

**European Commission
Research Programme of the Research Fund for Coal and Steel**

FASTCOLD

Fatigue strength of cold-formed structural steel details

WORK PACKAGE 4 – DELIVERABLE 4.2

“Workshop proceedings and journal papers”

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1 WORKSHOP PROCEEDINGS

Due to Covid-19 restriction measures, the FASTCOLD workshop was held on-line, in two sessions.

One can access either to the FASTCOLD Web-page where the meeting agenda and exhaustive information as well as the links to both sections are given, or directly to either one of the sessions, via the following links.

Web-page Fastcold-rfcs

<https://fastcold-rfcs.com/webinar-video/#webinar-link>

Session 1

<https://www.youtube.com/watch?v=LiuTtAUudng>

Session 2

<https://www.youtube.com/watch?v=yg6DUxsrgs>

2 JOURNAL PAPERS

The following papers has been published to date (December 31st 2021)

1. Díaz, A., Cuesta, I.I., Alegre, J.M., de Jesus, A.M.P., Manso, J.M., Residual stresses in cold-formed steel members: Review of measurement methods and numerical modelling, **Thin-Walled Structures**, Vol. 159, 107335, 2021 (DOI: 10.1016/j.tws.2020.107335).
2. Alegre, J. M., Díaz, A., Cuesta, I. I., & Manso, J. M. (2019). Application of the hole-drilling method for the evaluation of residual stresses near rounded ends. **The Journal of Strain Analysis for Engineering Design**, 54(7-8), 424-430.
3. Christos G. Prosgolitis, Alexis T. Kermanidis, Helen Kamoutsis, Gregory N. Haidemenopoulos, Spyros A. Karamanos, Influence of plastic prestraining on the fatigue crack propagation rate of S355MC and S460MC structural steels, **Fatigue Fract Eng Mater Struct.** 2021; 1-15. DOI: 10.1111/ffe.13436
4. Gomes, V. M., Rodrigues, M., Correia, J. A., Figueiredo, M. A., de Jesus, A. M. and Fernandes, A. A. (2019) "Monotonic and Fracture Behaviours of Bolted Connections with Distinct Bolt Preloads and Surface Treatments", **Frattura ed Integrità Strutturale**, 13(48), pp. 304-317 (doi: 10.3221/IGF-ESIS.48.30).
5. V.M.G. Gomes, A.M.P de Jesus, M. Figueiredo, J.A.F.O Correia, L. Abata, G. Lesiuk, A.A. Fernandes, Fatigue Behaviour of Bolted Connections Applied in Racking Structures. Experimental Perspective, **Structural Integrity Procedia**, Vol. 22, pp. 401-406, 2019 (doi: 10.1016/j.prostr.2020.01.050).
6. Lucas F. R. C. da Silva, Vitor M.G. Gomes, A.M.P de Jesus, M. Figueiredo, J.A.F.O Correia, G. Lesiuk, A.A. Fernandes, Fatigue behaviour of bolted joints for rack structures, **Structural Integrity Procedia**, Vol. 28, pp. 1426-1430 (doi: 10.1016/j.prostr.2020.10.115).
7. C.D.S. Souto, V.M.G. Gomes, M. Figueiredo, J.A.F.O. Correia, G. Lesiuk, A.A. Fernandes, A.M.P. De Jesus, Fatigue behavior of cold roll-formed rail profiles for rack structures, **Procedia Structural Integrity** Vol. 28, pp. 139-145 (DOI: 10.1016/j.prostr.2020.10.018).
8. C.D.S. Souto, V.M.G. Gomes, M. Figueiredo, J.A.F.O. Correia, G. Lesiuk, A.A. Fernandes, A.M.P. De Jesus, Fatigue behaviour of thin-walled cold roll-formed steel sections, **International Journal of Fatigue**, Accepted for publication.

9. Carlos D.S. Souto, Vítor M.G. Gomes, Lucas F.R.C. Da Silva, Miguel V. Figueiredo, José A.F.O. Correia, Grzegorz Lesiuk, António A. Fernandes, Abílio M.P. De Jesus, Global-local fatigue approaches for snug-tight and preloaded hot-dip galvanized steel bolted joints, **International Journal of Fatigue**, Submitted and revision requested.

