, V. “Performance Evaluation of Orifice Plate at Off-design Conditions” Proc. 34<sup>th</sup> NCFMFP, 10-12 Dec 2007, BIT Ranchi, India, pp 286-292.
  89. Tarnacha R.S., Singh S. N. and Rai, L. “Design and Fabrication set up for studying Multi-annular Jets” Proc. 34<sup>th</sup> NCFMFP, 10-12 Dec 2007, BIT Ranchi, India, pp 223-230.
  90. Chandel S., Sreedhar, M., Singh S. N. and Seshadri, V. “Design and Development of a Coriolis Wear Test Rig for prediction of Wear in Slurry Pumps” Proc. 35<sup>th</sup> NCFMFP, 11-13 Dec 2008, PESIT, Bangalore, India.
  91. Chandel, S., Sharma A K, Singh S. N. and Seshadri, V. “Effect of Orientation and Inlet Swirl on the development of the Transverse Jet under Cross Flow” Proc. 35<sup>th</sup> NCFMFP, 11-13 Dec 2008, PESIT, Bangalore, India.
  92. Tarnacha R.S., Singh S. N. and Rai, L. “Effect of Central Swirling Jet on the Flow Characteristics of Multi-Annular Jets in a Non-Expanding Confinement” Proc. 35<sup>th</sup> NCFMFP, 11-13 Dec 2008, PESIT, Bangalore, India.
  93. Vasudevan, P., Sen., P.K., Hegde, S. Davis, P and S. N. Singh, “Trigeneration for Rural Microenterprises: Technical Feasibility”, Proc. 35<sup>th</sup> NCFMFP, 11-13 Dec 2008, PESIT, Bangalore, India.
  94. Vijayakumar R., S N Singh, V Seshadri and R. Daga, “CFD Analysis for the Design of Optimum Geometry of the Orifices in the PC pipes for ensuring uniform feed rate of Coal through various Coal Burners in a Boiler”, Indian Power Stations Conference 2009.

95. Chandel, S., Singh S. N. and Seshadri, V. "High Concentration Slurry Disposal of Fly Ash and Bottom Ash (4:1) Mixture in Thermal Power Plants" Proc. 36<sup>th</sup> NCFMFP, 18-19 Dec 2009, COEP, Pune, India
96. Mudgal, A., Vasudevan, P., Sen., P.K., and S. N. Singh, "Design, fabrication and analysis of a 3-effect multiple effect distillation (MED) unit" Proc. 36<sup>th</sup> NCFMFP, 18-19 Dec 2009, COEP, Pune, India
97. Chandel, S., Singh S. N. and Seshadri, V. "High Concentration Slurry Transportation of Coal Ash with Conventional Pumping Systems for Mine Stowing Application" Proc. C-FORM, National Seminar on Fly Ash and Opportunity for Mining Sector, 26-27 Aug. 2010, New Delhi, India
98. Patel V. K., Dewangan A., Singh S. N. and Seshadri V., "CFD Analysis on the use of Adjustable Wedge Element for Balancing Flow in the Pulverized Coal Pipelines in Thermal Power Plant", Proc. [16th ISME Conference](#), ISME10-TI-7, December 02-04, 2010, IIT-Delhi, New Delhi, India.
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<sup>1</sup> GTRE - Gas Turbine Research Establishment, <sup>2</sup> NCFMFP-National Conference on Fluid Mechanics and Fluid Power, <sup>3</sup> ISME- Indian Society of Mechanical Engineers, <sup>4</sup> NCABE- National Conference on Air Breathing Engines.

