PARTICLE SWARM OPTIMIZATION TECHNIQUE (PSO) FOR DYNAMIC ECONOMIC DISPATCH (DED)

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ABSTRACT

This paper presents application of particle swarm optimization (PSO) technique for assessment of Dynamic Economic Dispatch (DED).Using this method, the best minimum of total generation cost can be obtained. DED is used to determine the optimal schedule of on-line generating output so as to meet the load demand at minimum operating cost under various systems and operating cost over the entire dispatch periods. PSO can solve the problems quickly with high quality solutions and stable convergence characteristics, whereas it is easily implemented evolutionary computation techniques. The DED based PSO techniques is a tested on a 26-bus system containing six generator bus, 20 load bus, and 46 transmission lines.

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

1.1 Introduction

Generating efficiency has been considered as one of the most important issues in most power plants. This is due to the fact that, so many intensive competitions have experienced in the electrical supply industries. The remote location of power plant from the load centre has been identified as one of the reasons which caused high cost. The increase in fuel these days has also contributed to this phenomenon. Therefore, economic dispatch is implemented in order to determine the output (generating) of each generator so that the total generation cost will be minimized. One of the new inventions is the implementation of dynamic economic dispatch. When the power plant is operating in normal operating conditions, the generator will generate more power than the total load demand and losses. Thus, there are so many options for scheduling generation. This means that the generator's real and reactive power will be re-allowed to be varied within certain limits so as to meet a particular load demand within minimum fuel cost[1]. Dynamic constraints were normally not considered the basic economic dispatch.

Dynamic Economic Dispatch (DED) schedules the generating outputs of all on-line units over a time horizon by taking the dynamic constraints of generators into account, whereas the traditional Static Economic Dispatch (SED) allocates the outputs of all committed generating units by considering the static behavior of them.