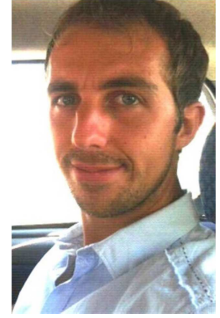


2 GF Mount St, Cirencester
Gloucestershire, UK,
GL7 1TJ

Mobile: +44 (0)7706 895172
Skype: davide,tonelli

Email: davide.tonelli86@gmail.com

Website: www.dic.unipi.it/davide.tonelli/



Davide Tonelli

Work and Vocational Experience

Mar. 2015 **Structural Engineer** at *OPS Structures Ltd., Cirencester, UK.*
-ongoing

I am currently working as a structural engineer at OPS Structures Ltd., a structural engineering consultancy recently set up in Cirencester (Gloucestershire) by former heads of Atkins office in Oxford: Mike Otlet, Dominic Pask and Mike Stephens.

During this period I have carried out:

1. Scheme design for a complex of 6 RC multi-storey buildings in Qatar;
2. Detailed design for one of the six aforementioned buildings;
3. Detailed design for a long span steel canopy in Qatar;
4. Detailed design for the steel enclosure roof of all the six aforementioned buildings;
5. Preliminary design of a 15 m tall totem structure in the Opera House area, Dubai;
6. Technical review of the remedial works for a multi-storey car park in Oman;
7. Scheme design for a multi-storey car park in Qatar;
8. Scheme design for Riyadh Western Metro Station;
9. Detailed design for the façade of a 150 m tall tower in Saudi Arabia;
10. Checks and remedial works for a complex titanium cladding in Iraq;
11. Technical review of a long span timber roof of a pool in UK.
12. Scheme design for a mixed-use development in Oman;
13. Scheme design for a RC children's hospital in Kuwait;
14. Scheme design for a luxury house in London.

Aug. 2014 **Visiting Ph.D. Student** at the *University of Bath, UK, Dept. of Architecture*
-Dec. 2014 *and Civil Engineering.*

Five enlightening months collaborating with well-known Prof. Chris Williams, for the development of my research project: the "*Statics Aware Voronoi Remeshing*" for Grid-shells. During this period I had the chance to develop the theoretical background for the numerical experiments already carried out in collaboration with the Italian National Research Council (CNR). This analytical work explains the relationship between topology and stiffness of the regular tilings of the Euclidean plane (i.e. triangular, quadrilateral and hexagonal grids). Its conclusions prove that the hexagonal pattern is much more efficient than currently deemed, and at the same time provide analytical insight on why polygonal grid-shells are rather insensitive to imperfections. Please refer to chapter 7 of my thesis for more details.

Jun. 2012 **Structural Engineer** at SMS - *Studio Masiello Strutture*, Pisa, IT.
-May 2013

An as brief as intense work experience with a highly experienced structural engineering practice in Pisa - specialized in structural glass – which has seen me involved in the design of a glass balustrade, a steel library, a steel sport facility and a RC terraced house.

Academic Experience

May 2013 **Teaching Assistant of Structural Design** course at the University of Pisa
-July 2014 (course held by Prof. Maurizio Froli at 4th year master students).

This activity involved both teaching and weekly review of yearly assignment. The teaching activity started with refreshers of the theory of slender beams and then was followed by classes encompassing both theory and exercises about structural design with reinforced concrete and steel.

The yearly assignment consisted instead of two projects, one in steel (usually an industrial building) and one in reinforced concrete (usually a residential or commercial construction) that the student had to carry out during the academic year. My role was that of tutoring them during this process, revising their projects and giving useful advice.

This experience was the perfect training ground to fine-tune my skills, so that now I properly master all the theory necessary to tackle demanding design.

2014 **Co-supervisor of master thesis.**

“Analisi teorico-sperimentale di una grid-shell a maglie Voronoi”
(Theoretical and experimental analysis of a Voronoi grid-shell).
<https://etd.adm.unipi.it/t/etd-09102014-154300/>

2012 **Co-supervisor of bachelor thesis.**

“Rilassamento elastico di lastre in vetro stratificate, curvate a freddo”
(Elastic relaxation of cold-bent laminated glass). It is not online but if required I can show it.

