

## Dr. Tanweer Hussain, Ph.D.

Professor, Department of Mechanical Engineering, and  
Mehran University of Engineering & Technology, Jamshoro  
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### CAREER SUMMARY:

Specialist in design, modelling and analysis of mechanical assemblies, stochastic and uncertainty analysis of mechanical system. In general, this research involves controlling variation propagations in Aero-engine assembly and Probabilistic/stochastic analysis of assembly tolerances. Current areas of interest include; 1) Design and the development of vertical axis wind turbines (An indigenous Ph.D. Project.), 2) Enhancing Charge Acceptance and power storage capacity in Lead acid Batteries. A Project with Rainbow High Tech Engineering Company (Pvt) Ltd (the Manufacturer of Bridge Power and Hawk Batteries in Pakistan).

### PAST PROJECTS:

- Involved in inspection of NDT and HDD of 32 inch dia LNG line laid between Jamshoro to Nawabshah (As a consultant with Applus Velosi from 2016 to 2018).
- Power generation enhancement and Heat rate analysis of Jamshoro Thermal Power Plant (2015-2016)
- Involved in assembly design of Jet Engine Casing Rotor at Rolls Royce Plc. UK, (Jan 2008 – Aug 2011). Studied and analysed T-500, T-900 and T-1000 jet-engines for error propagations during assembly and re-designed assembly processes of T-900 and T-1000 engines with effective method of controlling variation propagations in the assembly of these engines.
- Involved in assembly design of Jet Engine Casing with MTU Aero Engines GmbH Germany, (June 2010 – Sep 2011). Studied and analysed Outward Guide Vane (OGV) casing assembly of aero-engine. Developed method for optimisation of assembly process and controlling assembly variation propagations.

### CURRENT PROJECTS:

- Enhancing Charge Acceptance and power storage capacity in Lead acid Batteries. A Project with Rainbow High Tech Engineering Company (Pvt) Ltd (the Manufacturer of Bridge Power and Hawk Batteries in Pakistan).
- Design and modelling of Vertical Axis Wind Turbine, A Unique Spiral Bladed Turbine design. An indigenous Ph.D. Project.

### ACADEMIC RECORD

Date		Name & Address of Institution	Academic Degree / Diploma / Certificate Obtained	Subject / Field of Study
From	To			
May 1996	March 2001	Mehran University of Engineering & Technology, Jamshoro	B.Eng. 1st Division (72.36 %)	Mechanical Eng.
Jan 2004	June 2005	Mehran University of Engineering & Technology, Jamshoro	Post Grad Diploma 1st Division (72.88 %)	Manufacturing Eng.
Nov 2007	March 2012	The University of Nottingham	PhD	Mechanical Eng.
<b>Title Of PhD Thesis</b>		Modelling and Controlling Variation Propagation in Mechanical Assembly of High Speed Rotating Machines		

### PROFESSIONAL TRAINING

1. Condition Monitoring of Rotating Machines:	One Week Training at PRUFTECHNIK, Singapore	2017
2. NDT Level II Certification:	Four Weeks Training at Applus Veloci Pakistan	2016
3. IOSH Managing Safely:	One Week Training at Novax Pakistan	2014

### TEACHING EXPERIENCE

Position	Role
<b>Professor</b> (from 27-10-2016 till to-date) Department of Mechanical Engineering, Mehran UET, Jamshoro	• To oversee the design and development of the overall curricula, and develop and deliver a range of programmes of study (sometimes for entirely new courses) at various levels.
<b>Associate Professor</b> (from 15-04-2013 to 26-10-2016) Department of Mechanical Engineering, Mehran UET, Jamshoro	
<b>Assistant Professor</b> (from 16-07-2012 to 14-04-2013)	

