

Chiara Scapecchi

 **Work** : Viale del Risorgimento 2, DIN, 40136, Bologna, Italy

 **Email:**

 **Phone:**

Gender: Female **Date of birth:**

Nationality: Italian

EDUCATION AND TRAINING

[01/11/2020 – Current]

PhD in Automotive for an Intelligent Mobility

University of Bologna

Address: Viale del Risorgimento 2, DIN, 40136, Bologna, Italy

Field(s) of study: Machines design

Thesis: Fretting fatigue in automotive components

Supervisor: Professor Massimiliano De Agostinis

Still nowadays, there is no univocal method that allows engineers to design components to fretting fatigue, even though many different approaches have been proposed during the years, such as fretting maps and the SWT parameter .

The basic idea behind my research is to combine the two different approaches in order to identify the areas that might be affected by fretting fatigue (through the usage of fretting maps) and where there might be a crack initiation (through the usage of the SWT parameter).

[18/12/2019]

Mechanical Engineering Degree

University of Bologna

Address: Viale del Risorgimento 2, 40136, Bologna, Italy

Final grade: 110/110 with Honours **Level in EQF:** EQF level 7

Thesis: Fretting fatigue analysis in aluminium components for motorcycle applications

RESEARCH INTERESTS

Fretting Fatigue

In particular: identification of a design method univocally applicable in order to overcome fretting fatigue.

Joining Technologies

In particular: threaded joints, adhesive, friction and hybrid joints.

The research concerned the experimental characterization, numerical modeling and design of joints for application in the automotive, earthmoving and industrial sectors.

Design for Additive Manufacturing

In particular: static and fatigue characterization of specimens obtained by 3D printing, both plastic and metallic. Re-design of components for additive manufacturing, e.g. by means of topology optimization.

Failure analysis and structural optimization,

In particular: Finite Element Analysis supported by experimental stress analysis for the determination of the root-cause of failure in mechanical structures and machine parts, redesign of components and machine groups aiming at reducing weight, cost and/or increasing performance.

Low Cycle Fatigue

In particular: low cycle fatigue characterization of materials used mainly in the agricultural machinery field, both at low temperature and room temperature.

PUBLICATIONS

[2023]

Fretting fatigue of interference fitted joints: development of a novel specimen for four-point rotating-bending tests and experimental results

D. Croccolo, M. De Agostinis, S. Fini, G. Olmi, L. Paiardini, F. Robusto, C. Scapecchi, Engineering Failure Analysis,

Volume 144, 2023

[2022] **Fretting Fatigue in Mechanical Joints: A Literature Review.**

Croccolo D, De Agostinis M, Fini S, Olmi G, Robusto F, Scapecchi C. *Lubricants*. 2022; 10(4): 53.

[2022] **An Investigation About the Ageing Behaviour of Pre-Applied Threadlockers.**

De Agostinis, M, Croccolo, D, Fini, S, Olmi, G, Robusto, F, & Scapecchi, C.

Proceedings of the . Volume 2: Computer Technology and Bolted Joints; Design and Analysis. Las Vegas, Nevada, USA. July 17–22, 2022.

Experimental Investigation on the Fatigue Strength for Different Tightening Procedures and Materials in Metric Screws.

Fini, S, Croccolo, D, De Agostinis, M, Olmi, G, Robusto, F, & Scapecchi, C.

Proceedings of the . Volume 2: Computer Technology and Bolted Joints; Design and Analysis. Las Vegas, Nevada, USA. July 17–22, 2022. V002T02A031. ASME.

CONFERENCES AND SEMINARS

[07/09/2022 – 09/09/2022] **AIAS 2022 - Presentation** Padova, Italy

"Comportamento a fatica della lega AlSi10Mg a seguito di processo additivo: effetti dell'orientamento e dei trattamenti termico e superficiale" - Croccolo D., De Agostinis M., Fini S., Olmi G., Paiardini L., Robusto F., Scapecchi C.

"Fatigue behavior of AlSi10Mg manufactured by additive manufacturing: effects of the build orientation, heat and surface treatments"

LANGUAGE SKILLS

Mother tongue(s): Italian

Other language(s):

English

LISTENING C2 READING C2 WRITING C2

SPOKEN PRODUCTION C2 SPOKEN INTERACTION C2

Spanish

LISTENING B1 READING B2 WRITING B1

SPOKEN PRODUCTION A2 SPOKEN INTERACTION A2