

SlideLuvre™

Smart voltaic shading systems



the dtic

Department:
Trade, Industry and Competition
REPUBLIC OF SOUTH AFRICA



3rd place: SA Innovation Summit 2020 Inventors Garage



South Africa

1st Runner-up: Global Cleantech Innovation Programme SA 2021

OVERVIEW



SlideLuvre is a paradigm shift from the traditional

Building on the best features from conventional shading systems and external shutters, and combining that with solar panels and intelligent automation amounts to a cutting-edge green product capable of reducing building energy consumption and carbon emissions by as much as 50%.

Now entering the commercialisation phase, we welcome engagement by potential industry partners and customers.

APPLICATIONS

Commercial and public buildings (retrofit or new), including:

- buildings with inadequate shading or window overhang;
- buildings with a lack of suitable roof space for solar panels;
- new buildings requiring a larger window/net floor area than the regulatory 15% (SANS204).

PRODUCT

With its unique bifacial solar slats & intelligent automation system, SlideLuvre enables optimum solar & thermal performance...



- It generates solar energy, and
- it saves energy by reducing heating, cooling and artificial lighting needs.

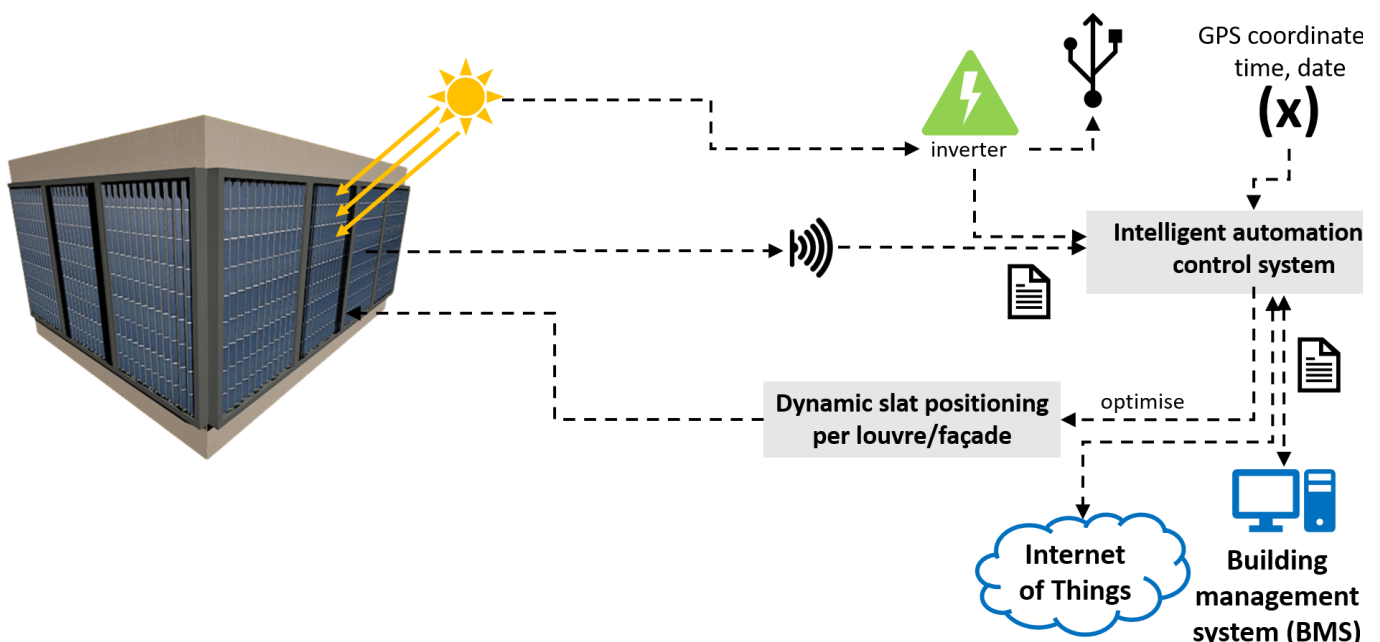
FEATURES AND BENEFITS



- **Intelligent:** dynamic slat positioning
- **Generates solar energy:** a solar energy solution for buildings with a lack of suitable roof space for conventional solar panels
- **Energy efficient:** superb thermal insulation and solar radiation control
- **Light and glare control:** effectively controls light levels and glare while still allowing views
- **Sustainable:** durable with a lifetime of >25 years and 99% recyclable
- **Acoustics:** sound-absorbing, noise-reduction and acoustic insulation properties

HOW DOES IT WORK?

The louvres are network enabled and can function as a standalone system or integrated with the building management system (BMS) and lighting system via its application program interface (API). The Internet of Things (IoT) enabled automation and control system uses input from sensors and other data to optimise louvre slat position for each façade with minimum to no manual involvement.