Department of Mechanical Engineering, Mehran UET, Jamshoro <b>Lecturer (from 27-09-2003 to 15-07-2012)</b>	<ul style="list-style-type: none"> <li>• To transfer knowledge including practical skills, methods and techniques.</li> <li>• To conduct research and supervise students at Bachelors, Masters and Doctoral Level</li> </ul>
Department of Mechanical Engineering, Mehran UET, Jamshoro <b>Demonstrator (from 24-04-2003 to 26-09-2003)</b>	
Department of Mechanical Engineering, Mehran UET, Jamshoro <b>Visiting Teacher (from 20-01-2003 to 23-04-2003)</b>	<ul style="list-style-type: none"> <li>• To liaise with industries for opportunities in professional growth and development, collaborate for research relationship</li> </ul>
Department of Mechanical Engineering, Mehran UET, Jamshoro <b>Lab Instructor (from Feb-2008 to Dec-2010)</b>	Teach subjects and conduct Lab at undergraduate Level
School of Mechanical, Materials and Manufacturing Engineering, The University of Nottingham, England UK	Provide training on CAD software Pro-E Wildfire and conduct solid Mechanics Lab at undergraduate Level

## INDUSTRIAL EXPERIENCE

**TRAINING CONSULTANT (from 2018 till to-date) United Energy Pakistan Limited**  
Field Training to the Production operators

**Senior Consultant (from 2016 to 2018) Aplus Veloci Pakistan**

- Monitor the progress of pipeline construction of LNG (42inch Dia.) pipeline project of SSGC as per ROW specifications.
- Coordinating the team of Engineers for inspection of weld joints quality, collection of data for RT, UT, and Hydrostatic testing and resolving pipeline construction problems.
- Instruct the team of Engineers to monitor the work of SSGC subcontractor as per work-order, issue NCRs if any Non-compliance is observed. And submit daily project status reports.
- Maintain safe and clean working environment by enforcing API standards.

**CONSULTANT LEAD ENGINEER (2005 to 2006) Total Waste Management Alliance Plc Contractor with ENI Gas Field, Bhit Mount, District Jamshoro, Pakistan.**

- Maintain project schedule by monitoring project progress; coordinating activities; resolving problems.
- Prepare project status reports by collecting, analyzing, and summarizing information and recommending actions.
- Maintain safe and clean working environment by enforcing procedures, rules, and regulations.
- Processing and recycling of Oil Based Mud / drilling waste.
- Commissioning, installation, operation and maintenance of RotoMill.

**MAINTENANCE & Q.C. ENGINEER (22-06-2001 to 19-01-2003) Dewan Sugar Mills Ltd. (Polypropylene Div)**

- Maintenance of compressors, pumps, extruders, weaving looms, and other plant machinery.
- Supervise Q.C. team and to inspect the product quality to meet the customer's requirement.
- Observe quality inhibiting situation and eliminate these conditions.

## ADMINISTRATIVE AND OTHER EXPERIENCE

- i. **Advisor (23-02-2017 till to-date)** Student Affairs and Career Counselling , Mehran University of Engineering & Technology, Jamshoro, Pakistan.

### **Job Responsibilities**

- Supervise the team of Class advisors to help students to recognize and achieve their educational goals, help students examine University programs, recognize their academic strengths and opt for future career.
- Supervise the team of counsellors to help students with job-related issues, such as finding work, setting career goals and dealing with stress on the job.

- ii. **Co-Director (22-01-2015 to-23-02-2017)** Directorate of Postgraduate Studies, Mehran University of Engineering & Technology, Jamshoro, Pakistan.

### **Job Responsibilities**

- Implementing postgraduate education policy as determined by the University and Ensuring compliance with University policies and regulations.

- To receive and review applications of the Postgraduate students schedule by monitoring project progress; coordinating activities; resolving problems.
- To arrange pre-admission test and interviews for prospective Postgraduate.
- To monitor the progress of Postgraduate students and deal with any issues arising in connection to their postgraduate research studentship.

- iii. **Super Focal Person** Prime Minister's National Laptop Scheme, Mehran University of  
(Feb-2014 till to-date) Engineering & Technology, Jamshoro, Pakistan.

