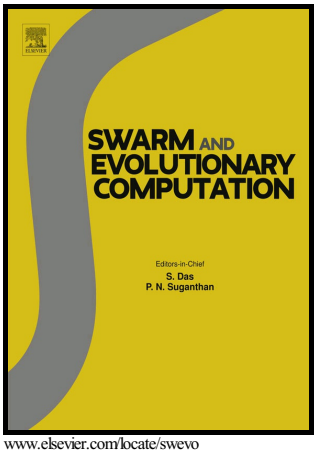
Author's Accepted Manuscript

Optimal Planning of Distributed Energy Resources in Harmonics Polluted Distribution System

Manoj Kumawat, Nitin Gupta, Naveen Jain, R.C. Bansal



www.elsevier.com/locate/swevo

PII: S2210-6502(16)30519-3
DOI: http://dx.doi.org/10.1016/j.swevo.2017.09.005
Reference: SWEVO308

To appear in: *Swarm and Evolutionary Computation*

Received date: 11 December 2016
Revised date: 12 July 2017
Accepted date: 9 September 2017

Cite this article as: Manoj Kumawat, Nitin Gupta, Naveen Jain and R.C. Bansal, Optimal Planning of Distributed Energy Resources in Harmonics Polluted Distribution System, *Swarm and Evolutionary Computation,* http://dx.doi.org/10.1016/j.swevo.2017.09.005

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

Optimal Planning of Distributed Energy Resources in Harmonics Polluted Distribution System

Manoj Kumawat[1*], Nitin Gupta[1], Naveen Jain[2], R. C. Bansal[3]

[1]Department of Electrical Engineering, MNIT Jaipur, 302017, India

[2]Department of Electrical Engineering, CTAE, MPUAT, Udaipur, 313001, India

[3]Department of Electrical, Electronics and Computer Engineering, University of Pretoria, South Africa

Abstract:

In this study, harmonics related to power quality issue and energy demand growth are considered simultaneously towards the realistic planning of medium voltage radial distribution system. Mostly, harmonics of distribution networks are produced in the presence of non-linear loads. Therefore, Distributed Energy Resource (DERs) can be placed to mitigate the harmonic distortions and to supply the required system energy demand. This paper presents a Modified Group experience of Teaching Learning Based Optimization approach, which can deal with allocation of DERs efficaciously in distorted and non-distorted radial distribution networks. The effectiveness of the proposed approach is validated on standards 33-bus and 69-bus test systems along with 83-bus (Taiwan Power Company) practical radial non-distorted distribution system. The results are compared with already well-established existing methods as suggested in the literature. Further, the proposed algorithm is applied to DER planning considering harmonics generating loads in above-mentioned test systems. The results with linear as well as non-linear loads on all three test systems prove that the proposed strategy can be a robust approach to enhance the system performance towards mitigating increased load demand within the constraints of the distribution system.

Keywords: Distributed energy resources; distribution load flow; harmonics spectrum; power quality; teaching learning based optimization.

Accepted manuscript

* Corresponding author: Mobile: +91 9828288334
E-mail addresses: 2013ree9030@mnit.ac.in (M. Kumawat), nitineed@gmail.com (N. Gupta), njain@ieee.org (N. Jain), rcbansal@ieee.org (R. C. Bansal)

دریافت فوری ← متن کامل مقاله

ISIArticles
مرجع مقالات تخصصی ایران

✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
✓ امکان دانلود نسخه ترجمه شده مقالات
✓ پذیرش سفارش ترجمه تخصصی
✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
✓ دانلود فوری مقاله پس از پرداخت آنلاین
✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات