

New Authentic Mechanics



TECHNOLOGY

Energy efficient HVAC

7 October 2021

Why NAM Tech



Every year 6 million starving people include 3 million children dies because food insecurity . Let's increase cooling capacity in hunger areas by 25%-30%

Cooling and refrigeration cause **CO₂** annual emission of 3 billion ton. Let's cut the number by 15%-20%

Let's save global electricity and fuel expenses spent for cooling and refrigeration by \$9-\$12 billion

Competitors?

To the best of our knowledge, we are know systems attempting improvement of the cycle efficiency using similar approaches like economizers of Bitzer or new cooling agent of Trane. There are companies which are working on various components of the system and improving their efficiency. We see these components as being complimentary rather than competitive.

One thing we want to emphasize.
They save 2%--6%.

We save 10%-38%.
Big difference.

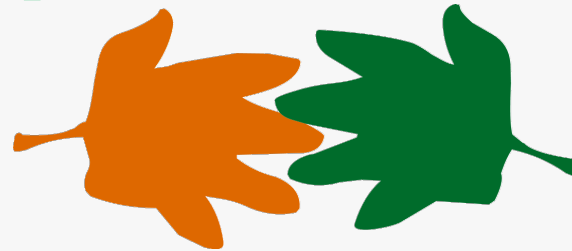
New Authentic Mechanics



FUNDED BY Ministry of National infrastructure, Energy and Water Resources

www.energy.gov.il

WITH THE ASSISTANCE OF The Ministry of Environmental Protection



MANUFACTURERS' ASSOCIATION OF ISRAEL

CERTIFICATE

This is to certify that the Quality Management System of
N.A.M. TECHNOLOGY LTD.
33 B, Odem St., Ma'alot, Israel

Has been assessed and complies with the requirements of:
ISO 9001:2015

This Certificate is Applicable to
Manufacturing, installing and marketing systems for energy efficiency of stationary refrigeration facilities (refrigeration rooms) and portable (refrigeration trucks).

Initial Approval: 07/01/2020
Issue Date: 07/01/2020
Valid Until: 07/01/2025

Certificate No.: 107057

Dr. Gilad Galuh
CEO

Avital Weinberg
Director, Quality & Certification Division

Our Vision: To Enhance Both Global Competitiveness of our Services, with our Uncompromised Quality and Integrity

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State of Israel
Patent Office



מדינת ישראל
רשות הפטנטים

חוק הפטנטים, התשנ"ז-1967
Patents Law, 5727 - 1967

תעודת פטנט

CERTIFICATE OF PATENT

This is to certify that the following particulars have been recorded in the Register of Patents:

זאת לתעודה כי הפרטים דלהלן נרשמו בפנקס הפטנטים

Patent No: **254616**
Date of Application: **24/09/2017**

מס' הפטנט:
תאריך הבקשה:

Title of Invention:
COMBINED-TYPE CASCADE REFRIGERATING APPARATUS

שם האמצאה:
התקן קרר קסקדי מסוג משולב

Patentee(s):

בעלי הפטנט:

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ישראל

Date of Publication: **30/01/2020**
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תאריך פרסום קיבול הבקשה:
תאריך מתן פטנט:

אופיר אלון
רשם הפטנטים
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תעודה זו הינה אישור כי דבר מתן הפטנט נרשם בפנקס הפטנטים
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* See reverse of certificate for patent validity

