

DESIGN AND IMPLEMENTATION OF ANN BASED CONTROL SCHEME FOR COUPLED INDUCTOR BASED HIGH GAIN DC – DC CONVERTER

BOTLA KISHORE¹, G. SHINY VIKRAM² & SATYANARAYANA.V³

¹P.G Scholar, Department of Electrical & Electronics Engineering,
Ramachandra College of Engineering, Vatluru(V), Pedapadu(M), W.G.Dist, Andhra Pradesh, India

²Assistant Professor, Department of Electrical & Electronics Engineering,
Ramachandra College of Engineering, Vatluru(V), Pedapadu(M), W.G.Dist, Andhra Pradesh, India

³Associate Professor, Department of Electrical & Electronics Engineering,
Ramachandra College of Engineering, Vatluru(V), Pedapadu(M), W.G.Dist, Andhra Pradesh, India

ABSTRACT

The basic Conventional DC – DC configurations like buck, boost and buck – boost are used in many of the industrial applications. The converters are fall under the category of non-isolated converters. These converters use reactive elements like inductors and capacitors for energy transfer purposes. Especially inductors used in these circuits will receive energy from source and stores it. Release the energy to the load. These conventional configurations suffer with drawback of low conversion gains. To overcome this drawback many of the derived configurations are proposed. Fly-back converters are one of such derived configurations. These converters suffer with issues like high switching losses, large stress across the switch and magnetic components. To avoid these issues coupled inductor based non isolated type converters [1] are used. These converters have the ability of achieving high conversion gains. This paper aims in development of closed loop control scheme for control of the load voltage with the help of Artificial Neural Network. Training of the ANN for the targeted values is done by using function fitting tool of ANN and simulation of the model is done using MATLAB / SIMULINK. The circuit thus modeled is simulated for different values of duty ratios and results are presented.

KEYWORDS: Boost, Buck, Coupled Inductors, Energy Recovering snubber, High Gain Dc–Dc Converter, ANN Based Controller, Pulse Width Modulation (PWM)