Assessment and Control of Noise and Vibration generated from Hand-held Power Tools

(Focused on the vibration at impact wrench using operations in car service centers and automobile manufacturing industries)

Jae-Kil Jang, Sang-Yong Oh, Eun-Jin Choi, Sung-Jin Kim, Bong-Nyun Kim, Chul-Ho Kim, Jung-Yong Kim, Chool-Jae Lee, Heu-Jung Byun, Jong-Shik Won, Hyun-Mi Park

The purposes of this study are to assess the vibration generated from power-driven impact wrenches at car service centers and automobile manufacturing industries, and to suggest the vibration control options and measures. Nearly 290,000 impact wrenches, mostly 1/2 and 3/4 inch-sizes, are used in various industries in Korea, which include car service centers, automobile industries, ship-building corporations, and industrial plant construction industries. The number of workers exposed to impact wrench vibration are estimated to be about 210,000.

About 16 percents of impact wrench using workers seem to be exposed to vibration exceeding EU standard of 5 m/sec^2. Vibration magnitudes and wrench using time are two major factors that govern 8 hour energy-equivalent vibration exposure levels at impact wrench using processes in automobile industries. Many workers using various vibration generating tools in car service centers complained of vibration-induced symptoms. Ergonomic evaluations of impact wrench using process in automobile manufacturing industries suggested the possible improvements of working postures. Vibration control measures driven from field investigation are proposed for automobile-related industries to prevent related occupational diseases. These control options may be applied to other similar industries suffering from various vibration-induced diseases.