



Current utilization of microturbines as a part of a hybrid system in distributed generation technology

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ABSTRACT

Microturbines are a relatively new distributed generation technology. Combined heat and power, known as cogeneration, can be considered the most economical attractive investment in microturbines. Latest technologies and increasing energy prices are propelling this technology to the forefront. This study aims to review the current state of utilization of microturbines in distributed generation as a standalone system or within a hybrid system to supply loads. It is found that more research and development effort is needed to improve the performance of microturbines, integrate them with other energy sources and adopt standards and regulations to connect them with the utility grid. These standards shall be developed to serve all parties and take into account regional and international requirements. Furthermore, complete mathematical modeling, especially for fuel consumption is still required. The development of small scale units within the range of kilowatts for in-house use as a backup source of residential PV system is also needed.

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Contents

1. Introduction	142
2. Microturbine construction and operation	143
3. Microturbine modeling	144
3.1. Technical modeling	145
3.2. Economical modeling	146
4. Modes of operation of microturbines	147
4.1. Hybridization microturbine with fuel cells	147
4.2. Hybridization microturbine with other renewable sources	147
4.3. Utilization of microturbine for cogeneration and trigeneration purposes	148
5. Environmental considerations of operation of microturbines	149
6. Standards and regulations	150
7. Conclusions	151
Acknowledgment	151
References	151

1. Introduction

Distributed energy resources refer to small generating units that are installed and interconnected to the electric power

distribution system near load locations. They are not commonly connected to a bulk power transmission system. Distributed generation typically includes renewable generation and fossil-fuel, as well as energy storage technologies. Distributed energy resources are generally more efficient, since they are located at customer load sites, rendering transmission and distribution system losses less compared to the central station generators [1–3].

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