**Job Responsibilities**

- Manage the team of Departmental and Campus Focal Persons.
- Ensuring that all the students are given proper guidance for the application process of PM Laptop Scheme.
- Ensuring that the record of all students is verified and processing the record to HEC Islamabad.
- Planning the arrangement for the distribution of Laptops to all the deserving students.
- Generate report of all assets issued every year and report to HEC Islamabad.

- iv. **University Focal Person** Prime Minister's Fees Reimbursement Scheme, Mehran University of  
(Jan-2016 till to-date) Engineering & Technology, Jamshoro, Pakistan.

**Job Responsibilities**

- Ensuring that all the students are given proper guidance for the application process of PM Fees Reimbursement Scheme.
- Managing the verification process of all the Postgraduate Directorates of the University.
- Receiving funds from HEC, ensuring the proper utilisation of funds against the fees of all Postgraduate students.
- Generate Fund Utilisation Report (FUR) of all funds received every year from HEC and report back to HEC Islamabad.

- v. **Quality Coordinator** Dean Faculty of Science Technology and Humanities, Mehran University of  
(12-02-2004 to 30-07-2005) Engineering & Technology, Jamshoro, Pakistan.

**Job Responsibilities**

- To Implement ISO-9001 standards at the Faculty level.
- Ensuring that all quality standards are delivered and the customer needs are met at their high quality.
- Interact with the department heads and departmental quality coordinators to understand the existing process and document the same.
- Set and document workflow/ procedures for all departments.
- Monitor effectiveness of the Quality Assurance process/ workflow for continuous quality improvement.

- vi. **Warden** Sachal Sarmast Hostel, Mehran University Jamshoro, Pakistan.  
(12-02-2004 to 30-07-2005)

**Job Responsibilities**

- To manage and monitor students' activities and provide basic facilities to the hostel residents.
- Welfare of students, provide pastoral support to the students.
- Actively participate to enhance the social and cultural life of the Hostel.

**7. RESEARCH PROJECTS SUPERVISED FOR MS/M.Phil/PhD STUDENTS:**

PhD Students	
Name of Student	Thesis/Project Title
Muhammad Sharif Jamali (In-process)	Design and CFD Modelling of Spiral Bladed Vertical Axis Wind Turbine for small scale energy production.

<b>M. Eng. Students</b>		
<b>S/N</b>	<b>Name of Student</b>	<b>Thesis/Project Title</b>
<b>COMPLETED</b>		
1	<b>Jameel H. Khaliqdina M.Eng. (Manufacturing)</b>	An Investigation into the Impact of Advance Manufacturing Technologies Implementation on Manufacturing Operations in SMEs
2	<b>M. Sharif Jamali M.Eng. (Manufacturing)</b>	Study of a Mechanical Damper for Endmills using ANSYS Software
3	<b>Naseem Ali Shahani M.Eng. (Manufacturing)</b>	Variation Propagation Modeling and Fabrication of Spiral used in Screw Classifier
4	<b>Shoukat Ali Noonari M.Eng. (Manufacturing)</b>	Development of Nanocerium Oxide And Assessment of Its Antibacterial Efficiency
5	<b>Fahad Abdul Jabbar M.Eng. (Manufacturing)</b>	Development Of Nickel-Flour apatite Composite Layer On Stainless Steel For Bio-Implants Applications
6	<b>G. Y. Mughal M.Eng. (Manufacturing)</b>	Design and Fabrication of Energy Harvesting Shoe
7	<b>Amjad Ali Shah M.Eng. (Manufacturing)</b>	Analysing the effect of changing RAH seal material on the heat rate improvement of 210-mw unit at TPS Muzaffargarh
8	<b>Kanwal Zehra M.Eng. (Manufacturing)</b>	Analyzing the Impact of Implementing Value Stream Mapping (VSM) in Manufacturing Processes
9	<b>Intizar Ali Tunio M.Eng. (Manufacturing)</b>	Comparative analysis of Fluid-structure interaction for different materials of propeller aircraft wing
10	<b>Nadir Narejo M.Eng. (Manufacturing)</b>	Fabrication and Characterisation of Nano-Fibre for Thermal Insulation
11	<b>Aeeman Soomro M.Eng. (Mechatronics)</b>	Design and installation of Controlled drip irrigation system at MUET
12	<b>Faheem Ahmed Mangi M.Eng. (Manufacturing)</b>	Analyzing the impacts of Lean tools and techniques on the efficiency of manufacturing organizations
13	<b>Mehwish Mirza M.Eng. (Mechatronics)</b>	Control and analysis of drip irrigation system
14	<b>Rabia Rashdi M.Eng. (Mechatronics)</b>	Controller Design for the Rotational Dynamics of a Quadcopter
15	<b>Imran Mir Chohan M.Eng. (Manufacturing)</b>	Investigation Of Influence Of Convergent Section Length And Angle On Performance Of Supersonic Nozzle
16	<b>Amjad Ali Solangi M.Eng. (Manufacturing)</b>	Performance Evaluation Of Vertical Axis Wind Turbine (VAWT) Through CFD Analysis
17	<b>Urooj Baig M.Eng. (Mechatronics)</b>	Controller Design For The Translational Dynamics Of Quadcopter
<b>IN-PROCESS</b>		
1		
2		
3		
4		

