

# CV

## **Alaa Mohamed Ahmed El-Butch Professor of Mechanical Design & Vice Dean for student affairs**

### PERSONAL DATA

**Date of birth:** 5/11/1960  
**Nationality:** Egyptian  
**Martial status:** Married with 2 Sons.

### Address:

**Mechanical Design Dept.  
Faculty of Engineering  
Mataria, Cairo, Egypt  
Tel. 202 26333813 Fax. 202 26332398  
Email: elbutch@aucegypt.edu**

### EDUCATION:

- **B. Sc. in Mechanical Engineering, (1983) Helwan University.**
- **M. Sc. in Mechanical Design, (1989) Helwan University.**
- **Ph.D. in Mechanical Design, (1994), Channel system between Leeds University, UK and Helwan University.**
- **Associate Professor in Mechanical design, (2001)**
- **Professor in Mechanical design, (2006) to present**

### CURRENT POSITION

**Dean of the Faculty of Engineering, Egyptian- Russian University, Cairo, Egypt.**

### SKILLS:

#### Academic skills

- **Teaching spectrum of Mechanical design, production, 3D modeling and numerical methods courses (Basic and advanced)**
  - **Accreditation of Engineering Programs (Assisted in ABET accreditation and re-accreditation of the Mechanical Engineering Program of the American University in Cairo) and currently involved in accreditation process of the mechanical engineering program of the faculty of Engineering, Mataria, Helwan University.**
- Involved in the national accreditation of the faculty of Engineering, Mataria**
- **2 D and 3D CAD modeling.**

#### Professional (Applied) skills

- Reverse Engineering of equipment and spare parts (for many Egyptian companies).
- Research and Development R&D
- Design of capital equipment (Designed many equipment over the last ten years).
- Consultancy, (to many Egyptian companies), in the field of mechanical design and solving engineering problems.
- Piping, tanks and pressure vessel design.
- Environmental auditing of factories.
- Fault diagnosis of mechanical systems
- Revision and verification of mechanical designs and product for market approval.

#### **FUNDED RESEARCH AND PROJECTS:**

- 1994      Environmental auditing of some factories in Helwan region, Cairo, Egypt  
Funded by the Academy of scientific research and technology, Cairo
- 1995      Planning and Designing of a factory for feeding industries  
Funded by the Academy of scientific research and technology, Cairo
- 1999      Feasibility study of producing a refrigerated moving van for the Forced army, Egypt, Funded by the Forced Army, Egypt.
- 1996:2006      Seven Research grants from the American University in Cairo to Make researches in the field of Tribology, ( 14 papers were published from these researches)
- 2006- 2008      Funded project to develop teaching of engineering drawing funded By the Eastern Tobacco Company.
- 2009- 2012      Involved in MSV TEMPUS Project: JP-00338-2008 to construct a master of engineering in sound and vibration.  
– Involved in a CIQAP project to develop the laboratories and workshops of the faculty of engineering, Mataria, to prepare it for national accreditation
- 2013- 2016      STDF project "Local Development and Manufacturing of Energy Recovery Pressure Boosting Devices for RO Desalination Plants"

#### **TEACHING ACTIVITIES:**

##### **UNDERGRADUATE COURSES:**

**Taught the following courses after awarded the Ph.D degree**

1. Mechanical Design I & II
2. Mechanics
3. Strength of materials
4. Stress Analysis

5. Engine Design
6. Production technology
7. Engineering Drawing (using tools and CAD)
8. Mechanical Drawing (using tools and CAD)
9. Numerical Methods for engineers
10. Computer graphics and geometric Modeling for engineers
11. Undergraduate thesis I
12. Undergraduate thesis II

**POST –GRADUATE COURSES:**

Tribology, Friction Induced Vibration, Piping system design, Tanks and pressure vessel design, Dynamic Friction, Hydrodynamic and Hydrostatic bearings, Advanced Tribology, Advanced numerical methods, Graduate seminar I, Graduate seminar II, Maintenance engineering

**TRAINING COURSES:**

Taught many courses to engineers from industry through the Engineering services at the American University in Cairo, Cairo University, Helwan University, and many consultation offices. The courses are in the following areas