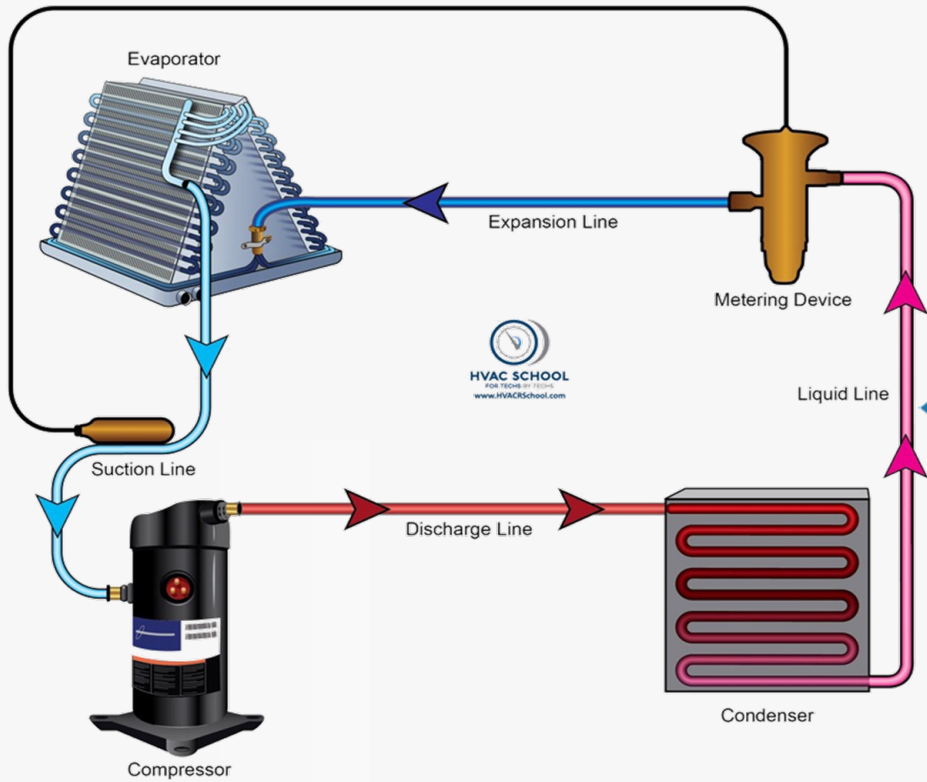
תמי תוקף הפטנט ראה בגב התעודה*

Coefficient of Performance

$$\mathbf{C.O.P.} = \frac{\mathit{Cooling\ Energy}}{\mathit{Electrical\ Energy}}$$

The Multi-cascade technology

The company invented multi cascade technology allowing to increase a main cooling unit COP by controlled subcooling



ECO-KOR Models

System developed
for refrigerated trucks



System for stationary
applications



Where is it relevant?

Refrigeration equipment is essential for the food, pharmaceutical, chemical and other industries, and our systems are suitable for most market niches.

Supermarkets

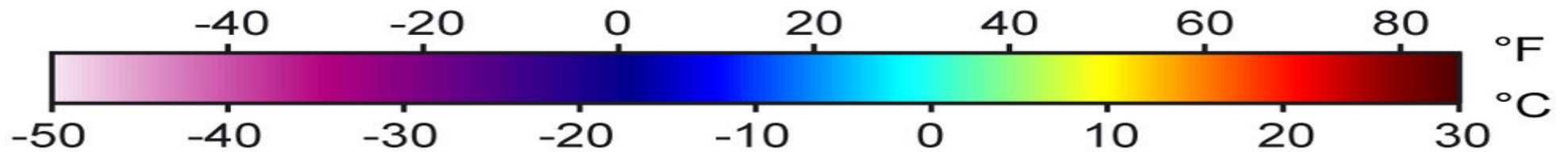
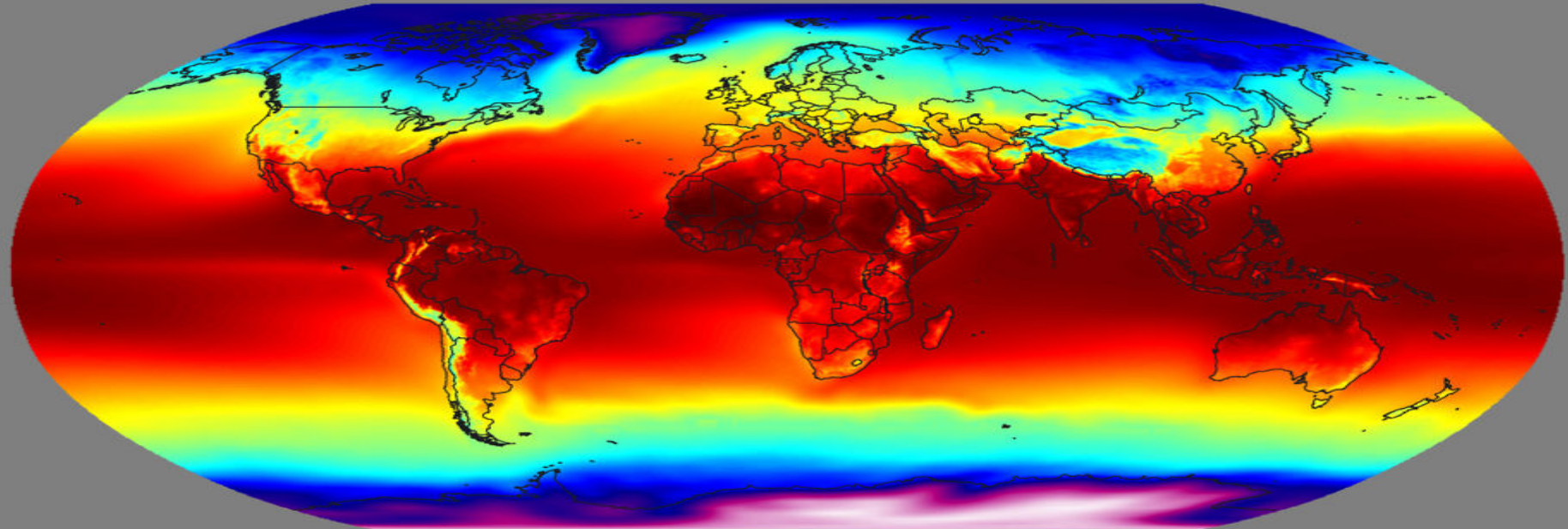
Cold warehouses

