Chattering diagnosis on hot strip finishing mills based on Modified Independent Component Analysis

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Hot rolling process is one of the ways to produce a coil with desired width and size by pressing a slab produced through previous steel making processes. Hot rolling process consists of heating furnace, rough mills and finishing mills. After heating at the furnace with proper temperature, the slab pass through rough mills and finishing mills. In this process, a phenomenon occurs that called 'chattering'. It causes strip marks on the slab surface or makes the surface uneven. Because the phenomenon is influenced by many complex factors, it is hard to definitely investigate and dependent on the experience of operator in most cases. Therefore, based on the enormous operation data related to hot rolling process, we apply the statistical data analysis method and diagnosis chattering phenomenon. In this study, we propose a procedure to detect and diagnosis chattering on hot rolling process. As a first step, we develop a chatter index that will be used for checking the occurrence of chattering based on roll force data. And then, we establish the statistical model based on Modified ICA algorithm.