

Monitoring of new and existing stainless-steel reinforced concrete structures by clad Distributed Optical Fiber Sensing - Distributed Optic Fibre Sensor data, Digital Image Correlation data and Actuator data.

SND-ID: 2021-291-1. **Version:** 1. **DOI:** <https://doi.org/10.5878/rnn3-dy47>

Download data

BD_data.txt (415.99 MB)

paper_data.mat (162.99 MB)

Associated documentation

Figure1a.pdf (57.29 KB)

Figure1b.pdf (231.93 KB)

Figure2.pdf (492.41 KB)

read_me.txt (1.77 KB)

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2021-291-1-1.zip (~579.74 MB)

Citation

Fernandez, I. (2022) Monitoring of new and existing stainless-steel reinforced concrete structures by clad Distributed Optical Fiber Sensing - Distributed Optic Fibre Sensor data, Digital Image Correlation data and Actuator data (Version 1) [Data set]. Chalmers University of Technology. Available at: <https://doi.org/10.5878/rnn3-dy47>

Creator/Principal investigator(s)

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Principal's reference number

SenseIT

Description

The implementation of structural health monitoring systems in existing civil engineering structures could contribute to a safer and more resilient infrastructure as well as important savings. Due to their light weight, small size, and high resistance to the environment, distributed optical fibre sensors (DOFS) stand out as a very promising technology for damage detection and quantification in reinforced concrete structures. This dataset includes information of DOFS featuring an external polymeric cladding with rough surface, deployed in a stainless-steel reinforced concrete beam subjected to four-point bending. Several sensor positions, both embedded in the concrete and attached to the surface, are included in a multilayer configuration. The data of the sensors includes two series of test, first cyclic loading under service loads and lastly cyclic loading to failure.

Additionally, data from Digital Image Correlation and the actuator recordings are included for cross-validation purposes.

The data included in this dataset basically consists in strain measurement of fibre optic sensor, i.e. BRUSens V9 cable, attached at different places on a Stainless-steel Reinforced Concrete Beam. The equipment to measure the strains of the sensor is an ODISI 6004 from Luna ink. which uses the Rayleigh backscatter technology. In addition, Digital Image Correlation data is included offering mid-span deflections of the beam. The equipment used for the acquisition of the images and the corresponding displacement fields is a ARAMIS from GOM technologies, that features two 12 MP cameras.

The dataset is available in MatLab and GNU Octave/txt (<https://www.gnu.org/software/octave/index>) formats.

Data contains personal data

No

Language

[English](#)

Data format / data structure

[Numeric](#)

Responsible department/unit

Architecture and Civil Engineering

Funding

- Funding agency: Swedish Transport Administration
- Funding agency's reference number: TRV/BBT 2017-028
- Project name on the application: Sensor Driven Cloud Based Strategies for Infrastructure Management

Research area

[Construction management](#) (Standard för svensk indelning av forskningsämnen 2011)

[Other civil engineering](#) (Standard för svensk indelning av forskningsämnen 2011)

Keywords

[Dofs](#), [Distributed optic fibre sensing](#)

Publications

Fernandez, Ignasi, Berrocal, G., Carlos, Rempling, Rasmus, Monitoring of new and existing stainless-steel reinforced concrete structures by clad Distributed Optical Fiber Sensing, Structural Health Monitoring Journal, 2022.

DOI: <https://doi.org/10.1177/14759217221081149>

If you have published anything based on these data, [please notify us](#) with a reference to your publication(s). If you are responsible for the catalogue entry, you can update the metadata/data description in DORIS.

Accessibility level

Access to data through SND
Data are freely accessible

Use of data

[Things to consider when using data shared through SND](#)

License

[PDDL 1.0](#)

Versions

Version 1. 2022-03-04

Download metadata

[DataCite](#)

[DDI 2.5](#)

[DDI 3.3](#)

[DCAT-AP-SE 2.0](#)

[JSON-LD](#)

[PDF](#)

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