- Mechanical design
- System design
- Fault diagnosis
- Slider bearings
- Anti-friction Bearings, designation, calculations, selection, maintenance, mounting and dismounting, and lubrication
- Tanks and pressure vessels
- Pumps and valves
- Reverse engineering
- Maintenance
- Computer Aided Drafting 2D
- 3D modeling
- Lubrication Technology
- Design and manufacturing of spare parts
- Design of fire fighting systems

**YEARS OF SERVICE:**

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|-------------|--|
| 1984-1992   | Research student at the mechanical Design Dept., Helwan University, Cairo.   |
| 1983- 1984  | Mechanical systems installation and operation during the obligatory military service.  |
| 1984- 1987  | Consultant in systems design and installation for the Egyptian Armed Forces after finishing the military service.                                |
| 1985 – 1992 | Designer of elevators, piping and fire fighting systems for huge stores and buildings through the consultant office (Ikhlas Hosny, Dokky, Cairo, |

- Egypt).
- 1992-1994 Research student, mechanical engineering Dept., Leeds University, Uk
- 1994 – 1997 Part time researcher, Scientific research Academy, Cairo, Egypt.
- 1994- 1996 Assistant professor of Mechanical design, Faculty of engineering, Mataria, Cairo, Helwan University
- 1996- 3003 **Visiting assistant and associate professor at the American University in Cairo.**
- 2006- Now Professor of Mechanical design, Faculty of engineering, Mataria, Cairo, Helwan University
- 1998 –2000 A member of the Tribology and spare parts center, Faculty of Engineering, Cairo University.
- 1998- 1999 Involved in ABET accreditation of the mechanical engineering program of the American University in Cairo.
- 2001- 2002 Involved in ABET re-accreditation of the mechanical engineering Program of the American University in Cairo.
- 2000 - Now Principal member of the research center for design and manufacturing of spare parts, equipment and production lines, Faculty of Engineering, Mataria, Helwan University
- 2009- 2011 Head of Mechanical design, Faculty of engineering, Mataria, Cairo, Helwan University
- 2011- Now Vice dean, Faculty of engineering, Mataria, Cairo, Helwan University

### **THESIS SUPRVISION**

- Ten M. Sc Thesis
- Six Ph D. Thesis
- Many Undergraduate thesis at the American University in Cairo & Faculty of engineering, Mataria

### **PUBLISHED PAPERS & BOOKS**

- 10 International journal papers
- 4 Local journal papers
- 40 International Conference papers
- 2 Books (Technology for the preparatory school level and Heavy duty equipment for the technical secondary school level)

### **Reviewer for four prestigious international journals, namely,**

- Tribology International, (Elsevier)
- Journal of Engineering Tribology, (Elsevier)
- Advances in Tribology
- Applied Mathematical Modelling (Elsevier)

( Refereed 35 international scientific journal papers for the three journals in addition to refereeing many international conferences papers).

External Reviewer for the new engineering programs and private higher engineering institute auditing, ( supreme council of universities)

Attended many training courses for external evaluation of engineering programs.

Reviewer, for the promotion committee for professors, (supreme council of universities)

Also attended a huge number of conferences and workshops worldwide.

## **Important publications**

### **International Journal Publications**

1- A. El-Butch, R. El-Badrawy, and M. O. Mokhtar, " An Approach to the Study of the Elasto-Plasto Hydrodynamic Lubrication in the Wire drawing process (Part I Experimental Work)",  
**Journal of Lubrication Science, Vol. 6 No. 2, 1994.**

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2- A. El-Butch, R. El-Badrawy and M. O. Mokhtar, "An approach to Study Of the Elasto-Plasto Hydrodynamic Lubrication in Wire Drawing Process", (Part II, Theoretical Predications),  
**Journal of Lubrication Science, Vol. 6 No. 3, 1994.**

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3- A. El-Butch and N. Ashour, " Analysis of Heavy Duty Tilting-Pad Journal Bearing Taking into Account Pad Distortion and Possible Adoption of Rubber Pad Segments",  
**Tribology International, Vol. 32 (1999), pp. 285-293.**

