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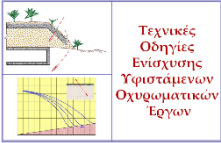
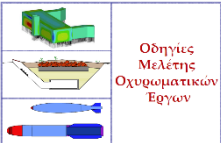

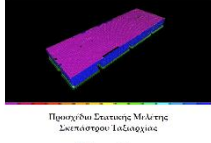
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SUMMARY OF ACTIVITIES IN DESIGN OF STRUCTURES AGAINST BLAST LOADS

To investigate the response and design of structures subjected to explosions, the research team of the Institute of Steel Structures adopts a combined approach of analytical calculations, advanced numerical simulations and, recently, tests conducted at a firing field and corresponding measurements. From the cooperation with the Hellenic Army General Staff (HAGS) design and assessment manuals of underground defense works were developed, which are now taught at the School of Technical Education of the Hellenic Greek Army Corps of Engineers and used by HAGS.

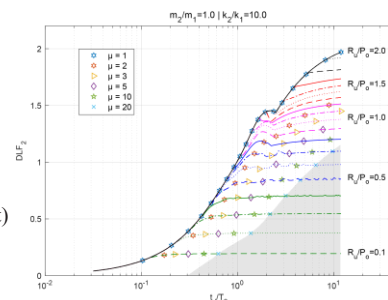
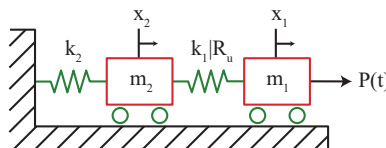
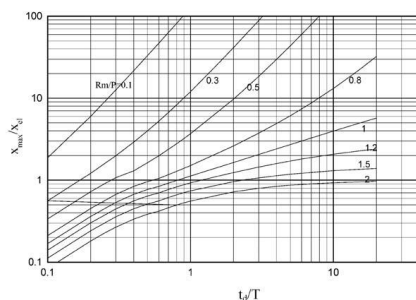
Design and assessment manuals of underground defense works

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 Τεχνικές Οδηγίες Υφιστάμενων Οχυρωματικών Έργων Γ. Μπουσοβίλας Χ. Γιαννής Α. Καζάνιος Γ. Κοσσιόπουλος Ιστοσελίδα 2008	 Οδηγίες Μελέτης Οχυρωματικών Έργων Γ. Μπουσοβίλας Χ. Γιαννής Α. Καζάνιος Γ. Κοσσιόπουλος Θεμελιώσεις 2008	 Αξιολόγηση της Επίπτωσης Υφιστάμενων Οχυρωματικών Έργων σε περίπτωση σεισμικής Οχρήσεως Μελέτη Οχυρωματικών Έργων Γ. Μπουσοβίλας Χ. Γιαννής Α. Καζάνιος Γ. Κοσσιόπουλος Αθήνα, Αρσενάριος 2007	 Προσέγγιση Σχεδίασης Μελέτης Σχεδίασης Ισολογισμός Γ. Μπουσοβίλας Χ. Γιαννής Α. Καζάνιος και συνεργάτες Αθήνα, Ιστοσελίδα 2006

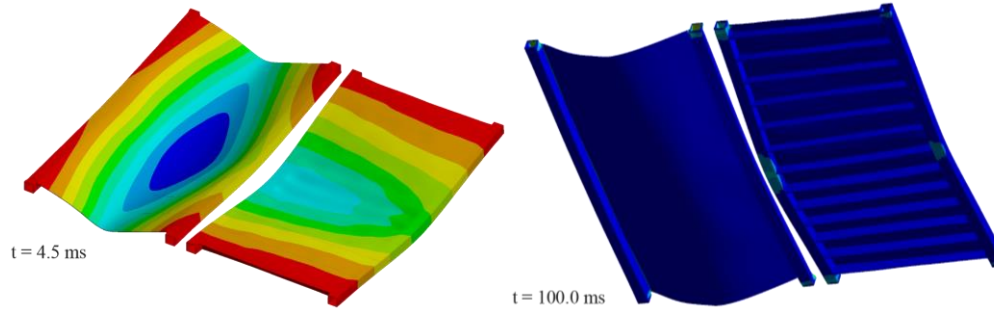
Tests and measurements at a firing field



Analytical calculations



Numerical simulations



FUNDED RESEARCH PROJECTS

- “Analytical and experimental investigation for the development of new and the improvement of existing methods for the design and strengthening against explosions of fortification buried in the ground”, funded by the Greek Army, budget 590,000€, Prof. G. Bouckovalas as P.I. (2004-2007).
- “A Safety Study about Explosives in the Vicinity of Natural Gas Transmission Systems and a Draft of Safety Rules”, funded by the Greek Public Gas Corporation (DEPA), Ass. Prof. F. Rigas as P.I. (1998).