## 8. MEMBERSHIPS

- Pakistan Engineering Council Life Time Membership as Professional Engineer.
- Accreditation Council Member for the Pakistan Engineering Council Accreditation of Higher Education Institution.
- National Curriculum Review Committee member for Mechanical Engineering, and Energy Systems Engineering Programs under Higher Education Commission Pakistan.
- Member Expert Team, Chartered Inspection and Evaluation Council, Government of Sindh
- Member, Senate, Mehran University of Engineering and Technology, Jamshoro
- Member, Academic Council, Mehran University of Engineering and Technology, Jamshoro
- Member, Board of Studies, Mechanical Engineering Program Mehran University of Engineering and Technology, Jamshoro
- Member, Board of Studies, Energy Systems Engineering Program, Mehran University of Engineering and Technology, Jamshoro

## 9. TRAININGS AND CERTIFICATIONS

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|---|---|
| 4. Condition Monitoring of Rotating Machines: | One Week Training at PRUFTECHNIK, Singapore   |
| 5. IOSH Managing Safely:                      | One Week Training at Novax Pakistan           |
| 6. NDT Level II Certification:                | Four Weeks Training at Applus Veloci Pakistan |

## 10. SOFTWARE SKILLS

- |               |                        |          |
|---------------|------------------------|----------|
| ❖ CATIA V5    | ❖ ANSYS FLUENT         | ❖ MATLAB |
| ❖ Solid-works | ❖ COMSOL Multi-Physics | ❖ CREO   |