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4- A. M. El-Butch, " The Effect Bubble oil on the Thermo-Hydrodynamic Performance of Tilting-Pad Journal Bearings Subjected to rotating Unbalance Load", **International journal of the Italian association of theoretical and applied mechanics (MECCANICA), Vol 36, No. 6, pp. 717-729, 2001.**

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5- M. O. Mokhtar, I. M. Ibrahim and A. El-Butch, "New suspension design for heavey duty trucks: Dynamic considerations", SAE 2000 Transaction,  
**J. of Commercial Vehicles, Section 2, Vol. 109, pp 669-677.**

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6- A. M. El-Butch, " Transient thermohydrodynamic lubrication of connecting rod big-end bearings", SAE paper No. 2002-01-1731, SAE Transaction, **J. of fuels and lubricants, section 4, Vol. 111.**

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7- I. M. Ibrahim M. O. Mokhtar, and A. El-Butch, "New suspension design for heavy duty trucks: Design considerations", SAE 2003 Transaction, **J. of Commercial Vehicles, Section 2, Vol. 112, pp 404-413.**

8- A. M. A. El-Butch, and N. El-Tayeb, " Surface roughness effects on thermo-hydrodynamic lubrication of journal bearings lubricated with bubbly oil", **Journal of Lubrication Science, Vol. 18, No. 1, 2006, pp 49-61.**

9- A. M. A. El-Butch, and N. Ashour," Transient analysis of misaligned elastic tilting-pad journal bearing", **Tribology International, Volume 38, Issue 1 , January 2005, Pages 41-48**

10- A. H. I. Mourad, N. Bekheet, A. El-Butch, L. Abdel-Latif, D. Nafee and D.C. Barton, "The effects of process parameters on the mechanical properties of die drawn polypropylene", **Polymer Testing, Volume 24, Issue 2 , April 2005, Pages 169-180.**

**11-** A.A.Srag, A. M. A. El-Butch, T. A. El-Sayed; Buckling of thin walled long steel pipes subjected to external pressure in process industries, *International journal of innovative science, Engineering & Technology*, 2(2015) 434-444

12-Kamal, A. M., El-Sayed, T. A., El-Butch, A. M. A., &Farghaly, S. H. (2016). Analytical and finite element modeling of pressure vessels for seawater reverse osmosis desalination plants. *Desalination*, 397, 126-139.

13- Kamal, A. M., El-Sayed, T. A., Farghaly, S. H. ,& El-Butch, A. M. A. Failure pressure of composite membrane housing for SWRO desalination plants, (2016)

. *Desalination, article in press.*

14- Abdelgawad H.A. M., El-Sayed, T. A.,& El-Butch, A. M. A. , An investigation into the performance of the hydraulic turbocharger. *Chinese Journal of Mechanical Engineering, under review.*

## **Local Journal Publications**

1- L. Abdel-Latif, A. Ammam, and A. El-Butch, "Experimental Investigation of Journal Bearing Under Dynamic Loading" **Engineering Research Journal of the Faculty of Engineering and Tech., Mataria, Vol. 8,1989.**

2- I. M. Ibrahim, A. El-Butch and T. El-Mahdy, "FE-Lumped Parameter Analysis of Friction Induced Vibrations in Disc Brake System Considering Pad Longitudinal Elasticity", **Engineering Research Journal of the Faculty of Engineering, Mataria, Vol. 58, P. 110, August, 1998.**

3- A. El-Butch, " Effect of Friction Materials' Tribological Properties on the Dynamic Behaviour of medium trucks Braking system" **Engineering Research Journal of the Faculty of Engineering and Tech., Mataria, Vol. 62, April, P209, 1999.**

4- A. M. El-Butch . I. M. Ibrahim and N. M. Ashour, " On the Effect of Distortion and Surface Roughness on Frictional Vibrations Induced in Mechanical Systems, " **Engineering**