SUPERVISION OF DOCTORAL THESES

- Orestis Ioannou (July 2022), “Design of Cladding to Mitigate Blast Effects on the Supporting Structure”.

JOURNAL PUBLICATIONS

- Ioannou, O., Hadjioannou, M., Gantes, C.J. and Lignos, X.A., “Experimental and Numerical Investigation of Cladding-Girt Systems subjected to Blast Loading”, *ASCE Journal of Structural Engineering*, Vol. 149, Issue 5, 04023030, May 2023.
doi: <https://doi.org/10.1061/JSENDH.STENG-11724>
- Ioannou, O., Hadjioannou, M. and Gantes, C.J., “A 2DOF Method to Study the Influence of Cladding Characteristics on the Response of the Supporting Structure under Blast Loading”, *ASCE Journal of Structural Engineering*, Vol. 148, Issue 12, 04022191, Dec. 2022.
doi: [https://doi.org/10.1061/\(ASCE\)ST.1943-541X.0003494](https://doi.org/10.1061/(ASCE)ST.1943-541X.0003494)
- Ioannou, O., Hadjioannou, M. and Gantes, C.J., “Evaluation of the Potential of Cladding to Mitigate Blast Effects on the Supporting Structure”, *ASCE Practice Periodical on Structural Design and Construction*, Vol. 27, Issue 3, 04022022, Aug. 2022.
doi: [https://doi.org/10.1061/\(ASCE\)SC.1943-5576.0000701](https://doi.org/10.1061/(ASCE)SC.1943-5576.0000701)
- Ioannou, O. and Gantes, C.J., “Membrane Action of Cladding Subjected to Blast Loading and Effects on the Supporting Structure”, *Vibration*, Vol. 4, pp. 768-786, 2021.
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- Olmati, P., Petrini, F., Vamvatsikos, D. and Gantes, C.J., “Simplified Fragility-Based Risk Analysis for Impulse Governed Blast Loading Scenarios”, *Engineering Structures*, Vol. 117, pp. 457-469, June 2016.
doi: <http://dx.doi.org/10.1016/j.engstruct.2016.01.039>
- Kouretzis, G.P., Bouckovalas, G.D. and Gantes, C.J., “Analytical Calculation of Blast-Induced Strains to Buried Pipelines”, *International Journal of Impact Engineering*, Vol. 34, Issue 10, pp. 1683-1704, October 2007.
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- Gantes, C.J. and Pnevmatikos, N.G., “Elastic-Plastic Response Spectra for Exponential Blast Loading”, *International Journal of Impact Engineering*, Vol. 30, Issue 3, pp. 323-343, March 2004.
doi: [http://dx.doi.org/10.1016/S0734-743X\(03\)00077-0](http://dx.doi.org/10.1016/S0734-743X(03)00077-0)

CONFERENCE PUBLICATIONS

- Olmati, P., Petrini, F., Vamvatsikos, D. and Gantes, C.J., “A Stochastic Simplified SDOF Model of a Steel Blast Door”, *XXIV Giornate Italiane della Costruzione in Acciaio*, Torino, Italy, Sep. 30 - Oct. 2, 2013.
- Kouretzis, G.P., Bouckovalas, G.D. and Gantes, C.J., “Strain Analysis of Buried Pipelines due to Blast-Induced Ground Shock Waves”, *4th International Conference on Earthquake Engineering*, Thessaloniki, Greece, June 25-28, 2007.
- Kouretzis, G.P., Bouckovalas, G.D. and Gantes, C.J., “Seismic Analysis of Flexible Underground Structures with 3-D Shell Theory”, *5th Greek National Geotechnical Engineering Conference*, Xanthi, 31 May-2 June 2006 (in Greek with English summary).
- Pnevmatikos, N.G. and Gantes, C.J., “Elastoplastic Response Spectra for the Design of Structures Subjected to Exponential Blast Loading”, *6th Greek National Congress on Mechanics*, Thessaloniki, Greece, July 19-21, 2001, edited by E.C. Aifantis and A.N. Kounadis, Vol. 1, pp. 261-266.
- Gantes, C.J., Bouckovalas, G.D. and Gerogianni, D.S., “Safety of Buried Steel Pipelines Subjected to Explosions”, *EuroSteel '99, 2nd European Conference on Steel Structures*, Praha, Czech Republic, May 26-29, 1999, edited by J. Studnicka, F. Wald, and J. Machacek, Vol. 1, pp. 113-116 (extended version on CD-ROM).