Slide 1 – Why FLAS? (The problem)

Title:
Why a System-Level Standard for Ventilation?

Key points:

- Ventilation systems consume a significant share of global electricity.
- Current fan solutions are designed as isolated devices.
- Installation, commissioning, and interoperability remain complex.
- Energy efficiency potential at system level is largely untapped.

Message:

The problem is not the fan efficiency, but the lack of system intelligence and interoperability.

Slide 2 – What is FLAS?

Title:
FLAS – Fan Local Area System

Key points:

- Open system architecture for intelligent fan microgrids.
- Fans operate as interoperable nodes, not standalone products.
- Shared power and communication environment.
- Designed for LVDC-based systems and smart buildings.

Message:

FLAS transforms ventilation from a collection of devices into a coordinated system.

Slide 3 – What does FLAS standardize (and what not)

Title:
Scope and Positioning

Standardizes:

- System architecture and roles
- Behavioral model and lifecycle states
- Plug-and-play operation
- Minimum communication capabilities
- Conformance levels

Does NOT standardize:

- Hardware platforms
- Communication protocols
- AI algorithms
- Cloud services

Message:

FLAS fixes interoperability points while leaving full freedom to innovate.

Slide 4 – Why IEC? (Value of standardization)

Title:
Why FLAS Fits IEC Standardization

Key points:

- Complements existing IEC standards (LVDC, BACS, control).
- Technology-neutral and future-proof.
- Aligned with ZEB, EPBD, and energy efficiency policies.
- Enables multi-vendor ecosystems and market scalability.

Message:

FLAS fills a missing system-level layer in the IEC landscape.

Slide 5 – Status and Proposal

Title:
Status and Proposed Next Steps

Key points:

- IEC-style pre-standard specification available.
- Published as open, royalty-free (Apache 2.0).
- Ready to be used as an initial Working Draft.
- Proposal for a new IEC Work Item (NWIP).

Message:

FLAS is mature enough to move from open specification to international standard.

🎤 Slide 1 – *Why FLAS? The Energy Challenge*

Note relatore:

Ventilation is one of the largest electricity end-uses globally, but most inefficiencies are not due to poor motor efficiency.

The real waste is systemic: fans running at full speed when not needed, unnecessary AC/DC conversions, and poor power quality.

This means that even very efficient fans, when deployed in traditional architectures, still waste a large amount of energy.

The challenge today is not improving single devices, but rethinking ventilation as a coordinated system.

🎤 Slide 2 – *What is FLAS?*

Note relatore:

FLAS stands for Fan Local Area System.

It is an open system architecture where fans are no longer isolated devices, but nodes in a shared power and communication environment.

This allows ventilation systems to behave like intelligent subsystems, capable of coordination, optimization, and adaptation.

FLAS is designed to fit naturally into LVDC-based buildings and future smart energy infrastructures.

🎤 Slide 3 – *What FLAS Standardizes (and What It Does Not)*

Note relatore:

A key point is what FLAS does and does not standardize.

FLAS standardizes behavior, not technology.
It defines how devices discover each other, how they are commissioned, how they behave in normal and abnormal conditions.

It does not standardize hardware, protocols, or AI models.

This keeps the standard open, future-proof, and innovation-friendly.

🎤 Slide 4 – *Why FLAS Matters for ECEEE*

Note relatore:

From an energy efficiency perspective, FLAS is important because it enables continuous, system-level optimization.

It supports LVDC distribution, reduces installation complexity, and makes advanced control economically viable.

Most importantly, it turns policy goals—like EPBD, ZEB, and smart readiness—into something that can actually be implemented in real buildings.

Without system-level standards, a lot of efficiency potential remains theoretical.

(Qui puoi mostrare il grafico energetico)

🎤 Slide 5 – *Status and Next Steps*

Note relatore:

FLAS is not just a concept.

A complete IEC-style open specification already exists and is published royalty-free under Apache 2.0.

The proposal is to use this work as the basis for a new IEC Work Item, focused on system architecture and behavior for intelligent ventilation.

The invitation is to treat ventilation as a system—and to standardize it accordingly.

“We already know how to build efficient fans.
What we need now are efficient fan systems.”

Q&A Notes – FLAS (ECEEE Rome)

1️⃣ *“Is FLAS just another communication protocol?”*

Risposta consigliata:

No. FLAS is not a protocol.

It is a system-level specification that defines how ventilation devices behave and interact within a shared energy and control environment.

Communication technologies are deliberately left open to avoid lock-in and to remain compatible with future developments.

Messaggio da far passare:
👉 *Behavior first, technology second.*

2️⃣ *“Why do we need a new standard? Aren’t existing HVAC standards sufficient?”*

Risposta consigliata:

Existing standards do a good job at component and subsystem level.

What is missing is a system-level behavioral standard for ventilation, especially in the context of LVDC, smart buildings, and AI-driven optimization.

FLAS fills this gap without duplicating or conflicting with existing standards.

Messaggio chiave:
👉 *FLAS complements, it does not replace.*

3️⃣ *“How does FLAS contribute to real energy savings?”*

Risposta consigliata:

The main savings do not come from marginal efficiency improvements of individual fans.

They come from coordinated control, demand-based operation, and elimination of systemic inefficiencies.

FLAS enables these savings by making system-level optimization technically and economically viable.

