Adopting Emerging Technologies & addressing its effect on Environment & Climate:
AFICTA, 13 Nov. 2025

COUNTRY REPRESENTATIVE

COP28 SIMULATION MODEL

21 - 26 OCT 2032

ESE
ENGINEERS FOR A SUSTAINABLE EGYPT

My mission is to fight for environmental degradation and climate conservation via education, peace, health, & start–up systems across the world.

Engineers For a Sustainable Egypt


1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS


13
CLIMATE ACTION
ALIGNING TO THE SUSTAINABLE DEVELOPMENT GOALS
Take urgent action to combat climate change and its impacts

- **<u>The Paris Agreement's central aim:</u>**

- "To strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below **2 degrees Celsius** above pre-industrial levels and to pursue efforts to limit the temperature increase even further to **1.5 degrees Celsius**. (12 December 2015, **COP 21 UNFCCC**)

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The **net zero target** is set generally in AFRICA & globally for around

2050

2070??

- India, Key Industrial player in ASIA & The world
- repledges for net zero goal by 2070
- “UK climate change conference, 2021”

Part 1:The Problem to be addressed- The Building as Liability

- "Globally, buildings are responsible for nearly **40% of annual carbon emissions**. A significant portion of this comes from Heating, Ventilation, and Air Conditioning – **HVAC**.

- In hot climates, like here in **Egypt**, this problem is magnified.

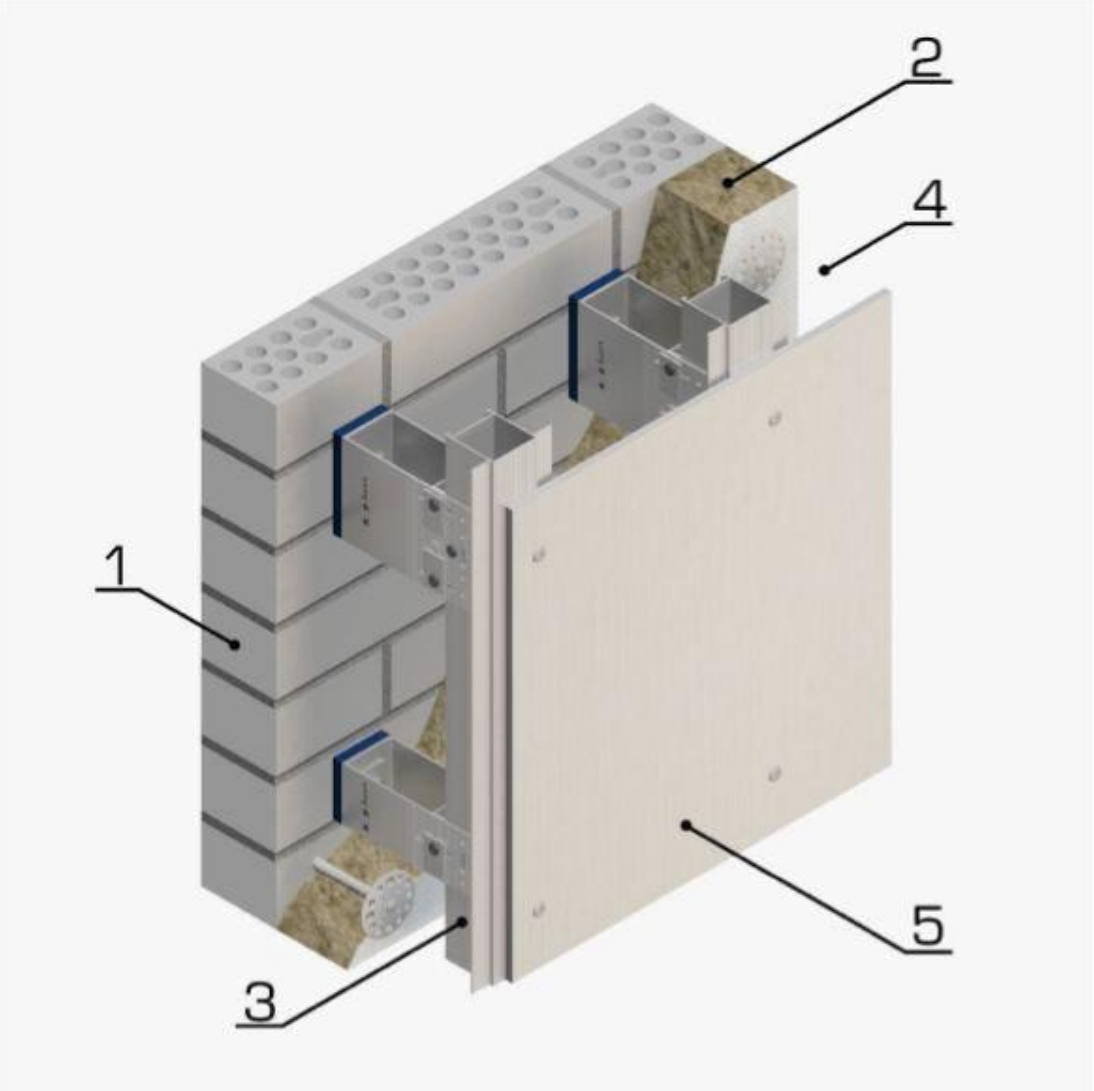
- Our buildings absorb solar radiation all day, turning them into **ovens** that require massive amounts of energy to cool.

- The conventional building envelope is often a liability. It is static, inefficient, and works ***against*** us in the fight for energy conservation.

(Part 2: The Solution - The Building as an Active, Adaptive Asset)

"This is where the Ventilated Facade comes in".

Think of it not just as a cladding, but as a **dynamic, adaptive exoskeleton** for a building.



- **<u>Main cladding components as designed by our Russian partner</u>:**

  - **1- Back up wall**
  - **2- Insulation**
  - **3- Structural Support**
  - **4- Air Gap**
  - **5- Cladding**
  -

How it works?

- **1-The Thermal Insulation Layer: Mandatory “Thermal buffering”**
- **2- The Aluminum Substructure:**
- **3-The Air Ventilation Gap: 'chimney effect'** or **stack ventilation**
- Our research shows that in hot climates like **Egypt**, a gap of up to **150 mm** provides optimal progressive efficiency.

- **The External Cladding:** This is the protective shield and the aesthetic layer. It can be anything from stone to composite panels.
- Crucially, this layer can now be **active**. Imagine your entire building skin generating power.
- By integrating **photovoltaic solar panels as the cladding material**, the facade transforms from a passive protector into an active energy generator

Passive turned to Active by ,,,,,BMS!

It's the Perfect Passive Foundation for Active ICT

By reducing the heat load on the structure by **30-40%**, it makes the job of the HVAC systems, which are controlled by an ICT/BMS, much easier and far more energy-efficient.

We handle the passive resilience, and the BMS handles the precise, active control.

2. Enabled for Monitoring and Validation, we can easily integrate temperature sensors within the air gap and behind the insulation.

The Active Facade (Advanced Integration):

- When we use Building-Integrated Photovoltaics **(BIPV)**—solar panels as the cladding—the facade becomes an active ICT component.
- It generates power and data that must be monitored and managed by smart grid systems

Photos from Egypt , the New Administrative Capital

- The **Iconic Tower** in Egypt is a significant project in the realm of solar energy production.
- The tower's design and construction reflect Egypt's commitment to harnessing its abundant solar energy resources.


Thank you