### Invited Talks

1. **Presidential Address**, 27<sup>th</sup> Nat. Conference on Fluid Mechanics and Fluid Power, FCRI, Palghat, 11-13 Dec. 2000
2. 17<sup>th</sup> National Convention of Mechanical Engineers, The Institution of Engineers (India), Indore, Nov. 2001
3. **Presidential Address**, 28<sup>th</sup> Nat. Conference on Fluid Mechanics and Fluid Power, PEC, Chandigarh, 13-15 Dec. 2001.
4. **Design of Flow meters using CFD, FLUENT** CFD Conference Pune, Nov 18-20 2003.
5. **CFD: Design tool for Flow meters**, 30<sup>th</sup> National conference on Fluid Mechanics and Fluid Power, NITK Surathkal (Kar), Dec 11-13, 2003 pp 19-39.
6. **Design of Pipelines for Wet Disposal of Coal Ash**, 18<sup>th</sup> Dr. S P Luthra Memorial Lecture, at The Institution of Engineers (India), Delhi State Centre, 27<sup>th</sup> July 2011.

## Technical Reports

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2. Singh S.N. and Gupta A.K., 'An experimental investigation of flat plate boundary layers transition due to 3-D tripping devices', Dept. of Aeronautical Engineering, IIT, Kanpur.
3. Singh S.N., Agrawal D.P., Raghava A.K. and Malhotra R.C., 'Flow through bladed passages', Technical Report AM/IIT-D, Dept. of Applied Mechanics, IIT, Delhi, April, '85.
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  - (a) Singh S.N., Agrawal D.P. and Malhotra R.C., 'Aerodynamic studies of mixing of co-axial swirling jets in a confined space', 1st Technical Reports IITD/R-308 -- March '88.
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  - (d) Singh S.N., Agrawal D.P., Dhawan C.M. and Rai L., 'Investigation of swirling compressible flow in vaned radial diffusers for high pressure centrifugal compressors', 4th Technical Report IITD/ME/R-414, Feb., '94.
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- (a) Singh S N, Seshadri V and Singh P, "Study of Non-Circular Diffuser with Bleeding" First Technical Report, IITD/IRD-RP01679, April 2005.
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(b) S N Singh, P K Sen, Sriram Hegde, Padma Vasudevan,'Bio-Energy: Technology and Business Solutions for the UK and INDIA", Second Technical Report, IITD/IRD-RP02260,International Division, DST, August 2013.

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2. 'Computational fluid dynamics', edited by Singh S.N., Agrawal D.P. and Seshadri V.' Nov. '91. I.I.T. Delhi publication.
3. 'Centrifugal compressor technology', edited by Singh S.N. and Agrawal D.P.', I.I.T. Delhi publication, Sept. '91.
4. 'Manual for basic experiments in fluid mechanics', edited by Veeravalli S.V., Singh S.N., Seshadri V., Sen P.K. and Sanghi S.
5. 'Advanced techniques in the analysis of fluid flows', edited by Singh S.N., Sanghi S., Veeravalli V. and Seshadri V.
6. 'Proceedings 25<sup>th</sup> National & 1<sup>st</sup> International Conference on Fluid Mechanics and Fluid Power', Vol. 1 and Vol. 2, Edited by S.V. Veeravalli, S. Sanghi, S.N. Singh and V. Seshadri.

## List Of Patents

S. No.	Title	Co-inventors	Indian / Other countries	Status	Date filed	Remarks
01.	Coconut dehusking machine	i) Aswin Cander N.C., B.Tech. Student, AM ii) Aswini N., B. Tech. Student, AM	Indian	Approved in IPR-SC No. 72 held on 21/7/10	To be filed	Allotted to K&S Partners
02.	Foot Step Electricity Generator	i) Siddhant Garg, M. Tech. Student, AM	Indian	Approved in IPR-SC No. 72 held on 21/7/10	To be filed	Allotted to Anand & Anand
03.	A hydraulic jack	i) Karan Vir Saini, AM	Indian	Considered in IPR-SC No. 73 held on 10/9/2011	Under Review	
04.	Mechanical type automatic flushing system	i) Vijay , AM	Indian	Filed	Indian Patent Application No.1655/DE L/2010 Date of filing 14-07-2010	
05.	Bucket Washing Machine	i) Ajay Kumar Behera, M.Tech (Design), AM ii) Jitu Ranjan Nayak, M.Tech. (Design), AM	Indian	Approved in IPR-SC No. 76 held on 28/1/2011	Under Review	
06.	A wheeled walker with breaking system					
07.	A novel swirl rotor assembly to be used as a mixer	i) Ankur Gupta	Indian	Considered in IPR-SC No. 77 held on 25/2/2011		

