SPEED/TENSION CONTROL IN HIGH SPEED WINDING SYSTEM WITH MULTIPLE ROLLERS

Abstract

For steel winding at high speed,not only the speed/tension need to be controlled stably,but also the influence in winding tension due to feeding speed variation need to be minimized. Mean while,since shift correction in transverse direction is usually reguired in high speed winding, multiple rollers between feeding and winding wheels are often included ,which have significant effect in winding tension control. Therefore,this research is aiming at improving the speed/tension control in high speed winding system with multiple rollers.

The system dynamic models with and without those middle rollers included were derived first simulation and frequency response analysis were done on both cases for comparison. It can be observed that additional resonance poles in relatively low frequency appear in the system considering multiple middle rollers,the bandwidth of the tension control system was decreased compare to the system without middle rollers.

Keyword: Winding system, tension control, interference suppression