Food plants

**Refrigerated
Trucks and Reefers**



Saving rates in different climate zones

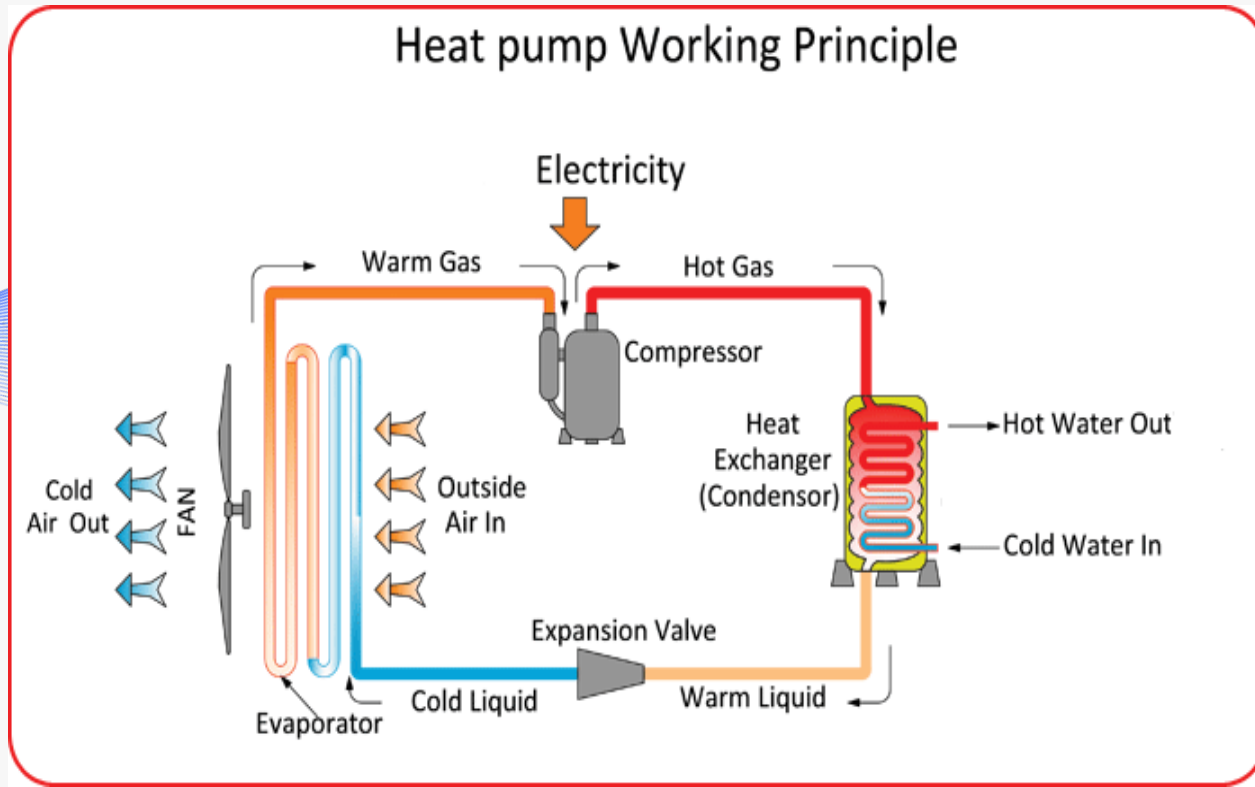


Annual Mean Temperature

Saving rate	Frozen	Cold	Saving rate	Frozen	Cold
	32%-38%	20%-24%		12%-15%	8%-10%
	22%-28%	15%-18%		8%-10%	5%-7%
	18%-20%	12%-15%		N/A	N/A

