Improved Friction Joint With Self-Locking Grips

Flexible risers are used in the oil industry to transport liquids and gas from the seafloor to extraction and production equipment at the sea surface. Ongoing research aims at using composite materials instead of steel, in order to reduce weight and increase stiffness. Ensuring an optimal load transfer between the composite and metal components is very important. This paper presents an improved method for anchoring a flat fiber reinforced tendon using a double grip system with self-locking grips. The novelty is the combination of new experimental results and finite element (FE) analysis to develop a superior dry friction grip. Experimental results are carried using a dedicated test setup, through which the test parameters can be accurately controlled. The efficiency of the grip system during pullout is superior to results obtained with flat grips. Numerical results offer an in-depth understanding of the influence between friction, geometrical parameters, and performance, making it possible to optimize the design. Results show that this grip system offers immediate technical applications, in a variety of conditions.

General information
State: Published
Organisations: Department of Mechanical Engineering, Solid Mechanics, Manufacturing Engineering, National Oilwell
Varco Denmark I/S
Contributors: Costache, A., Glejbøl, K., Sivebæk, I. M., Berggreen, C.
Pages: 8
Publication date: 2016
Peer-reviewed: Yes

Publication information
Journal: Journal of Offshore Mechanics and Arctic Engineering
Volume: 138
Article number: 051401
ISSN (Print): 0892-7219
Ratings:
BFI (2019): BFI-level 1
Web of Science (2019): Indexed yes
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 1.62 SJR 1.038 SNIP 1.467
Web of Science (2017): Impact factor 1.044
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 0.89 SJR 0.915 SNIP 1.067
Web of Science (2016): Impact factor 0.993
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 0.97 SJR 1.093 SNIP 1.371
Web of Science (2015): Impact factor 0.711
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 0.69 SJR 0.783 SNIP 1.466
Web of Science (2014): Impact factor 0.57
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 0.66 SJR 0.753 SNIP 1.369
Web of Science (2013): Impact factor 0.621
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 0.58 SJR 0.894 SNIP 1.362
Web of Science (2012): Impact factor 0.506
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1