

# The Drive System Optimization of Single Screw Extruder to Control Thickness of Insulation

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**Abstract**— The main phase in production of electric wires and cables is the isolation process. The extruder is the equipment that provides the insulation process by extruding the insulating material onto metal wire. The efficiency of the insulation process is largely determined by the following factors: extruder productivity, extruder operating point, thermal regime ect. The paper tends to approach the energy efficiency of the insulation process through the prism of insulation layer quality assurance (thickness, eccentricity). Solving this problem requires a thorough mathematical study of the extrusion process. The main results obtained in this paper are: was determined the mathematical model which describ the extruder productivity at the electric wire insulation lines, was determined the relation that determining the point of maximum efficiency of the extrusion process. The diagram of the extruder control system driven by an asynchronous motor with frequency converter was developed to maintain the extrusion process at the maximum efficiency point and a constant thickness of the applied insulation layer.

**Keywords**— Extruder control system; electrical wire;insulation; thickness control;

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