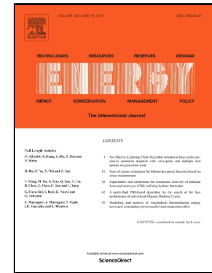


# Accepted Manuscript

An energetic and economic analysis of power productive gas expansion stations for employing combined heat and power

A. Arabkoohsar, Z. Gharahchomaghloo, M. Farzaneh-Gord, R.N.N. Koury, M. Deymi-Dashtebayaz



PII: S0360-5442(17)30952-0  
DOI: 10.1016/j.energy.2017.05.163  
Reference: EGY 10971  
To appear in: *Energy*  
Received Date: 19 October 2016  
Revised Date: 05 May 2017  
Accepted Date: 28 May 2017

Please cite this article as: A. Arabkoohsar, Z. Gharahchomaghloo, M. Farzaneh-Gord, R.N.N. Koury, M. Deymi-Dashtebayaz, An energetic and economic analysis of power productive gas expansion stations for employing combined heat and power, *Energy* (2017), doi: 10.1016/j.energy.2017.05.163

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 proof before it is published in its final 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.

# An energetic and economic analysis of power productive gas expansion stations for employing combined heat and power

A. Arabkoohsar<sup>1</sup>, Z. Gharahchomaghloo<sup>2</sup>, M. Farzaneh-Gord<sup>3</sup>, R.N.N. Koury<sup>4</sup>, M. Deymi-Dashtebayaz<sup>5</sup>

<sup>1</sup>Department of Mechanical Engineering, Azadshahr Branch, Islamic Azad University, Azadshahr, Iran

<sup>2</sup>Department of Computer Engineering, Milad Institute of Higher Education, Minoodasht, Iran

<sup>3</sup>Faculty of Mechanical Engineering, Shahrood University of Technology, Shahrood, Iran

<sup>4</sup>Faculty of Mechanical Engineering, Federal University of Minas Gerais, Belo Horizonte, Brazil

<sup>5</sup>Faculty of Mechanical Engineering, Hakim Sabzevari University, Sabzevar, Iran

\*Corresponding Author: Email: [mani.koohsar@yahoo.com](mailto:mani.koohsar@yahoo.com)

## Abstract:

The feasibility of employing combined heat and power (CHP) systems for providing the required heat in power productive gas expansion stations (PPGES) has been studied. However, there is no study in the literature indicating which PPGES is an economically efficient host for the CHP technology. In this work, comprehensive energetic and economic analyses are accomplished on several gas expansion stations (GES) in Iran. The corresponding power generation units and CHP systems of each of these stations are sized and designed. Net present value (NPV) is the economic method of used for the sizing and design procedure. The novel technical criterion of relative heating demand (RHD) which makes the economic index of relative NPV (RNPV) equal to zero determined the eligible PPGESs for being equipped with a CHP unit. The results show that a PPGES might be an appropriate host for a properly sized and designed CHP system if its RHD value is greater than 0.35. This value for the simple GESs was found as 0.23.

**Keywords:** Power productive gas station, combined heat and power, Turbo-expander, Energetic analysis, Economic assessment

Download English Version:

<https://daneshyari.com/en/article/5476593>

Download Persian Version:

<https://daneshyari.com/article/5476593>

[Daneshyari.com](https://daneshyari.com)