## Association with Research and Development Projects

- |     |   |  |
|-----|---|--|
| 1.  | Flow behind flame stabilisers   | AR&DB sponsored projects at I.I.T. Kanpur,<br>Principal Investigator:<br>Dr. A.K. Gupta,<br>Dept. of Aerospace Engg. |
| 2.  | Flat plate boundary layer transition due to 3-D tripping devices                                  | AR&DB sponsored project at I.I.T. Kanpur,<br>Principal Investigator:<br>Dr. A.K. Gupta, Dept. of Aerospace Engg.     |
| 3.  | Flow through bladed passages  | AR&DB sponsored project at I.I.T. Delhi,<br>Principal Investigator:<br>Prof. R.C. Malhotra                           |
| 4.  | Small gas turbine components  | Under IIT-UK collaboration,<br>Principal Investigator:<br>Prof. R.C. Malhotra  |
| 5.  | Aerodynamic mixing of swirling co-axial jets  | Sponsored by AR&DB at I.I.T. Delhi<br>Principal Investigator:<br>Prof. R.C. Malhotra                                 |
| 6.  | Simulation of atmospheric boundary layer in a closed circuit wind tunnel for dispersion studies   | Ministry of Human Resources and Development,<br>Principal Investigator:<br>Prof. R.C. Malhotra                       |
| 7.  | Swirling flow through 3-D passages  | IITD-UK collaboration under Colombo plan,<br>Principal Investigator: Dr. S.N. Singh                                  |
| 8.  | Investigation of compressible swirling flow through vaned diffuser using Laser Doppler Technique  | Sponsored by AR&DB at IIT Delhi<br>Principal Investigator:<br>Prof. D.P. Agrawal / Dr. S.N. Singh                    |
| 9.  | Development of a computer code for small gas turbine components                                   | Sponsored by AR&DB<br>Principal Investigator:<br>Dr. S.N. Singh  |
| 10. | Simulation of flow in reverse flow combustor  | Sponsored by AR&DB<br>Principal Investigator:<br>Dr. S.N. Singh  |
| 11. | Development of demonstration unit for the hydraulic conveying of ash at higher concentrations     | Sponsored by DST<br>Principal Investigator<br>Prof. V Seshadri<br>Co-principal Investigator:<br>Prof. S N Singh      |
| 12. | Development of design methods and optimisation for hydraulic transport of bottom ash, Phase I.    | Sponsored by DST<br>Principal Investigator:<br>Prof. V Seshadri<br>Co-principal Investigator:<br>Prof. S N Singh     |
| 13. | Development of demonstration unit for the hydraulic conveying of ash at higher concentrations.    | Sponsored by DST<br>Principal Investigator:<br>Prof. V Seshadri<br>Co-principal Investigator:<br>Prof. S N Singh     |
| 14. | Simulation of Cold and Reacting Flows in Gas Turbine Combustor                                    | Sponsored by AR&DB<br>Principal Investigator<br>Prof. S.N. Singh   |
| 15. | Flow Characteristics of "S" Shaped Diffusing Ducts  | Sponsored by AR&DB<br>Principal Investigator<br>Prof. S.N. Singh   |
| 16. | Modernisation and Removal of Obsolescence of the Fluid Mechanics Lab., Ministry of Human Resource | 1999 - 2 years<br>Principal Investigator:<br>Prof. V Seshadri  |