10. C.A. Castiglioni, A. Menghini, Simulazioni numeriche e misure sperimentali delle tensioni residue in profili formati a freddo. COSTRUZIONI METALLICHE, 2020. (handle:<http://hdl.handle.net/11311/1158582>)
<https://re.public.polimi.it/handle/11311/1158582#.YIkcP7UzbZs>

2.1 In preparation

1. C.A. Castiglioni, A. Menghini, A. Kanyilmaz, J.M. Manso, A.D. Portugal, Multiple cycles coiling and uncoiling effects on cold-formed steel members residual stresses: investigations and numerical models. Selected journal: Thin-Walled Structures, Elsevier

2. C.A. Castiglioni, A. Menghini, A.M.P De Jesus, C. Souto, J.M. Manso, A.D. Portugal, Experimental and numerical simulations on cold-formed members: experiences and results. Selected journal: Thin-Walled Structures, Elsevier

3 CONFERENCE PRESENTATIONS and PROCEEDINGS

The following papers has been presented at Conferences and/or published in Conference Proceedings to date (December 31st 2021)

1. A.Díaz, I.I. Cuesta, J.M. Alegre, V. Gomes, A.M.P. de Jesus, J.M. Manso. Finite Element simulation and experimental measurement of residual stress in cold-formed steel members. **5th Iberian Conference on Structural Integrity**. Coimbra, Portugal (Virtual). 25th-27th March, 2020 (Oral communication).
2. A.Díaz, J.M. Alegre, I.I. Cuesta, J.M. Manso. Study on residual stresses in cold-formed steel members using the Hole-Drilling method. **XXXVI – Spanish Conference on Fracture** (Grupo Español de Fractura). Sevilla, Spain. 3rd-5th April, 2019 (Poster communication).
3. A.Díaz, I.I. Cuesta, J.M. Alegre, V. Gomes, A.M.P. de Jesus, J.M. Manso. Finite Element simulation and experimental measurement of residual stress in cold-formed steel members. *Annals of Fracture Mechanics*, Vol. 37, pp. 98-103, 2020. ISSN: 0213-3725
4. A.Díaz, J.M. Alegre, I.I. Cuesta, J.M. Manso. Study on residual stresses in cold-formed steel members using the Hole-Drilling method. *Annals of Fracture Mechanics*, Vol. 36, pp. 527-532, 2019, ISSN: 0213-3725
5. C.G. Prosgolitis, A. T. Kermanidis, S. A. Karamanos. Influence of pre-straining on the fatigue crack growth rate of S355 and S460 structural steels (Abstract acceptance for presentation at 6th International Virtual Conference of Engineering Against Failure (ICEAF VI) 2021, 23-25 June 2021)
6. C.G. Prosgolitis, Alexis T. Kermanidis, Spyros A. Karamanos, Comparative study of fatigue crack propagation in S355 and S460 structural steels. (Oral presentation at 7th Panhellenic Congress, Athens, Greece, 11-13 December 2019)
7. V.M.G. Gomes, A.M.P de Jesus, M. Figueredo, J.A.F.O Correia, A.A. Fernandes, Fatigue Behaviour of Double Shear Bolted Butt Connections Made of Thin Steel Plates, Event: Doctoral Congress in Engineering, 27th-28th June 2019.
8. A. Martins, V.M.G. Gomes, A.M.P de Jesus, A. Santos, J.A.F.O Correia, A.A Fernandes, Fatigue behaviour of cold-formed rail profiles for racking structures: a numerical simulation perspective, ICMFM XIX, 5th-7th September, 2018 (Poster Presentation)

9. M. Rodrigues, Gomes VMG, Correia JAFO, Figueiredo MAV, De Jesus AMP, Fernandes AA., Monotonic and fracture behaviour of bolted connections with distinct bolt preloads and surface treatments, XVI Portuguese Conference on Fracture 2018.
10. V.M.G. Gomes, A.M.P de Jesus, M. Figueiredo, J.A.F.O Correia, L. Abata, G. Lesiuk, A.A. Fernandes, Fatigue Behaviour of Bolted Connections Applied in Racking Structures. Experimental Perspective, Proceedings of First International Symposium on Risk Analysis and Safety of Complex Structures and Components, 1st-2nd July 2019.
11. C.D.S. Souto, V.M.G. Gomes, M. Figueiredo, J.A.F.O. Correia, G. Lesiuk, A.A. Fernandes, A.M.P. De Jesus, Fatigue behavior of cold roll-formed rail profiles for rack structures, Proceedings of the VECF1 - 1st Virtual European Conference on Fracture, june 2020.
12. T. Geers, B. Hoffmeister, C. Heinemeyer; Investigations on the influence of cold-forming and associated residual stresses on the fatigue strength of thin-walled details, Conference: Eurosteel Sheffield 2020/2021
13. C.A. Castiglioni, A. Menghini, A. Kanyilmaz, Influence of residual stresses on the fatigue life of cold formed profiles used in automated warehouses. XXVII Giornate Italiane della Costruzione in Acciaio-Ricerca-Progettazione-Industria: i nuovi orizzonti delle Costruzioni Metalliche, 2019
<https://re.public.polimi.it/handle/11311/1109778#.YIkbrbUzbZs>