Collegamento al grafico:
👉 *This is exactly what the energy savings chart illustrates.*

4️⃣ *"Is FLAS compatible with current building automation systems?"*

Risposta consigliata:

Yes. FLAS is designed to integrate with existing BACS and energy management systems.

It defines how ventilation systems behave internally, while remaining interoperable with higher-level building controls.

Messaggio chiave:
👉 *FLAS is a subsystem, not a replacement.*

5️⃣ *"Does FLAS mandate LVDC?"*

Risposta consigliata:

FLAS is designed for LVDC-based systems, because LVDC aligns naturally with modern loads and energy efficiency goals.

However, the standard focuses on system behavior and does not mandate specific voltage levels or electrical implementations.

Messaggio chiave:
👉 *LVDC is an enabler, not a constraint.*

6️⃣ *"How does FLAS handle safety and failures?"*

Risposta consigliata:

Safety is addressed through defined lifecycle states and mandatory safe behaviors.

The standard ensures predictable responses to faults and communication loss, while relying on existing electrical safety standards for protection details.

Messaggio chiave:
👉 *Behavioral safety, not hardware prescription.*

7️⃣ *“Isn’t AI risky in safety-critical systems?”*

Risposta consigliata:

FLAS does not standardize AI algorithms or allow AI to bypass safety rules.

AI functions operate within predefined behavioral and safety constraints.

This ensures that intelligence enhances efficiency without compromising predictability.

Messaggio chiave:
👉 *AI as optimization, not authority.*

8️⃣ *“Who benefits from FLAS standardization?”*

Risposta consigliata:

Manufacturers benefit from interoperability and reduced integration effort.

System integrators benefit from simpler commissioning and maintenance.

Policymakers benefit from a concrete mechanism to translate efficiency goals into deployable systems.

End users benefit from lower energy use and better system performance.

Messaggio chiave:
👉 *FLAS aligns incentives across the ecosystem.*

9️⃣ *“Is this industry-driven or policy-driven?”*

Risposta consigliata:

It is both.

The work started from industrial experience, but it is explicitly aligned with policy objectives such as EPBD, ZEB, and smart readiness.

The goal is to provide a neutral technical foundation usable by all stakeholders.

Messaggio chiave:
👉 *Technology serving policy.*

🔟 *“What are the next steps?”*

Risposta consigliata:

The next step is to bring this work into an international standardization context, such as IEC.

This allows open discussion, validation, and refinement by a broad community.

The intention is not to push a finished solution, but to start a structured standardization process.

Messaggio chiave:
👉 *Open process, not closed proposal.*

🎯 Frase di chiusura consigliata (se serve)

“If we want ventilation to contribute meaningfully to energy efficiency goals, we need to standardize how systems behave, not just how components perform.”

🔹 What is FLAS? (1 sentence)

FLAS is an open system-level specification that defines how fans behave and interact as an intelligent, energy-aware system.

🔹 Why is FLAS needed?

- Ventilation energy waste is **systemic**, not component-related
- Current standards focus on **devices**, not **systems**
- Policy goals (EPBD, ZEB) require **coordinated operation**

Key message:
👉 *Efficient fans are not enough; we need efficient fan systems.*

🔹 Is FLAS a protocol?

No.
FLAS standardizes **behavior and interoperability**, not communication technology.

Key message:
👉 *Behavior first, technology second.*

🔹 What does FLAS standardize?

- System architecture and roles
- Lifecycle states and plug-and-play behavior
- Minimum communication capabilities
- Conformance levels

What it does NOT standardize

- Hardware
- Protocols
- AI algorithms
- Cloud platforms

Key message:
👉 *Fixed interoperability points, open innovation.*

🔹 How does FLAS save energy?

- Enables demand-based operation
- Enables coordinated control
- Eliminates systemic inefficiencies
- Makes continuous optimization feasible

Key message:
👉 *Most savings come from coordination, not marginal efficiency gains.*

🔹 Why is LVDC relevant?

- Modern loads are natively DC
- Reduces conversion losses
- Simplifies integration with PV and storage

FLAS is **LVDC-oriented**, not LVDC-prescriptive.

Key message:
👉 *LVDC is an enabler, not a constraint.*

🔹 How does FLAS relate to BACS?

- FLAS operates **inside** the ventilation subsystem
- BACS operate **above**, at building level

They are complementary.

Key message:
👉 *FLAS is a subsystem, not a replacement.*

🔹 Is AI safe in FLAS?

- AI is **allowed**, not **mandated**
- AI cannot bypass safety or behavioral rules
- AI optimizes within predefined constraints

Key message:
👉 *AI as optimization, not authority.*

🔹 Who benefits?

- Manufacturers → interoperability
- Integrators → simpler commissioning
- Policymakers → implementable efficiency
- Users → lower energy use

Key message:
👉 *Aligned incentives across the ecosystem.*

🔹 Why IEC?

- Neutral, international platform
- Complements existing standards
- Enables scalable adoption

Key message:
👉 *System-level gaps need system-level standards.*

🔹 Status?

- Complete IEC-style pre-standard available
- Open, royalty-free (Apache 2.0)
- Ready for IEC New Work Item

Key message:
👉 *This is ready to be discussed, not just proposed.*

🎯 Final closing sentence (use if needed)

"We already know how to build efficient fans.
What we need now are efficient fan systems."