	Development Rs. 7,00,000/-	Co-principal Investigator: Prof. S N Singh
17.	Design and Development of Pulsed Wire/Film Probe for Low Speed Measurement in Air, MHRD Rs.9,00,000/- + Industries Contribution Rs. 3,00,000/-	2000 - 3 years Principal Investigator: Prof. S V Veeravalli Co-principal Investigator: Prof. V Seshadri Prof. S N Singh
18.	Design and Development of Air Slides System for Bulk Materials Handling, MHRD, Rs.10,00,000/-	2001 - 2 years Principal Investigator: Dr V K Agrawal Co-principal Investigator: Prof. V Seshadri Prof. S N Singh
19.	Development of a Fluidised Motion Conveying system for Pollution Free Handling of Fly Ash, Sponsored by Ministry of Environment Rs.15, 00,000/-	2001 - 3 years Principal Investigator: Dr V K Agrawal Co-principal Investigator: Prof. V Seshadri Prof. S N Singh
20.	Scheme of Modernization & removal of obsolescence in experimental methods and analysis laboratory Sponsored by MHRD, Gov. of India Rs. 15,00,000/-	2001-2004 Principal Investigator Prof, D K Sehgal Co-principal Investigator Prof V Seshadri Prof S N Singh Prof K K Chaudhary Prof R K Mittal Prof S V Veeravalli
21	Study of Dispersion Characteristics of vehicular Exhaust Using the environmental wind tunnel Sponsored by MHRD Gov. of India Rs. 10,00,000/-	2001-2004 Principal Investigator Prof K K Chaudhary Co-principal Investigator Prof V Seshadri Prof S N Singh Prof Mukesh Khare
22	Studies on Divided Entrance Aircraft Intake Ducts Sponsored by ARDB Rs. 10,00,000/-	Completed Prof. S N Singh, Co-principal Investigator Prof. V Seshadri Dr. S Bharani
23	Modelling and analysis of Flow of Exhaust Fumes from Ship Funnel and their interaction with Ship Deck/Gas Turbine Intakes Sponsored by NRB Gov. of India Rs. 16,11,500/-	Completed Principal Investigator Prof V Seshadri Co-principal Investigator Prof S N Singh Lt. Cdr. P R Kulkarni
24	Studies on Non Circular Diffuser with Bleeding Sponsored by ARDB Gov. of India Rs. 7,18,000/-	Completed Principal Investigator Prof S.N.Singh Co-Principal Investigator Prof V Seshadri
25	High Concentration (above 60% by weight) Disposal of Coal Ash Using Slurry Pipeline Sponsored by DST Gov. of India Rs. 43,85,200/-	Completed Principal Investigator Prof V Seshadri Co-principal Investigator Prof S N Singh Dr V K Agrawal

- 26 Effect of Free Steam Turbulence (Active and Passive Grid) on the Development of a Turbulent Boundary layer. **Completed**  
Principal Investigator  
Prof S V Veeravalli  
Co-principal Investigator  
Prof S N Singh  
Dr. Srinivas Bhat  
Sponsored by DST Gov. of India  
Rs. 20,56,380/-
- 27 Flow Characteristics of Multicoaxial Jets (Simulated Gas Turbine Combustor) **Completed**  
Principal Investigator  
Prof S.N.Singh  
Co-Principal Investigator  
Prof V Seshadri  
Dr. Lajpat Rai  
Sponsored by ARDB Gov. of India  
Rs. 5,09,800/-
- 29 Analysis of Manoeuvring Hydrodynamics of Underwater Vehicles, Sponsored by NRB **Completed**  
Principal Investigator  
Prof V Seshadri  
Co-Principal Investigator  
Prof. S N Singh  
Rs. 16 Lacs
- 30 Development of an Associate Node for Computational Fluid Dynamics at IIT Delhi Sponsored by ARDB, Rs 42.07 Lacs **Completed**  
Principal Investigator  
Prof. S N Singh  
Co-Principal Investigator  
Prof V Seshadri  
Prof. C V Ramakrishnan  
Prof. S. Sanghi  
Dr. Balaji S.  
Prof. M R Ravi  
Prof. Ratan Mohan
- 31 Energy and Engineering Inputs to Wasteland Development for Livelihood Security submitted to Ministry of Rural Development, Gol, Rs 99.54 lacs **Submitted**
- 32 Improvement of S&T Infrastructure in Applied Mechanics Department: Establishment of Advanced Flow Diagnostics Laboratory Sponsored by FIST in Subject Area 'Engineering Sciences', Rs. 3.5 Crores **Completed**  
Head of Department(AMD)  
and all
- 33 Bioenergy: Technology and Business Solutions for the UK and India under Science Bridge Programme between Aston University, UK and I.I.T., Delhi, India Sponsored by DST & RCUK Rs. 7 Crores **Ongoing**  
Principal Investigator  
Prof. P.K. Sen  
Co-Principal Investigator  
Prof. S N Singh
- 34 Flow Characteristics of Heated Multicoaxial Jets Sponsored by ARDB Gov. of India Rs. 19,50,000/- **Ongoing**  
Principal Investigator  
Prof. S N Singh  
Co-Principal Investigator  
Prof. V Seshadri