## 11. RESEARCH PUBLICATIONS:

- i. Mehwish, Mirza; and Tanweer Hussain. (2018), "Control and Analysis of Drip irrigation system ", International Journal for Research in Applied Science & Engineering Technology (IJRASET), Vol. 6(4): 5069-5074.
- ii. Mir, I.; Samo, S.; Hussain, T., Ali, I., and Durani, H.A.K. (2017), "Influence of Convergent Section Length and Angle on Performance of Supersonic Nozzle ", Sindh University Research Journal (Science Series), Vol. 49(4): 727-732.
- iii. Ali, I.; Samo, S.; Kumar, D.; and Hussain, T. (2017), "Aerodynamic Performance analysis of Rough Rectangular Aircraft Wing for Subsonic flow", Sindh University Research Journal (Science Series), Vol. 49(2): 403-408.
- iv. Shaikh, S. A., Jumani, S., and Hussain, T.(2014), "Investigating the Effects of Assembly Order on the Performance in Relation to Cognitive and Physical Demands Under Takt Time", Mehran University Research Journal of Engineering and Technology, Vol. 33(4): 372-380.
- v. Yang Z., McWilliam S., Popov A. A. and Hussain T. (2013), "A Probabilistic Approach to Variation Propagation Control for Straight Build in Mechanical Assembly", International Journal of Advanced Manufacturing Technology, Vol. 64(5-8), p. 1029-1047. (Impact Factor: 1.205)
- vi. Yang Z., McWilliam S., Popov A. A., Hussain T., and Yang, H. (2013), "Dimensional Variation Propagation Analysis in Straight-Build Mechanical Assemblies Using A Probabilistic Approach", Journal of Manufacturing Systems, Vol. 32(2), p. 348–356. (Impact Factor: 1.070)
- vii. Hussain, T., Memon, A. R., and Larik, J. (2013), "Analysis of Thermal Desorption System for the Chemical Treatment of Old Storages of Oil Based Mud", Mehran University Research Journal of Engineering and Technology, Vol. 32(2), p. 71-80.
- viii. Hussain, T., Abbasi, A. F., and Daudpoto, J. (2013). "Tolerance Analysis in Straight-Build Mechanical Assemblies Using a Probabilistic Approach-2D Assembly", Mehran University Research Journal of Engineering and Technology, Vol. 32(2), p. 319-328.
- ix. Hussain, T., Shaikh, G. Y., and Shaikh, S. A. (2013). "Variation Propagation Control in Straight-Build Assemblies: 2D Case Study", Mehran University Research Journal of Engineering and Technology, Vol. 32(1), p. 71-80.

- x. Shaikh, S. A., Shaikh, G. Y., and Hussain, T. (2013). "Investigating the Effects of Concurrent Performance of Physical and Cognitive Demanding Task in Paced Assembly Lines", *Mehran University Research Journal of Engineering and Technology*, Vol. 32(3), p. 365-372.
- xi. Hussain, T., McWilliam, S., Popov, A. A. and Yang, Z. (2012), "Geometric Error Reduction in the Assembly of Axisymmetric Rigid Components - A 2D Case Study", *Proceedings of the Institution of Mechanical Engineers, Part B, Journal of Engineering Manufacture*, Vol. 226(7), p. 1259-1274. (**Impact Factor: 0.770**)
- xii. Hussain, T., Memon, M. and, Ali, Z. (2012), "Prediction of Elastic-Plastic Behaviour of Structures at Notches", *Mehran University Research Journal of Engineering and Technology*, Vol. 31(3): 545-552.
- xiii. Memon, M., Hussain, T. and, Ali, Z. (2012), "Minimizing Assembly Errors by Selecting Optimum Assembly Sequence in the Assembly of Rigid Circular Structure", *Mehran University Research Journal of Engineering and Technology*, Vol. 31(4): 743-754.
- xiv. Pathan, D. M., Ali, Z., and, Hussain, T. (2012), "Analysis of the Controllers for the Transitional Manoeuvres of Adaptive Cruise Control Systems", *Mehran University Research Journal of Engineering and Technology*, Vol. 31(3): 545-552.
- xv. Ali, Z., Pathan, D. M. and Hussain, T., (2012), "Analysis of an ACC System for Sliding Mode and MPC under Transitional Manoeuvres", *Mehran University Research Journal of Engineering and Technology*, Vol. 31(4): 669-676.
- xvi. Hussain, T., Ali, Z., Daudpoto, J., Khaliqdina, J.H., and Memon, I. A. (2012), "A Probabilistic Tolerance Analysis for Mechanical Assembly of Rotating Machines", *Sindh University Research Journal (Science Series)*, Vol. 44(4): 565-570.
- xvii. Hussain, T., Ali, Z., and Larik, J. (2012), "A Study on Tolerance Representation, Variation Propagation Analysis and Control in Mechanical Assemblies", *Sindh University Research Journal (Science Series)*, Vol. 44(3): 427-432.
- xviii. Ali, Z., Jumani, S., and Hussain, T. (2012), "Sliding Mode Control for Longitudinal Control of a Platoon of Adaptive Cruise Control Vehicles", *Sindh University Research Journal (Science Series)*, Vol. 44(2): 245-250.
- xix. Ali, Z., Jumani, S., and Hussain, T. (2012), "Analysis of the Automotive Powertrain Model for Longitudinal Dynamics Control using Look-up Tables", *Sindh University Research Journal (Science Series)*, Vol. 44(2): 281-290.
- xx. Pathan, D. M., Hussain, T., Daudpoto, J., and Memon, I. A. (2012), "Neural Network Steering Controller for a Ship", *Sindh University Research Journal (Science Series)*, Vol. 44(3): 395-398.
- xxi. Daudpoto, J., Ali, Z., Hussain, T., and Khaliqdina, J.H., (2012), "Design, Development and Characterisation of a Bundled SMA Actuator", *Sindh University Research Journal (Science Series)*, Vol. 44(4): 641-644.
- xxii. Hussain T., Yang Z., Popov A. A. and McWilliam S. (2011), "Straight-Build Assembly Optimization: A Method to Minimize Stage-by-Stage Eccentricity Error in the Assembly of Axisymmetric Rigid Components (Two-Dimensional Case Study)", *ASME Journal of Manufacturing Science and Engineering*, Vol.133(3), p.031014/1-9. (**Impact Factor: 0.727**)
- xxiii. Yang Z., Hussain T., Popov A. A. and McWilliam S. (2011), "Novel Optimization Technique for Variation Propagation Control in an Aero-Engine Assembly", *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*, Vol. 225(1), p. 100-111. (**Impact Factor: 0.770**)
- xxiv. Yang Z., Hussain T., Popov A. A. and McWilliam S. (2011), "A Comparison of Different Optimization Techniques for Variation Propagation Control in Mechanical Assembly", *IOP Conference Series: Journal of Materials Science and Engineering*, Vol.26(1), p. 1-11.