## **International Conferences Publications**

1- M. O. Mokhtar, and A. El-Butch, "On The Effect of Pressure And Temperature On The Hydrodynamic behavior of Journal Bearing Under Laminar Flow" Proceeding of the **7th International Conference on Numerical Methods in Laminar and Turbulent Flow, Stanford, UK, 15-19 July, Vol. II, Part 1,1991.**

2- A. El-Butch, T. C. Childs, M. O. Mokhtar and R. El-Badrawy, "A Theoretical Assessment Of Lubrication Behavior In Hydrostatic Extrusion Process", Proceeding of the **6th Nordic Symposium On Tribology, Nordtrib'94, Uppsala, Sweden, 12-15 June, 1994.**

3- A. El-Butch, T. C. Childs, M. O. Mokhtar and R. El-Badrawy, " Reappraisal Of Hydrodynamic Lubrication In Metal Rolling Process" Proceeding of the **22nd Leeds-Lyon Symposium on Tribology, 6-9 Sept., Leeds, UK, 1994.**

4- A. El-Butch, M. O. Mokhtar and S. El-Badrawy, "The Effect of Additives to Mineral Oils on the Wear of Metals" Proceeding of the **Hungarian Chemical Society Conference on the environmental aspects in production and utilization of lubricants, 13-15 Sept., 1995.**

5- M. O. Mokhtar, A. El-Butch and S. El-Badrawy, "A Comparative Study on the Tribological Contribution of EP Additives to Mineral Oils", proceeding of the 11th International Colloquium Tribology, (Tribology 2000), **Industrial and Automotive Lubrication, 13-15 Jan, Stuttgart / Ostfildern, Germany, P. 1777, 1998.**

6- I. M. Ibrahim and A. El-Butch, "Effects of Non-Newtonian Behaviour in Connecting Rod Big-End Bearings", proceeding of the **11th International Colloquium Tribology, (Tribology 2000), Industrial and Automotive Lubrication, 13-15 Jan, Stuttgart / Ostfildern, Germany, P. 959, 1998.**

7- A. El-Butch and I. M. Ibrahim, " Modeling and Analysis of Geometrically Induced Vibration in Disc Brakes Considering Contact parameters", **SAE paper No. 1999-01-0143, 1999 SAE Congress & Exposition, 1-4 March, Detroit, USA,** Book entitled Brake technology and ABS/TCS Systems, Published by the Society of Automotive Engineers, p 43, March, 1999.

8- A. El-Butch, " The Influence of Friction Materials' Tribological Properties on the Dynamic Behaviour of Disc Brakes", Proceeding of the **6th International Congress on Sound and Vibration, Technical University of Denmark, Copenhagen, 5-8 July, 1999.**

9- E. Rabeih, A. El-Butch and I. Ibrahim, " A study of Self Excited Vibration of a Two-Pin-Disc System with Particular reference to disc-Brake", Proceeding of the **6th International Congress on Sound and Vibration, Technical University of Denmark, Copenhagen, 5-8 July, 1999.**

10- N. M. Ashour and A. M. El-Butch , " Prediction of the Thermal Characteristics of Thrust Bearing With Arbitrarily Pivoted Pad ", **12 th International Colloquium Tribology Stuttgart / Ostfildern , Germany , Vol . II , Page 1361 – 1369 , January 11-13 , 2000 .**

11- A. M. El-Butch, " Evaluation of Friction Materials' Tribological Properties and their Effect on the Dynamic Response of disc brake Systems", The international conference on Automotive Braking – **Technology for the 21st Century, sponsored by IMeche, SAE and Leeds University, July, 2000.** Also appeared in a **Professional Engineering** Publishing book by (IMEche) under a title "Brakes 2000, edited by D. Barton and S Earls, ISBN 1 86058 261 3, pp 51-60.

