

## PERANCANGAN ALAT POTONG KERAMIK DENGAN PENDEKATAN ERGONOMI DAN KESELAMATAN KERJA (STUDI KASUS DI UD. ANUGERAH MAKMUR JAYA, SURABAYA)

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### **Abstract**

*UD Anugerah Makmur Jaya is a manufacturer of ceramic lists in Dukuh Kupang Surabaya. The production process is started from the cutting process, printing and ovening the ceramic in a high temperature kiln. According to preliminary interview and data collection there were identified some problems that correlated with complaint and, painful on operator body segments and uncomfortable environment, especially noise from the cutting machine (127.59 dB). To support the problem identification, then time study was done and the production reject/scrap was recorded too. The average ceramic cutting time was 8.7 second/piece while the reject rate of cutting process was 6.6%. The next problem according to the management was accidental rate.*

*From the initial data collection and analysis on the working method using Nordic Body Map questionnaire, it could be known that several body segments such as back, low back, waist have the highest painful score (1.194). Using the REBA analysis, it was known that the REBA score was 12 (the working risk level was very high) and it might be improved immediately. On the energy consumption point of view, it could be seen that the energy consumption rate for ceramic cutting was 2 kcal/min.*

*To overcome those problems, then the working facility, especially ceramic cutting machine, was redesigned and facilitated with a new jig. As the supporting system to reduce the working accidental rate then the operators had the duty of using the safety working equipments, such as safety glasses, jacket, earplug, and also safety gloves. By redesigning the initial ceramic cutting machine and supported by some jigs, and safety equipments on the production floor, then some improvements were achieved. The improvements were: body map score reduction to 0.33 (72.09% reduction), REBA score reduction to 4 (medium risk), average ceramic cutting time reduction to 4.49 second per piece (48.3% reduction), energy consumption reduction to 1.6 kcal/minute (20% reduction), noise reduction to 118.8211 dB, heart pulse/minute reduction from 116.6 pulse/minute to 102.4 pulse/minute) and finally the reject scrap of cutting process had been reduced to 1%.*

*Keywords : complaint, painful, REBA, energy consumption, working facility*

### **1 LATAR BELAKANG PENELITIAN**

U.D. Anugerah Makmur Jaya merupakan perusahaan yang bergerak dalam *printing* keramik yang berlokasi di Dukuh Kupang Surabaya. Perusahaan ini berdiri sejak tahun 2001 dengan memproduksi 3 macam produk, yaitu *lis*, *panel*, dan *inserto*. Dalam penelitian ini hanya difokuskan pada pembuatan lis keramik karena produk ini adalah produk yang paling rutin diminta oleh konsumen dibandingkan dengan produk lainnya yang dibuat oleh perusahaan.

Proses pembuatan keramik ini dimulai dari pemotongan bahan baku *lis* yaitu keramik putih berukuran 25 x 33 cm menurut ukuran yang sesuai dengan permintaan konsumen. Kemudian, keramik yang telah dipotong akan disablon dengan *pigment* warna dan berikutnya disablon dengan *Vetrosa* serta dioven pada *Kiln* yang bersuhu 1000° C. Dengan bekerja menggunakan alat bantu (mesin potong keramik) yang ada di perusahaan, melalui pengamatan awal dan wawancara dengan operator diperoleh adanya keluhan dan rasa sakit saat proses pemotongan keramik akibat posisi kerja jongkok dan membungkuk serta ketidaknyamanan kerja akibat suara bising (127.59 dB) dari mesin potong keramik.