**Alaa Eldin Elsaeed Dawood**

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**University:** Benha University,

Faculty of Engineering at Benha,

Benha, Qalubia, Egypt.

**Personal Details:**

**Birth:** Nov. 21st, 1972, Egypt.

**Nationality:** Egyptian **Marital Status:** Married

**Education and Qualifications:**

**B. Sc.** in Mechanical Power Engineering, 1995, Benha Higher Institute of Technology (BHIT), Benha

University, Egypt, with a very good Honors degree, 1st class graduate.

Prerequisite courses for MSc study in BHIT, Benha University. Modules included: “Advanced study in Internal Combustion engines”, “Theory of Combustion”, “Advanced Thermodynamics”, “Advanced Measurements”,” Advanced Heat Transfer” and “Advanced Numerical Analyses”.

**M. Sc.**, in Mechanical Power Engineering, 2003, BHIT, Benha University, Egypt, Thesis entitled “Effect of Alternative Fuel on Internal Combustion Engine Performance and Pollution”. Experimental evaluation of Diesel engine performance and emission using blends of jojoba oil byproducts and Diesel fuel

Prerequisite courses for PhD study in Cairo University. Modules included: “Advanced Flow Measurements Techniques and Instrumentations”, “Theory and Application of Turbulence” and “Turbulence in combustion”.

**Ph.D. study**, in Mechanical Engineering, University of Leeds UK. Thesis entitled “Combustion and Flow Characteristics in a Disc-Shaped Spark Ignition Engine”. This study focused on the simultaneous effect of flow structure inside a spark ignition engine, evaluated using different Laser based measurements Techniques (LDV and PIV), on flame propagation. During the study different phases were taken place. The first phase focused on comparing the simultaneous flow measurements inside the engine using LDV and PIV (PIV measurements were analyzed temporally like LDV technique). In the second phase the flow inside the combustion chamber was mapped over the entire compression stroke using PIV technique. Finally, the third phase focused on simultaneous measurements of in-cylinder pressure, in-cylinder flow and flame propagation using PIV and natural light imaging techniques. A novel technique to investigate in-cylinder flow during the combustion events was established but not included in the Thesis. Separate study where different methodologies were applied to investigate integral length scale at different operating conditions was also not included

**Work Experience**

**Lecturer**, Mechanical Engineering Department, Benha School of Engineering, Benha University, Egypt, 2011.

**PhD student**, School of Mechanical Engineering, Leeds University, Leeds, LS2 9JT, UK

2006- 2011. Duties included:

* Setup and developed an experimental test rig involving a fully accessible optical spark ignition engine with instrumentations to measure engine operating parameters, engine peripherals, flow measurements systems (PIV and LDV) and flame imaging system.
* Designed and built prototype engine with complete optical access (in both vertical and horizontal axes) and interchangeable inlet manifolds.
* Fully operated the test rig and analysis of the output data.
* Studied all aspects of combustion in the internal combustion engine and the influence of turbulence on combustion.
* Trained MSc students and junior PhD students in the methodology of operating the engine and analyzing data.
* Skills development through attending different courses, seminars and conferences.
* Responsible for combustion laboratory Health and Safety implementation & observation.
* Conducted safety audits for the combustion laboratory.
* Participated in providing lab guidelines for equipment operation and handling (SOP).

**Lecturer assistant**, Mechanical Engineering Department, BHIT, Egypt, 1997-2006. Duties included:

* Management and supervision of the combustion laboratory in B.H.I.T.
  + Supervised and directed laboratory technicians and assistants.
  + Developed and implemented measures for safe handling/storage/disposal of hazardous substances in accordance with relevant regulations.
  + Co-ordinated use of all materials around the laboratory.
  + Developed and implemented operational guidelines and practices in the lab (e.g. safety policy and SOP).
  + Reviewed, evaluated and modified laboratory practice - suggest alternatives/developed practical exercises.
  + Oversaw the production of safety assessments for all activities within the laboratory.
  + Created and maintained chemical and equipment databases.
  + Assisted with the development of laboratory designs.
  + Managed experimental trials.
  + Diagnosed equipment malfunctions.
  + Performed calibration checks and operated specialist laboratory equipment and instruments.
  + Oversaw maintenance of equipment.
  + Evaluated and selected equipment and made recommendations for purchase.
  + Recognized abnormal results and ways to rectify same.
  + Was responsible for maintaining quality data collection and lab database.
  + Supervised some of the industrial research projects that related to combustion.
  + Setup a lab for testing new alternative diesel engine fuels (jojoba oil and its byproducts) as part of experimental phase of my MSc study.
  + Liaised with commercial companies.
  + Liaised with other laboratories to share resources.
  + Supported individual research groups.
* Continued teaching undergraduate courses.
* Supervised the final year projects of the BSc students.
* Supervised junior demonstrators and teacher assistants.