12- A. M. El-Butch, " Effect of Air Bubbles on the Thermo-Hydrodynamic Performance of Journal Bearings", Proceedings of the **5th Engineering System Design and Analysis Conference Sponsored by ASME International, Montreux, Switzerland, July 10-13, 2000, pp 499-506.**

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13- A. M. El-Butch, " Evaluation of Friction Materials' Tribological Properties and their Effect on its Dynamic Response of disc brake Systems", **paper No. 2001-01-0949, 2001 SAE Congress & Exposition, 5-8 March, 2001, Detroit, USA.**

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14- N. M. Ashour and A. M. A. El-Butch, " On the performance of fixed pad thrust bearings", **14 th International Colloquium Tribology, January, 13-15, Stuttgart, 2004.**

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15- A. M. A. El-Butch, and N. Ashour, "Hydrodynamic performance of tilting-pad thrust bearing with wavy surface", Proceedings of **TRIB2004 2004 ASME/STLE International Joint Tribology Conference, Long Beach, California USA.**

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16- A. M. A. El-Butch, "Misaligned effects on the lubrication behaviour of crankshaft bearings", Proceedings of **TRIB2004 2004 ASME/STLE International Joint Tribology Conference, Long Beach, California USA.**

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17- A. Fawzy, Y.K. Youness, A. El-Butch and I. M. Ibrahim, "An Investigation of riction Dynamics of Mass Spring System with Base Excitation", **IMECE2005, 2005 ASME International Mechanical Engineering Congress and Exposition, November 5-11, 2005, Orlando, Florida USA.**

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18- A. Latif Youness, L. A. Abdel-Latif, and A. El-Butch, "Elasto-Hydrodynamic Analysis of Human Artificial Hip Joint Prostheses", accepted for presentation at the of **IMECE2005, 2005 ASME International Mechanical Engineering Congress and Exposition, November 5-11, 2005, Orlando, Florida USA.**

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19- M. O.A. Mokhtar, A. El-Butch and I. M. Ibrahim, " Adoption of Floating-Ring Bearing Design in Automotive Applications" **SAE paper No. 2005-01-3783, SAE meeting on 2005 Powertrain & Fluid Systems Conference & Exhibition, San Antonio, TX, USA, 24-27 October, 2005.**

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20- A. El-Butch, N. Bekheet, " The effects of process parameters on the Tribological behavior of die drawn polypropylene", **15th International Colloquium Tribology, January 17– 19, 2006, Stuttgart / Ostfildern, Germany.**

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21- M. O. Mokhtar, S. A. R. Naga and A. M. El-Butch , "A New Approach to the Assessment of Friction Losses in Polymeric Materials", **15th International Colloquium Tribology, January 17– 19, 2006, Stuttgart / Ostfildern, Germany.**

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22- **A. Bahzad, L.A. Abdel-Latif and A. El-Butch, " Thermo-Hydrodynamic Analysis of Rough Journal Bearing", 8th Biennial ASME Conference on Engineering Systems Design and Analysis, ESDA 2006, Torino, Italy, 4-7 July 2006**

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23- **A. Kamal, El-Butch, A, F. Faheem, "Effect of the friction material ingredients on the frictional and dynamic behavior of disc brakes", ICSV 17 - 18-22 July 2010, Cairo, Egypt**

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24- A. Bahzad, A. El-Butch, A, F. Faheem, "A Study on Stick-Slip Vibration for Dry and Boundary lubricated friction with Mass-On-Moving-Belt", **ICSV 17 - 18-22 July 2010, Cairo, Egypt**

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25- A. El-Butch, A. F. Faheem, "A Study on Vibrations Induced by Dry Friction ", **ICSV 17 - 18-22 July 2010, Cairo, Egypt**

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three other papers are under publications

## **International local Conferences Publications**

1- A. El-Butch, " A Study on Point Contact Elasto-Hydrodynamic Lubrication under Combined Rolling and Squeeze Film Motion", Proceeding of the **8th International Military technical College, Cairo, Egypt, 12-14 May, P 191, 1998.**

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2- I. M. Ibrahim, A. El-Butch and N. Ashour, “ A Study on Frictional Vibrations Induced in Disc Brakes”, proceeding of the **5<sup>th</sup> Conference on the Egyptian Society of Tribology, April 10-12, p. 307, 1999.**

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3- A. M. El-Butch, “ Non-Newtonian Effects on Thermo-Elstohydrodynamic lubrication of piston skirts”, proceeding of the **6<sup>th</sup> International conference of the Egyptian Society of Tribology, 28-29 December, 2002, pp269-278.**