Publications

- 1 D. Tonelli, N. Pietroni, E. Puppo, M. Froli, P. Cignoni, G. Amendola, R. Scopigno.
Stability of Statics Aware Voronoi Grid-Shells. Vol. 116, pag. 70-82, Engineering Structures **2016**. <http://dx.doi.org/10.1016/j.engstruct.2016.02.049>
- 2 N. Pietroni, D. Tonelli, E. Puppo, M. Froli, R. Scopigno, P. Cignoni.
Statics Aware Grid Shells. Vol. 34, no. 2, pag. 627-641, Computer Graphics Forum **2015**.
<http://dx.doi.org/10.1111/cgf.12590>
- 3 M. Froli and D. Tonelli.
Progettare involucri di forma libera: l'ingegnerizzazione dell'involucro.
Vol. LXVI, no. 3 - Mag/Giu, pag. 44-55, Costruzioni Metalliche **2014**.
http://www.dic.unipi.it/davide.tonelli/files/00-00_Ingegneria_2a%20bozza.pdf

Education

2012 - 2014 **Ph.D. in Civil Engineering**, University of Pisa, Pisa (IT)

2009 – 2011 **Master Degree in Civil Engineering**, University of Pisa, Pisa (IT), (*Honours*)

2005 – 2009 **Bachelor Degree in Civil Engineering**, University of Pisa, Pisa (IT), (*Honours*)

Ph.D. thesis

Title **Statics Aware Voronoi Grid Shells.**
Supervisors

url
description Prof. M. Froli (University of Pisa), Prof. C.J.K. Williams (University of Bath).
<https://etd.adm.unipi.it/t/etd-03052015-154257/>

This dissertation presents the Statics Aware Voronoi remeshing, a novel pattern for generating innovative free-form grid-shells that are both aesthetically pleasing and structurally sound. Two main novelties are introduced in the grid-shell design context: a polygonal topology and an automatic method for taking into account the statics of the surface underlying the grid-shell. These features, together with the innate adaptivity of the Voronoi pattern, make this new remeshing extremely suitable for free-form architecture. Numerical analyses are carried out to show that free-form Statics Aware Voronoi grid-shells achieve better structural performances with respect to their quadrilateral competitors. Numerical results are also confirmed and supported through a theoretical framework, instituted upon the old-time concept of equivalent continuum. Eventually, a physically built mock-up practically demonstrates the feasibility of the new Statics Aware Voronoi Grid-Shells. Please refer to enclosed presentation for details.

Master thesis

Title **Design of the new footbridge “Gualandi” in Pisa.**
Supervisors

url
description Prof. M. Froli, Prof. M. Dringoli, Prof. N. Squeglia, Dr. L. Lani (University of Pisa).
<http://etd.adm.unipi.it/t/etd-08292011-165819/>

Feasibility study, historical framework, structural and geotechnical design of a steel arch footbridge, to be located in a historical site in the city of Pisa.

Technical skills

- My best strength consists in carrying out **hand calculations**, setting up spread-sheets with **Excel** (or **Mathcad**) and drafting **reports**;
- I am able to set up numerical models of structural systems using **Robot**, **GSA**, **Straus7**, **Sap 2000**. I have sound experience in linear and non-linear static analyses;
- I have experience in drawing with **Autocad** and modelling with **Rhinoceros**;
- I have familiarity with architectural drawings and I can easily sketch my ideas in order to put them through;
- I have also familiarity with other software such as Smart Engineer (CADS), TEDDS, Photoshop, Illustrator, LaTeX and basics of VB 6 - Processing – Matlab scripting.

References

Employers (present and past)

Mike Otlet, Dom Pask, Mike Stephens, OPS Structures Ltd., Cirencester, UK.

<http://www.opsstructures.co.uk/>, bev.garlick@opsstructures.co.uk, +44 (0) 1285 651456.

Gerardo Masiello, SMS - Studio Masiello Strutture, Pisa - P.zza Martiri della Libertá 12, 56127.

<http://www.smstrutture.it/>, info@smstrutture.it, +39 050 555052.

Academy

Prof. M. Froli, Department D.E.S.T.e.C., University of Pisa.

<http://www.mauriziofroli.it/>, m.froli@ing.unipi.it, +39 050 2218220.

Prof. C.J.K. Williams, Department of Architecture and Civil Engineering, University of Bath.

<http://www.bath.ac.uk/ace/people/williams/>, c.j.k.williams@bath.ac.uk, +44 (0) 1225 386818.