The growing awareness of environmental issues and the requirements to establish solutions diminishing the impact on working environment as well as external environment has initiated ever increasing efforts to develop new, environmentally benign tribological systems for metal forming. The present paper gives an overview of these efforts substituting environmentally hazardous lubricants in cold, warm and hot forging as well as sheet forming and punching/blanking by new, less harmful lubricants and furthermore describes other measures directed towards the same goal such as development of anti-seizure tool materials and coatings and application of structured workpiece and tool surfaces.

General information
State: Published
Organisations: Manufacturing Engineering, Department of Mechanical Engineering, Yokohama National University, Sumico Lubricants Co., Ltd, Friedrich-Alexander University Erlangen-Nürnberg, Toyota Motor, Shizuoka University, University of Notre Dame, Nihon Parkerizing Co., Ltd., Technical University of Darmstadt
Pages: 760-780
Publication date: 2010
Peer-reviewed: Yes

Publication information
Journal: C I R P Annals
Volume: 59
Issue number: 2
ISSN (Print): 0007-8506
Ratings:
BFI (2019): BFI-level 2
Web of Science (2019): Indexed yes
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Scopus rating (2017): CiteScore 4.09 SJR 2.034 SNIP 2.811
Web of Science (2017): Impact factor 3.333
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.93 SJR 2.055 SNIP 3.158
Web of Science (2016): Impact factor 2.893
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): CiteScore 3.83 SJR 2.088 SNIP 3.294
Web of Science (2015): Impact factor 2.492
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): CiteScore 4.39 SJR 3.123 SNIP 3.992
Web of Science (2014): Impact factor 2.542
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): CiteScore 3.87 SJR 2.598 SNIP 3.818
Web of Science (2013): Impact factor 2.541
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): CiteScore 3.04 SJR 2.086 SNIP 4.156
Web of Science (2012): Impact factor 2.251
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): CiteScore 2.81 SJR 2.117 SNIP 3.46