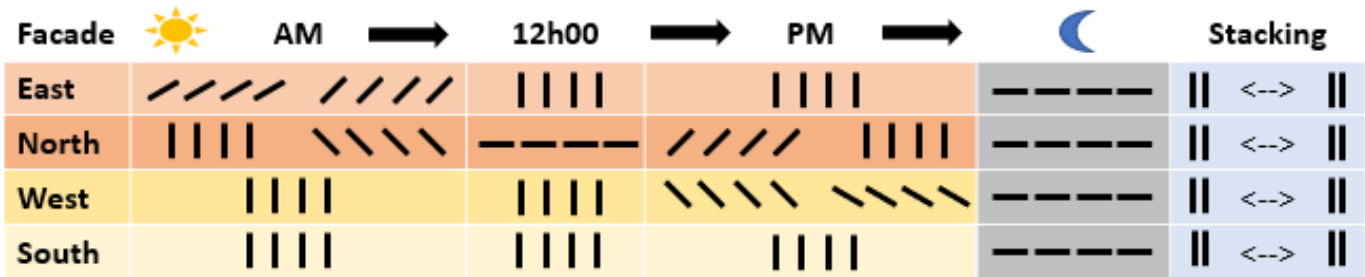


DYNAMIC SLAT POSITIONING



Dynamic solar control is a key ingredient in the quest for zero-energy buildings. Our proprietary control system goes even further by optimising daylight, glare, thermal gain and solar energy generation during the day, and limiting light pollution and insulating windows at night.

It allows louvres to be controlled individually, collectively or per façade (see diagram below), while the stacking option can be utilised to maximise daylight, ventilation or to allow for window maintenance when required.



Simplified view of slat positioning (southern hemisphere)

ENERGY-EFFICIENCY SAVINGS

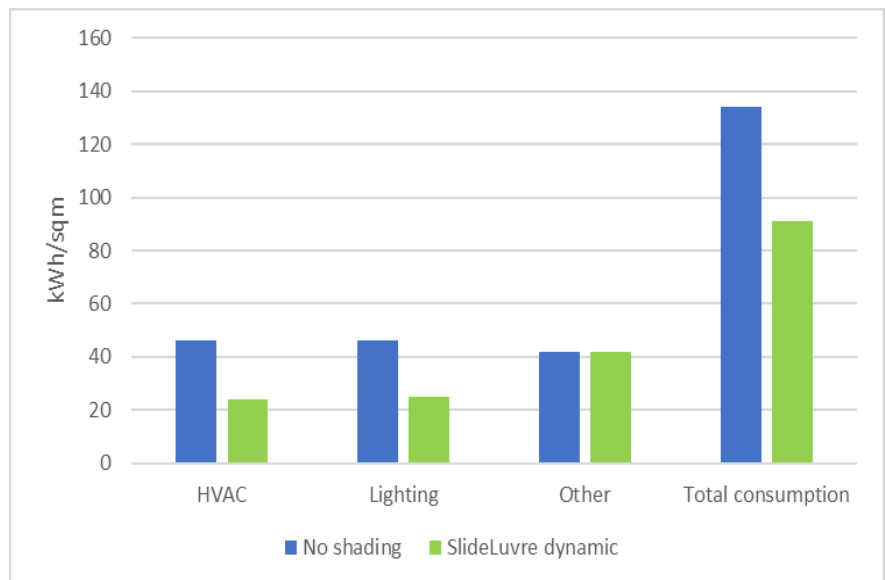
Performance simulation done for a notional building in Cape Town* showing the effect of SlideLuvre's dynamically controlled slats with internal lighting control based on the lux level:

Annual energy-efficiency savings:

- HVAC: 48%
- Lighting: 46%
- Total consumption: 32%

**Independent study performed by Greenplan Consultants.*

The "No shading" scenario is based on consumption data from the Cape Town LEAP Technical Report 2015 and the Green Building Council of SA calculation method.



NOTE: The building and inputs used in this model is one of many possible scenarios which are dependent on a variety of factors, in particular, internal lighting and internal heat generation that can vary significantly from building to building.

