Solar cell teaching model

How can gotlbo optimize solar cell models?
In this paper,we have developed a new optimization method called GOTLBO,which can be efficiently used to extract the parametersof solar cell models. GOTLBO employs the concept of GOBL to accelerate the convergence speed of original TLBO through the initialization step and generation jumping.

Is gotlbo a good method for identifying solar cell parameters?
Then,GOTLBO is employed to identify the parameters for two solar cell models,i.e.,single diode model and double diode model. The simulation results demonstrate that the performance of GOTLBO is very competitivecompared with other parameter identification techniques proposed in the literature. The rest of the paper is organized as follows.

Can a 57 mm diameter solar cell be used for parameter identification?
Application to parameter identification of solar cell models In this section,the I-V characteristic of a 57 mm diameter commercial (R.T.C. France) silicon solar cell is used to evaluate the efficiency of the GOTLBO-based parameter identification method. The experimental data has been adopted from the system under 1 sun (1000 W/m 2) at 33C .

What are the different approaches to identifying the parameters of PV cells?
Up to now,three main approaches have been applied to identify the parameters of PV cells,which are the analytical,numerical,and meta -heuristic approaches,,. The analytical approach is used to deal with the problem of nonlinearity between different parameters via a mathematical method.

What is the function of photovoltaic (PV) power generation system?
The functionality of photovoltaic (PV) power generation system is to turn solar energy into electricity. To this system,the PV cell is a very important portion and the accuracy of its model is the basis for modeling the entire system .

What happens if a PV cell model is inaccurate?
Inaccurate model of PV cells not only brings huge errors to the system,but also causes deviation to the maximum power point tracking ,,. Several models have been developed and proven to be effective in modeling PV cells.

In this paper, an adaptive teaching-learning-based optimization with ...

The BB-TLBO is proposed to identify the unknown parameters of one, two and three-diode models of the RTC France silicon solar cell and of the commercial photovoltaic solar module monocrystalline STM6-40/36, taking into account the performance indices: high precision, more reliability, short execution time and high convergence speed ...

The BB-TLBO is proposed to identify the unknown parameters of one, two and three-diode models of the RTC France silicon solar cell and of the commercial photovoltaic solar module monocrystalline STM6-40/36, taking ...

Constructing a high-performance photovoltaic (PV) system refers to extracting the characteristics of solar cell models. A population-based algorithm with a parameter-free design called Teaching ...

A population-based algorithm with a parameter-free design called Teaching and Learning ...

ifferential evolution (DE), referred to as ATLDE, is proposed to accurately and reliably identify the unknown parameters of PV models. In ATLDE, three improvements are intro-duced: i) the...

Key learnings: Solar Cell Definition: A solar cell (also known as a photovoltaic cell) is an electrical device that transforms light energy directly into electrical energy using the photovoltaic effect.; Working Principle: The working of solar cells involves light photons creating electron-hole pairs at the p-n junction, generating a voltage capable of driving a current across ...

A population-based algorithm with a parameter-free design called Teaching and Learning Based Optimization (TLBO), inspired by the way teachers teach in the classroom, is proposed in this paper...

In this paper, an adaptive teaching-learning-based optimization with experience learning, called ELATLBO, is proposed for parameter identification of PV cell models. In ELATLBO, the experience learning strategy is proposed and the population is divided into the fit solutions and inferior solutions to adaptively select the teacher ...

GOTLBO is comprehensively evaluated through benchmark functions and ...

A simple, first-principles mathematical model has been developed to analyze the effect of interfacial and bulk charge transfer on the power output characteristics of dye-sensitized solar cells ...

DOI: 10.31209/2018.100000042 Corpus ID: 70053606; Improved Teaching Learning Based Optimization and Its Application in Parameter Estimation of Solar Cell Models @article{Fan2018ImprovedTL, title={Improved Teaching Learning Based Optimization and Its Application in Parameter Estimation of Solar Cell Models}, author={Qinqin Fan and Yilian ...

ifferential evolution (DE), referred to as ATLDE, is proposed to accurately and reliably identify ...

GOTLBO is comprehensively evaluated through benchmark functions and parameter identification problems. Simulation results demonstrate the superiority of GOTLBO. This paper presents a new optimization method called GOTLBO (generalized oppositional teaching learning based optimization) to identify parameters of

solar cell models.

Parameters identification of solar cell models using generalized oppositional teaching learning based optimization. Xu Chen, Kunjie Yu, Wenli Du, Wenxiang Zhao and Guohai Liu. Energy, 2016, vol. 99, issue C, 170-180 . Abstract: This paper presents a new optimization method called GOTLBO (generalized oppositional teaching learning based optimization) to identify ...

Abstract:-This paper discusses the educational benefits of utilizing the mathematical models of Solar Cells in an electrical power systems curriculum. The mathematical model of Solar Cells and their simulation are discussed by using Pspice and Matlab-Simulink software.

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