



الجمهورية الجزائرية الديمقراطية الشعبية وزارة
التعليم العالي والبحث العلمي جامعة
قسنطينة 1 - الإخوة منتوري
كلية العلوم الدقيقة



PEOPLE'S DEMOCRATIC REPUBLIC OF ALGERIA
MINISTRY OF HIGHER EDUCATION AND SCIENTIFIC RESEARCH
Constantine 1 University – Frères Mentouri
Faculty of Exact Sciences

ANNONCE DE SOUTENANCE



Conformément à la décision n° 02/DS/2026 datée du 22 Janvier 2026 autorisant la soutenance d'une thèse de doctorat, le Vice-doyennat chargé de la post-graduation, de la recherche scientifique et des relations extérieures, a n n o n c e la soutenance publique d'une thèse de doctorat en Sciences le :

Lundi 16 Février 2026 à 16H00

Lieu : A la salle de conférences sise au Campus Chaab Erssas - Constantine 1 – Frères Mentouri

Filière : Physique

Spécialité : Energies Renouvelables.

Doctorante: **ABBAZ Dalila**

Sur le thème : « Etude théorique et expérimentale des machines frigorifiques à adsorption à différentes conditions thermiques de la source de chaleur ».

Devant le jury d'examen :

	Nom et prénoms	Grade	Etablissement d'appartenance
Président	DJEZZAR Mahfoud	Professeur	Université Constantine1, Frères Mentouri
Directrice de thèse	CHAKER Abla	Professeure	Université Constantine1, Frères Mentouri
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Co-directeur invité	BENELMIR Riad	Professeur	Université - Lorraine – F r a n c e

A b s t r a c t

The aim of this work is to study two adsorption refrigeration cycles that can be considered at the current time, in order to contribute to promote the massive use of adsorption refrigeration machines powered by a renewable energy sources. These systems could be a real alternative to energy-intensive mechanical vapor compression refrigeration machines powered by fossil fuel electricity.

A new adsorption refrigeration system powered by a biomass boiler, under hot water temperature conditions lower than 85°C, is proposed. A numerical model of the whole system, single-stage adsorption machine using the silica-gel/water couple and storage tank, is developed and validated by measures on a test stand.

Parametric studies have been carried out using the developed model to determine the effect of parameter adaptation of the components configuration and the operating process, on the cold production capacity, on the performances and on the cyclic characteristics of the system, in conventional and direct cycle mode.

A feasibility study was also carried out to analyze the operation of a cascade adsorption cycle, using high temperature driving heat for a low temperature refrigeration application, varying the three thermal levels in the cycle, such as, generation (260°- 320°C), condensation (25°- 50°C) and evaporation (-15°- 5°C) The working pairs used in our study are, zeolite/ammonia for the beds operating at high temperatures and activated carbon/ammonia, for those operating at low temperatures.