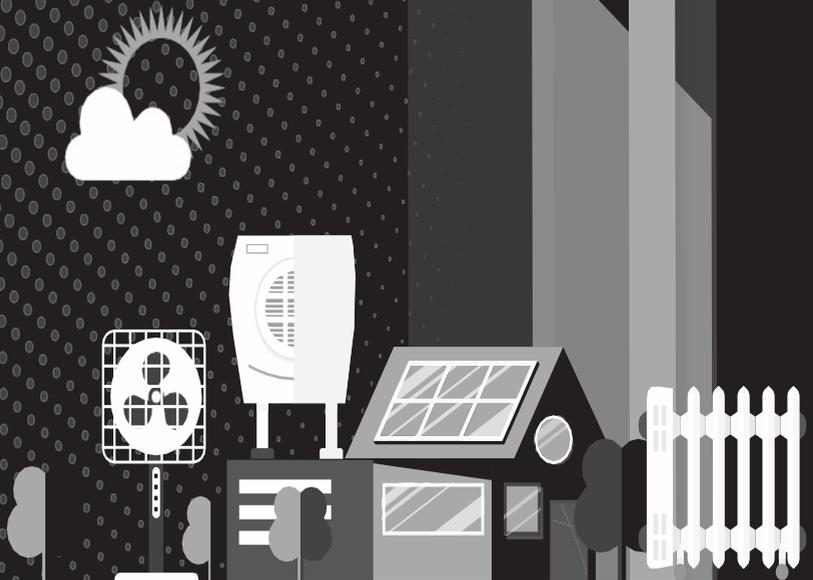




Université Hassan 1^{er} - Settat
Km 3 Route de Casablanca
B.P. 539 - Code postal : 26 000 - Settat
Tél : +212 5 23 72 12 75 / 76 - Fax : +212 5 23 72 12 74
www.uh1.ac.ma

Guide pratique destiné au

Guide technique pour le chauffage, la climatisation Et la ventilation.



*¹BENACHIR NOUHAILA ,
Hassan I First University of Settat, Faculté
Sciences et Technique Ecole Nationale des
Sciences Appliquées, LISA Laboratory,
Berrechid 26100, Morocco.*

Corresponding author :

Benachir Nouhaila

**(Benachir.nouha@gmail.com/n.benbachir
@uhp.ac.ma/)**



"Architecture is a wonderful expression of the discovery process. It's like a scientist who doesn't know the answer, but knows the path to it. That's what drives me: the joy of the path, the discovery."

Glenn Murcutt Architect, winner of the 2002 Pritzker Architecture Prize

"The publication of this book was financed by the Hassan
ler University fund for scientific research. "

A My
BENACHIR
Nouhaila

Dedication

Dedication

I dedicate this modest work to my dearest parents, the first ones who encouraged and supported me during this long way.

**

Thanks

"Praise be to GOD, lord and master of the universes".

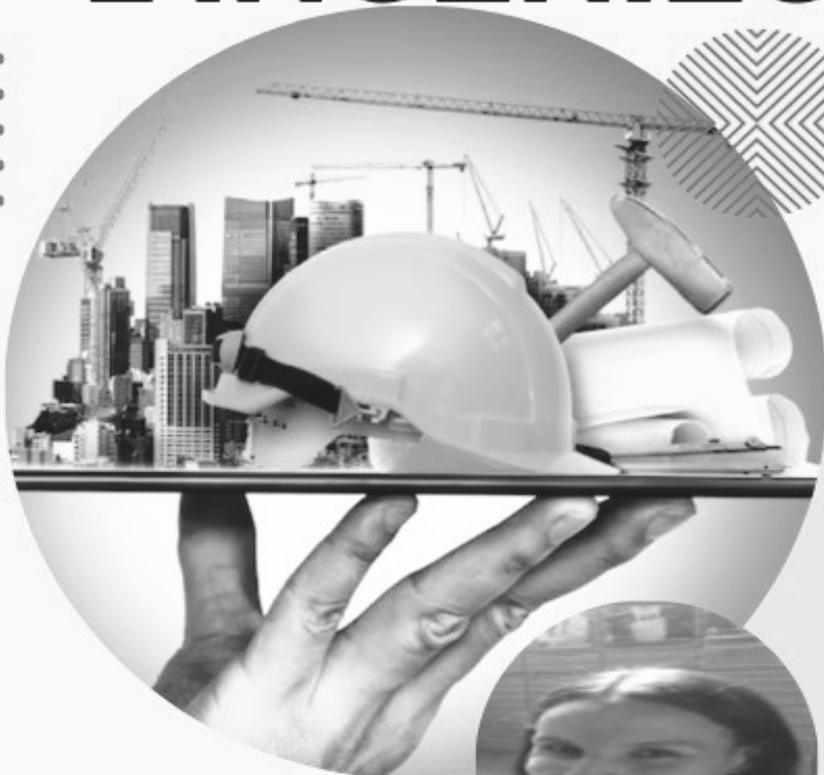
I would like to express my thanks to a whole world of people who have made this study possible and who have contributed to its elaboration in any form.

I address myself to GOD, the almighty, to thank him for having given me the courage, the support, the patience to carry out this work.



THÈSE PRÉSENTÉE EN VUE DE L'OBTENTION DU
DIPLOME DE DOCTORAT EN PHYSIQUE
INGÉNIERIE :

SCIENCES POUR L'INGÉNIEUR



By: Benachir Nouhaila
Soutenue publiquement le : 2023



Scientific production

Publication