The Status Quo in Heat Pump Market

Conventional single-stage heat pump, operating like a conventional air conditioner, which is usually made from an outdoor unit of a conventional air conditioner



The Classical Problem of Heat Pump



Most likely normal

Probably Needs Service

The heating market - Homeham



Solved problem

- A sharp reducing of thermal power and energy efficiency ratio (COP) of existing heat pump at low outside temperatures;
 - Difficulty and even inability to achieve temperature of 55 Celsius (border temperature of Legionella) in the reverse water heating reservoir in winter period;
 - High energy costs (sometime, more than 30% of total energy spending) frosted evaporator thawing;
- Because low efficiency of existing heat pump an limitation of electricity infrastructure consumer should use a fossil energy sources.



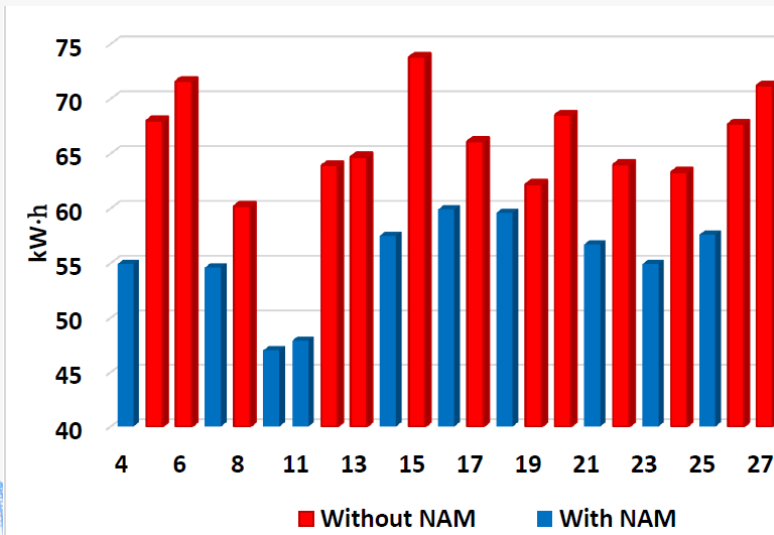
The opportunity

Heat pump with high COP in negative temperatures. Our heat pump Homeham based on multi cascade technology will open 2-5 billion dollar niche at heat pump industry to markets such as North USA, Canada, Russia, and Scandinavia. Our simulations show that we will save more than 31% in Helsinki and 35% in Quebec. As well, our heat pump can work in warm climate providing energy saving of 15%-18%.

The Study Cases - Testimonials



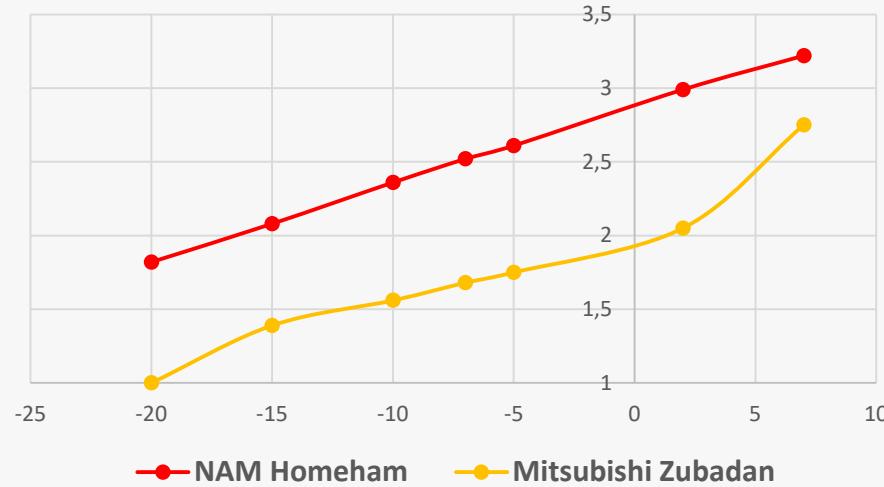
20% of fuel & energy saving



“Great result of saving” - **Dov Basel**,
 Director of Environmental
 Protection, Tnuva



COP Tout 55°C



Energy consumption reduced by 31%

“Excellent quality and smart solutions”- **Radik Bogrichuk**,
 HVAC Manager of Tower Semiconductor

Thank you!

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