- Prof. A. Dewan
35. Baseline Document on Handling and Transportation of Fly Ash  
Sponsored by DST Gov. of India  
Rs. 16,52,400/-
- Completed**  
Principal Investigator  
Prof V Seshadri  
Co-principal Investigator  
Prof S N Singh  
Dr V K Agrawal
36. Experimental and Numerical Investigations on Aerodynamics of BWB Tailless Configurations  
Sponsored by ARDB, Gov. India  
Rs. 27,24,000/-
- Ongoing**  
Principal Investigator  
Prof. S N Singh  
Co-Principal Investigator  
Dr. Amit Gupta
37. Integrated Technology System for Phytoremediation of Domestic Wastewater with Floating Reed Beds: R&D and Pilot Testing  
Sponsored By Rajiv Gandhi National Drinking Water Mission, Ministry of Drinking water and sanitation, Govt. of India.  
Rs. 32,07,840.00
- Ongoing**  
PI: Prof. S.N.Singh  
Co-PI.: Prof PK Sen  
Co-PI.: Prof. Satyawati
38. Study of the Airwake and its control over Helo Deck of Naval Ships for Safe Helicopter Operations, Naval Research Board, Ministry of Defense, Government of India.  
Rs.49,99,080
- Approved In-principle**  
PI: Prof. S.N.Singh  
Co-PI.:Prof. V. Seshadri  
Co-PI.:Cdr. R Vijaya Kumar  
Co-PI.:Dr. Sawan Suman

## Annexure XIII

### Consultancy Projects (Approximately 1000 Jobs)

Consultancy jobs for the following clients have been done over the past five years:

1. M/s Thermodyna Pvt. Ltd. Faridabad
2. M/s Khaitan Electricals, Faridabad
3. M/s M.M.I., New Delhi
4. M/s Bharat Brakes and Valves Ltd., Calcutta
5. M/s Envirotech Instruments, Greater Kailash, New Delhi
6. M/s Flowcon India, Faridabad
7. M/s Bharat General Industries, New Delhi
8. M/s Submersible Pumps, Noida
9. M/s Okhla Head Works, New Delhi
10. M/s Micro Machines, New Delhi
11. M/s Fedders Lloyd, New Delhi
12. M/s Bell Lloyd, Calcutta
13. M/s Rockwin India, New Delhi
14. M/s Microprecision, Faridabad
15. M/s Sterling Machines, Delhi
16. M/s Central Pollution Board, Delhi
17. M/s Paharpur Cooling Towers
18. M/s Taylor Instruments
19. M/s Techno Fab., Delhi
20. M/s I.S.I., Delhi
21. M/s Instrumentation Ltd., Palghat
22. M/s V.S.S.C., Trivandrum
23. M/s B.H.E.L., Trichi
24. M/s Micro Engineering Ltd., Faridabad
25. M/s NMDC, Hyderabad
26. M/s Continental Valves, Delhi
27. M/s Masoneilan (India) Ltd., Delhi
28. M/s Swarag Automobiles, Meerut
29. M/s Engineering Specialities, Calcutta
30. M/s Regional Test Centre, Okhla  
Test Facility for Testing Desert Coolers'  
Design, Fabrication and Testing (Rs. 1.36 Lacs.)
31. M/s R.D.S.O., Lucknow  
'Drag reduction on BOXN Wagons' (Rs. 5.00 lacs.)
32. M/s H.C.L. and M/s MECON - Two projects  
'Pilot Plant and Bench Scale Tests' (Rs. 1.5 Lacs.)
33. Evaluation of in-situ performance of flow metering devices and annubars M/S Micro-precision Products (Rs. 60,000 + 50,000 + 10,000)
34. Pilot plant and bench scale tests for the design of iron ore tailing disposed pipeline at Kiriburn Mines, M/s SAIL, Bihar (Rs. 95,000)
35. Design, fabrication and calibration of velocity probes for flow measurement to cooling towers, M/s Wig Brothers, New Delhi (Rs. 35,000)
36. Study of Airflow and temperature in the 115 NC engine, M/s Eicher Tractors Engg. Centre, Bullabgar (Rs. 30,000)