**Planning and Management Officer**, Egyptian Military Forces, 1996-1997. Associate Director of the Planning and Management Unit of Civil Services Sector (west Delta branch).

Duties included:

* Leading a team of 40 military engineers to design and construct the telephone network infrastructure in one of the largest states in Egypt.
* Planned and scheduled work for the group to ensure proper distribution of assignments for five thousand soldiers, officers and external contractors.
* Ensured synchronization of project tasks.
* Planned and implemented the overall project policies, procedures, and services.
* Ensured that all projects operated according to the standard guidelines regarding Health & Safety roles.
* Total project management including resources, delivery and costs.
* Oversaw the ordering of supplies.
* Organized and managed the proper work flow.

**Demonstrator**, Mechanical Engineering Department, BHIT, Egypt, 1995-1996. Duties included:

* Teaching the following undergraduate courses: “Combustion theory, internal combustion engine fundamentals, applied thermodynamics, heat transfer, fluid mechanics, maintenance of refrigeration and air conditioning systems”.
* Research supervisor for final year students.

**Research Interests:**

* Alternative Diesel engine fuels (vegetable oils) and their influence on engine emissions.
* Characterization of an in-cylinder flow structure (using optical techniques) and its effect on combustion.
* Methodology to quantify flow parameters.
* Developing a novel technique to characterize flow structure during combustion events.
* Cyclic variability measurements of in-cylinder engine flows using high-speed PIV.
* Effect of intake manifold configurations on flow field structure and the performance of internal combustion engines.
* Effect of turbulence on combustion and emission.
* Effect of high voltage on flame propagation.
* Advanced laser diagnostics in internal combustion engine.
* Spray characterization and its effect on engine performance and emission.
* Combustion characterization in constant volume combustion vessels.
* Flame stability.
* Influence of electrical fields on combustion.

**Selected Publications:**

1. Huzayyin A. S., Bawady A. H., Rady M. A., and Dawood A., 2004, Experimental Evaluation of Diesel Engine Performance and emission using blends of jojoba oil and Diesel fuel, Energy Conversion and Management, Vol. 45 , pp.2093-2112.

2. Huzayyin A. S., Bawady A. H., Rady M. A., and Dawood A., 2004, Performance and emission characteristics of Diesel engine using blends of jojoba oil and jojoba methyl ester with gas oil, Journal of Engineering Sciences, Faculty of Engineering, Ain Shams University, Egypt, Vol. 39, No. 2, pp.

473-495.

3. Dawood A.,"Effect of Engine Operating Parameters on Cyclic Variability in a S.I. Engine”, in progress.

4. Dawood A.,"Comparison between Simultaneous LDV and PIV Techniques in the Characterization of in-cylinder Flow in a S.I. Engine”, in progress.

5. Dawood A.,"In-cylinder Flow Characterization during Compression Stroke in a Disc-shaped S.I. Engine Using PIV Technique”, in progress.

6. Dawood A.,” In-cylinder Flow and Flame Propagation Interaction in a Disc-shaped S.I. Engine”, in progress.

**Continuing Education and Training Programs:**

* Training courses on operating and maintaining power plant components in Shoubra ElKhema Thermal Power Station ,(Jun- December, 1992 and 1993 ) and Elmahmoudia combined power station (Jun- November )1994.
* Short course for operating and maintaining hydraulic turbine in Aswan High dam, December, 1994.
* Prerequisite courses for MSc degree, BHIT, Benha University, 1997- 1998.
* Prerequisite courses for PhD degree, Cairo University, 2004- 2005.
* Leadership training course for two weeks, Institute of Leadership Preparation, September, 2005.
* COSSH, Leeds University, 21st of June, 2006.
* Fire Awareness, Leeds University, 18th of September, 2006.
* Health and Safety Awareness, Leeds University, 7th of December, 2006.
* Manual Handling Principles & Practice, 18th of January, 2007.
* Compressed Gas Equipment, Leeds University, 2nd April, 2007.
* Laser Safety course, Leeds University, 20th March, 2007.
* Attended a short course on Spark Ignition Engine Combustion, Continuing Professional Development (CPD) Centre in Leeds, 4th -8th June, 2007.
* UNICEG meeting, Jaguar, Castel Bromwich, Birmingham, “Engine Modeling and Measurements”, 26th April, 2007.
* UNICEG meeting at Lotus, Norfolk, UK, 9th April, 2008.
* Lab View Core 1 and 2 courses, Leeds University, 24th – 28th November, 2008.
* UNICEG meeting at Birmingham University, UK, December, 2008.
* PIV/LIF Imaging Dantec Dynamic Seminar, Leeds University, 3rd of June, 2009.
* Fire extinguisher training, UK, 2010.
* Laboratory safety training, UK, January 2010.

**Referees**

Prof. C.G.W. Sheppard

Professor of Applied Thermodynamics and Combustion

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Prof. Mohamed Said Attia Shehata

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