

Development of a protocol to detect and diagnose the chattering in the hot rolling process

홍정별, 박병언, 조하늬, 지유미, 김동국¹, 양정은¹, 이인범[†]
포항공과대학교; ¹POSCO
(iblee@postech.ac.kr[†])

In the POSCO hot rolling process, a chattering phenomenon occurs in rolling roll. By the chattering, a chatter mark is produced on the produced coil or an additional operation is required to remove the chatter mark; it reduces the process efficiency. To prevent the chattering, we developed chatter detection and cause diagnosis protocol. A chatter index indicating whether or not the actual chatter occurred is developed in order to detect the chatter. A statistical chatter detection model is established based on Modified ICA algorithm. Then, contribution plots based on the reconstruction-based contribution (RBC) are calculated to extract the process variables affecting the chatter. RBC can reduce the smearing effect of the variables rather than the conventional contribution plots. The most significant three variables are extracted using the RBC, then the variables are validated as the chatter causative variables.