turnitin unesa1

Turnitin [91]

DPE

Document Details

Submission ID

trn:oid:::3618:112386813

Submission Date

Sep 15, 2025, 7:04 PM GMT+7

Download Date

Sep 15, 2025, 7:11 PM GMT+7

File Name

Turnitin [91].pdf

File Size

113.8 KB

1 Page

490 Words

3,177 Characters

10% Overall Similarity

The combined total of all matches, including overlapping sources, for each database.

Filtered from the Report

- Bibliography

Match Groups

- **4** Not Cited or Quoted 10%
  Matches with neither in-text citation nor quotation marks
- **0** Missing Quotations 0%
  Matches that are still very similar to source material
- **0** Missing Citation 0%
  Matches that have quotation marks, but no in-text citation
- **0** Cited and Quoted 0%
  Matches with in-text citation present, but no quotation marks

Top Sources

10%	Internet sources
0%	Publications
0%	Submitted works (Student Papers)

Integrity Flags

0 Integrity Flags for Review

Our system's algorithms look deeply at a document for any inconsistencies that would set it apart from a normal submission. If we notice something strange, we flag it for you to review.

A Flag is not necessarily an indicator of a problem. However, we'd recommend you focus your attention there for further review.

Match Groups

- **4** Not Cited or Quoted 10%
  Matches with neither in-text citation nor quotation marks
- **0** Missing Quotations 0%
  Matches that are still very similar to source material
- **0** Missing Citation 0%
  Matches that have quotation marks, but no in-text citation
- **0** Cited and Quoted 0%
  Matches with in-text citation present, but no quotation marks

Top Sources

10% Internet sources
0% Publications
0% Submitted works (Student Papers)

Top Sources

The sources with the highest number of matches within the submission. Overlapping sources will not be displayed.

1	Internet	journal.i-ros.org	9%
2	Internet	doaj.org	2%

Journal of Current Studies in SDGs
Homepage : https://journal.i-ros.org/index.php/JOCSIS
Email : jocsis@i-ros.org

e-ISSN 3089-7564
Vol. 1, No.3, August 2025

Theoretical Review: Adiabatic Coupler Engineering and Modification in Supporting SDGs 9 Efficient Optic Technology Engineering and Innovation

Rahmatta Thoriq Lintangesukmanjaya[1*], Akhmad Iswardani[1], Binar Kurnia Prahani[1], Dwikoranto[1], Noval Maleakhi Hulu[2]

[1]Universitas Negeri Surabaya, Surabaya, Indonesia
[2]Monash University, Selangor, Malaysia

Check for updates | Open Access | CC BY

DOI : https://doi.org/10.63230/jocsis.1.3.91

Sections Info

Article history:
Submitted: September 3, 2025
Final Revised: September 12, 2025
Accepted: September 13, 2025
Published: September 14, 2025

Keywords:
Adiabatic;
Adiabaticity;
Coupler;
Optical;
Phython.

ABSTRACT

Objective: *This study aims to describe the application of adiabatic coupler modification in efficient optical coupler engineering and to emphasize its contribution to the achievement of SDG 9 (Industry, Innovation, and Infrastructure).* ***Method:*** *The method used is a literature study through a review of relevant articles and Python software-based analysis to evaluate the impact of coupler modifications, as an effort to strengthen theoretical findings.* ***Results:*** *The results of this study show that the invariance principle-based reverse engineering approach is practical in designing directional couplers on waveguides. Combined with perturbation analysis of the coupled mode equations, this method produces directional couplers that are highly robust to parameter variations such as coupling coefficient and wavelength. However, changes in scale or resonance through Python integration do not significantly affect the apparent deviation of the coupler wave, so the efficiency of the coupler is mainly determined by the coupling coefficient and wavelength variations.* ***Novelty:*** *This study highlights the novelty of utilizing the invariance principle and resonance modification as an efficient and straightforward approach for adiabatic coupler optimization. Furthermore, the results demonstrate the significant contribution of adiabatic couplers to SDG 9 through their support for the development of sustainable optical communication infrastructure, increased energy efficiency, and innovation in next-generation optical technologies.*

INTRODUCTION

The development of resilient infrastructure, inclusive and sustainable industrialization, and increased technological innovation are emphasized in Sustainable Development Goal 9 (SDG 9) as the main pillars of global development (Lyytimäki, 2025). The role of science, technology, and innovation is recognized as key in realizing SDG 9, especially in strengthening the competitiveness of research-based industries and cutting-edge technology (Dzhunushalieva & Teuber, 2024). Research by Lintangesukmanjaya et al. (2025) states that technology integration plays a very strategic role in achieving the SDGs. Technological innovation also has a significant role in strengthening the achievement of SDGs (Fitroni et al., 2025). Utilization of technology in accelerating the implementation of SDGs. One of the technological developments is optical technology, where advances in materials, device design, and photonic integration show great potential to support energy efficiency, system miniaturization, and high-speed communication performance (Wu et al., 2020).

Technological developments are increasingly rapid, especially in the use of optical physics. In the use of technology involving the processing, transmission, and control of