37. Laboratory tests and analysis for the design of disposal pipeline of lead zinc mill tailings, M/s Engineers India Ltd. (Rs. 90,000)
38. 'Design, Fabrication, Calibration and Supply of Probes for measuring cooling water flow at Talcher', M/s RECONDO Ltd, 0.85 Lacs, 1995.
39. 'Evaluation of In-Situ equations of various types of Flow Metering devices', M/s Micro Precision Products Pvt Ltd, 6.5 Lacs, 1994-99.
40. 'Transportation of Fly Ash and Bed Ash slurries in pipelines at optimum conditions', M/s Macawber Bekay Ltd, 0.90 Lacs, 1996.
41. Pressure drops characteristics of Air Breather Valves and Flame Arrestors', M/s Process Instrument Industries, 0.85 Lacs, 1997.
42. 'Characteristics and Deviation of in-situ Equations for flow elements', M/s Carlo-Dynatech Industries, 0.50 Lacs, 1997.
43. 'Study of Ash handling at DESU Power Plants', Fly Ash Mission, TIFAC and DVB, 1.5 Lacs, 1997.
44. 'Bench scale and Pilot Plant Loop tests for the hydraulic transportation of Fly Ash and Bed Ash', M/s Mahindra and Mahindra Ltd, 1.75 Lacs, 1997.
45. 'Prediction of in-situ equations for flow elements under changing conditions', M/s Placka Instruments and Controls Pvt Ltd, 0.60 Lacs, 1997.
46. 'Wind Tunnel studies on Ship Model (INS Delhi) to improve Flow Distribution', M/s Mazagaon Docs Ltd, 1.65 Lacs, 1997.
47. 'Review Consultancy in Sri Sailam Left Bank Canal Lift Irrigation Scheme', M/s Andhra Pradesh Electricity Board, 12.0 Lacs, 1998.
48. 'Determination of Working Equations for Venturimeters for Naval Applications', M/s Precision Castings, 0.775 Lacs, 1998.
49. 'Performance Characteristics of Flow Elements used in Thermal Power Plants', M/s Engineering Specialities Pvt Ltd, 0.60 Lacs.
50. 'Development of Twin Casing Fly Ash Slurry Pump and Demonstration', Paster Project, DSIR and M/s Bharat Pumps and Compressors Ltd, 5.0 Lacs, 1999.
51. 'Design and Calibration of 3 hole Pilot Rods for Cooling Tower Flow Measurement', M/s Paharpur Cooling Towers Ltd, 0.60 Lacs, 1999.
52. 'Feasibility Study to advise Delhi Vidhyut Board for increasing Ash Concentration in disposal system at IP Power Station', M/s Fly Ash Mission DST and DVB, 4.25 Lacs, 1999.
53. 'Alternate Coal Ash Disposal System For Thermal Power plant 'M/S Central Pollution Control Board, Delhi, 2.5 Lacs, 2001.
54. 'Analysis of rear Implement Control Valve using CFD' M/s Tractors and Farm equipments Ltd., Chennai, 205 Lacs, 2002.
55. 'Flow Analysis of the Steel Liner of the Bifurcation for The TALA hydroelectric Project' M/s Water and Power Consultancy Services, 6.0 lacs, 2003
56. CFD Analysis of Flow Field in the Upstream Region of Turbines at JURALA Hydroelectric Project" M/s APGENCO, Hyderabad, 2003. 4.5 lacs
57. "CFD Analysis of Flow Field in the Draft Tubes and Tail Pool of Baira Siul Hydroelectric Project" M/s NHPC Limited, 2004. 1.95 lacs
58. "Study on the erosion Resistance of Ceramic lined steel pipes", "M/s Naval Materials Research Laboratory, Thane. 2004, 2.75 lacs
59. "Evaluation of In-situ equation based on given working conditions and verification of Discharge coefficient" M/s Micro Precision Products Pvt. Ltd. Faridabad 2004-2008 25Lacs
60. "Experimental verification of Discharge coefficient of flow elements and derivation of Insitu equation based on working conditions" M/s Minco(India) Pvt. Ltd. Goa 2004-2008 25 Lacs