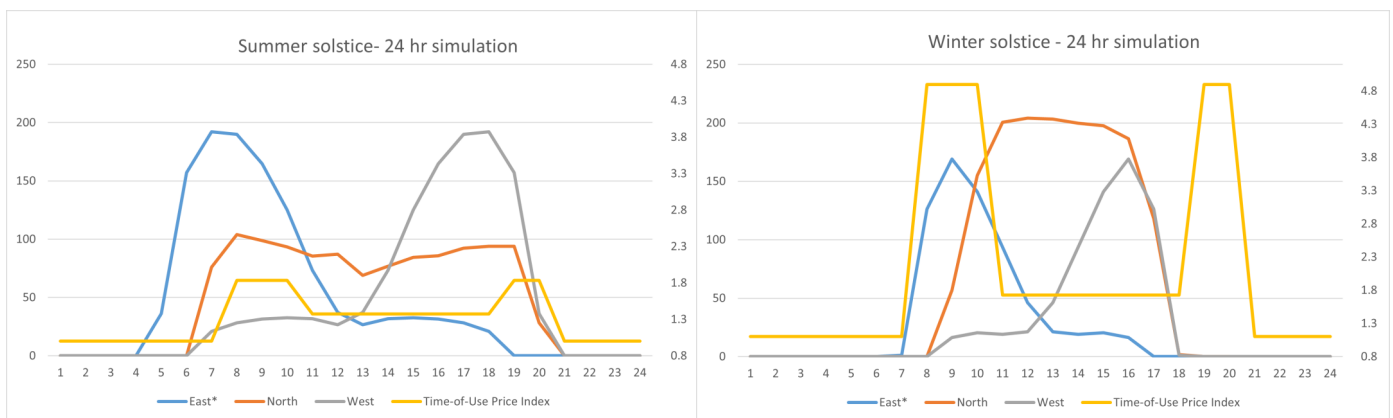
TIME-OF-USE SAVINGS



Another way SlideLuvre saves on electricity cost is by generating solar energy during peak daily and seasonal demand timeslots.

The figures below depict 24-hour simulations (on summer and winter solstices respectively) of the kWh solar yield for a 1sqm louvre installed on the East, North & West orientations of a building in Cape Town (East is an estimate and mirrors the West orientation for comparative purposes).

The Time-of-Use Price Index (yellow line on 2nd y-axis) is calculated using the City of Cape Town's Time-of-Use tariffs with the winter off-peak tariff as basis.



Note: North and West data based on results from a preliminary feasibility study by the Centre for Renewable & Sustainability Studies, University of Stellenbosch.

FINANCIAL BENEFITS

Local electricity cost has sky-rocketed by 446% in 12 years, and the trend will continue for the foreseeable future.

In a tenanted building these increases are passed on to tenants. SlideLuvre enables savings on a number of fronts, with benefits for landlord and/or tenant:

Solar energy:

- Reduced electricity bills, including Time-of-Use savings and electricity credits for excess generation
- Section 12B income tax rebate: deduct 100% of capital cost from income tax in year 1 of use

Energy efficiency:

- Reduced energy bills as a result of savings on heating, cooling and artificial lighting
- Section 12L income tax rebate: deduct R0.95 for each kWh energy saving

PROJECT EXAMPLE



Type	Office building
Location	Cape Town
Building area	2 730 sqm (4 floors of 683 m ² each)
SlideLuvre area	539 sqm (east, north & west facades)
Solar energy yield p.a.*	92 405 kWh
Energy-efficiency savings p.a.	117 662 kWh
Total electricity saving p.a.	210 067 kWh (57%)
Payback period	<3 years
Carbon emissions saving p.a.	194 942 kg CO ₂ (49%)

* Using estimated bifacial PV slat efficiency of 23%.

NOTE: In comparison, rooftop solar panels with 18% efficiency (340 m² ≈ 50% of roof area) may generate an estimated 104 432 kWh during the same period.

GREEN STAR CERTIFICATION

Spanning 5 Categories and 12 Credit objectives, SlideLuvre can make a significant contribution towards Green Star certification outcomes.

Applicable Green Star Categories and Credits

Indoor environmental quality	OB-IEQ-4: Daylight OB-IEQ-5: Daylight glare control OB-IEQ-8: Thermal comfort
Energy	OB-Ene-1: Greenhouse gas emissions OB-Ene-5: Peak energy demand reduction
Materials	OB-Mat-3: Reused materials OB-Mat-4: Shell and Core or Integrated Fit-out OB-Mat-8: Sustainable timber OB-Mat-9: Design for disassembly OB-Mat-11: Local sourcing
Emissions	OB-Emi-7: Light pollution
Innovation	OB-Inn-1-3: Innovative strategies & technologies/ exceeding benchmark/outside scope of Green Star rating

SLIDELUVRE®

SlideLuvre (Pty) Ltd

Office 301, 3rd Floor, Eikestad Mall,
43 Andringa Street, Stellenbosch, 7600, South Africa

Marlene Badenhorst

E: marlene@slideluvre.com

T: +27 (0)21 808 1724

M: +27 (0)82 920 7369

Version 1.6: Issue date 2021-04-15