## 12. International Conferences

- i. Soomro, A.; and Hussain, T.; "Design and Installation of Controlled Drip Irrigation System", *International Conference on Energy, Environment and Economics*, Harriot Watt University, Edinburgh, UK. (14-16 August), 2018
- ii. Shah, S. A. A.; Hussain, T.; and Aftab, U.; "Analyzing the effect of changing RAH seal material on the heat rate improvement of 210-MW unit", *1st International Conference on Advanced Materials and Processing (ICAMP-17)*, Mehran University of Engineering and Technology, Jamshoro, Pakistan. (Feb 28-March 2), 2017
- iii. Ali, I, Hussain. T & Qureshi. S "Effect of surface roughness on lift and drag of airplane wing for subsonic flow" presented at *1st International Conference & Exhibition of Chemical Engineering ICECE-16* at Mehran UET Jamshoro on 14th - 16th Jan 2016.

- iv.** Ali, I.; Hussain, T.; Muhammad, H.; and Al-Khfaji, S. S.;(2016), "Parametric study of three blade Vertical Axis Micro Hydro Turbines (VAMHT) by changing blade characteristics". 4<sup>TH</sup> International Conference on Energy, Environment and Sustainable Development 2016 (EESD 2016), November 3-5, 2016, Jamshoro, Sindh, Pakistan.
- v.** Hussain T.; (2014), "A Fully Non-Linear Model for Modelling Variation Propagations in Mechanical Assemblies". International Symposium on Green Manufacturing and Applications (ISGMA 2014), June 24-28, 2014, Busan, South Korea.
- vi.** Hussain, T.; Yang, Z.; Popov A. A.; and McWilliam S.; (2010), "Controlling Variation Propagations in Straight Build of an Assembly by Process Optimization Methods (2D Case Study)". 21st International Computer –Aided Production Engineering Conference (CAPE 2010), Edinburgh, UK.
- vii.** Yang Z., Hussain T., Popov A. A. and McWilliam S., (2009), "A Comparison of Different Optimization Techniques for Variation Propagation Control in Mechanical Assembly". Trends in Aerospace Manufacturing (TRAM 2009) International Conference, Sheffield, UK.