61. "Evaluation of pressure drop Characteristics of 3 way Control valve" M/s Anergy Instruments Pvt. Ltd. Delhi, 2005 1.80 Lacs
62. "Three Dimensional CFD Analysis of Flow in the downstream Intake structure Region of TRT" M/s APGENCO, Hyderabad 2005 3.0 Lacs
63. "Transient Flow Analysis for Kalwakurthy lift Irrigation Scheme and Bhima lift Irrigation Scheme " M/s Patel Engineering Limited, Hyderabad , 2006 12 Lacs
64. "Meter proving of Turbine Flowmeter" M/s IFFCO, Aonla, Unit, Bareilly, 2007. 1.35 lacs.
65. "CFD Modelling of Variable Orifice for Optimizing Design of Orifice". M/s NTPC Ltd., Noida, 2007, 2.81 lacs.
66. "Conducting Tunnel Action Test on the Boundary Wall as well as Structural Design of Boundary Wall Including Wind Action", M/s Suptd. Engineer Flood Circle, GNCTD, 2007, 6.06 lacs.
67. Rheo Logical Analysis of Ask for HCSD", M/s Jindal Steel and Power Ltd., Raigarh, 2008, 1.75 lacs.
68. "Enhancement of the Performance of 32/37 mm Torando Duct using Hydraulic Superject Machine", M/s Duraline India Pvt. Ltd., 2007-2008, 5.0 lacs.
69. "Design and Calibration of Pitot Rods", M/s Paharpur Cooling Tower Ltd., Kolkata, 2008, 2.25 lacs.
70. "Pressure Drop Characteristics of Different Strainers under Clean and Choked Conditions", M/s. Grand Prix Engineering Pvt. Ltd., Faridabad.
71. "Study of Ejector Compression Cycle-Phase I", M/s. ACME Telepower Ltd., Gurgaon.
72. "Wind tunnel Study for 275 m high RCC twin Steel flue Chimney", M/s LANCO Infratec Ltd., Gurgaon.
73. "Determination of Solid Properties and Conduct Rheological Tests to Determine Relative Viscosity", M/s Hindustan Zinc Limited, Bhilwara .
74. "Transient Flow Analysis For: Water Pipeline from the Clarifier to Fore Bay at NCTPP, Dadri amd Raw Water Pipeline to PT Plant Clarifier at Indira Gandhi STPP, Jhajjar", M/s Unitech Machines Limited, Gurgaon, Haryana.
75. " Design, Fabrication and Calibration of Pitot Tube for IDCT works for Maud, Rihand and Vindhyaachal ", M/s NBBC Ltd. New Delhi.
76. "3D CFD Analysis of the Flow Through Trash Rack Structure in the Presence of Muck Deposition at SLBHES", M/s Andhra Pradesh Power Generation Corp. Ltd, Hyderabad.

**In the year (2013-2014), along with Prof. S V Veeravalli and Prof. Sanjeev Sanghi, I have under taken consultancy jobs worth Rs.20 Lacs (Approx.). So far, The total number of consultancy undertaken during this period is 10.**

## Other Significant Extension Activities

Sl. No.	Activity	Body	Duration	Remarks*
1.	Development of Fluid Mechanics Lab Under Network Scheme.	REC Silchar	1995-1996	Total lay out Rs. 45 Lacs
2.	Attended NC of Fluid Mechanics and Fluid Power.	IIT-Madras	December 1995	
3.	Member of Organizing Committee on workshop.	Ash Ponds Handling	April 1996	
4.	Guided a project jointly with Prof. V. Seshadri.	Dept. Of CES	1997-1998	For UNV sponsored student
5.	Organizing Secretary	25 <sup>th</sup> National & 1 <sup>st</sup> International Conference on FMFP, IIT-Delhi	1998-1999	
6.	Member, Organizing Committee, 11 <sup>th</sup> ISME Conference	IIT-Delhi	1998-1999	
7.	Vice-President	NSFMFP	1998-1999	
8.	Reviewed papers	International Journal for Solar Energy	1998-1999	
9.	President	NSFMFP	2000-2001	
10.	Participated in Systems	International Seminar of Material Handling	16 <sup>th</sup> -18 <sup>th</sup> November 2000	
11.	Attended and presented the two papers	15 <sup>th</sup> Hydro-Transport, Conference, Banff, Canada	3 <sup>rd</sup> - 5 <sup>th</sup> June 2002	
12.	Attended	3 <sup>rd</sup> North America Conference on Multiphase flow, Banff, Canada	7 <sup>th</sup> June 2002.	
13.	Delivered 2 lectures on CFD in a CEP Course organized by Dr. Ratan Mohan	Dept. of Chemical Engineering	2001-2002	
14.	Reviewer	IJEMS	2002-2003	
15.	Reviewed paper	I Mech. E, UK	2002-2003	
16.	President	NSFMFP	2002-2003	
17.	Member, Executive Committee	Institute of Engineers, Delhi Chapter	2002-2003	
18.	Member, Academic Committee	Aeronautical Society of India	2003-2004	

19.	Executive Member	Institute of Engineers, Delhi Chapter	2003-2004	
20.	Reviewed papers for proceeding	Institution of Mechanical Engineers	2004-2005	
21.	Reviewed papers	Indian Journal of Engineering and Materials.	2004-2005	
22.	Member, Academic Committee.	Aeronautical Society of India	2004-2005	
23.	Attended International Conference on Wear	San Diego, USA	2004-2005	
24.	Organized two meeting in the Dept. of Applied Mechanics	(1) AR&DB (HR Panel) (2) AR&DB (Aerodynamics Panel).	2005-2006	
25.	International Conference "CHOPS- 05"	Hilton Hotel, Sorrento, Italy	August 27 <sup>th</sup> -31 <sup>st</sup> 2006	
26.	33 <sup>rd</sup> National and 3 <sup>rd</sup> International Conference on Fluid Mechanics and Fluid Power	IIT-Bombay	Dec 7 <sup>th</sup> – 9 <sup>th</sup> 2006	
27.	37 <sup>th</sup> AIAA Fluid Dynamics Conference and Exhibit 2007	Miami, Florida, USA	June 25 <sup>th</sup> - 28 <sup>th</sup> 2007	
28.	Attended Inter IIT Staff Sports	IIT-Bombay	Dec 22 <sup>nd</sup> -24 <sup>th</sup> 2007	
29.	Attended Inter IIT Staff Sports	IIT-Kharagpur	Dec 22 <sup>nd</sup> -24 <sup>th</sup> 2008	
30.	39 <sup>th</sup> AIAA Fluid Dynamics Conference	San Antonio, USA	June 2009	
31.	OMAE Conference .	Hawaii, USA.	May 31 <sup>st</sup> - June 5 <sup>th</sup> 2009	
32.	Interaction under EPSRC and Science Bridge Project	Aston University Birmingham, UK	July 3 <sup>rd</sup> -12 <sup>th</sup> 2009	
33.	Alumni Interaction	PAN-IIT	July 2013	