The context in France that lead to the French task force on ventilation

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Outline

1. Background in France
2. Construction of a national consultative body on ventilation issues
3. Connected key achievements
4. Conclusion & perspectives

1. Background in France – *EP and airing regulations*

- **The EP regulation (RT2012) generalizes low energy dwellings (~50 $kWh_{ep}/m^2/y$)**
  - Envelope airtightness requirement for single-family dwellings:
    - $q_{a4} \leq 0.6\ m^3/h/m^2 \cong n_{50} \leq 2.3\ h^{-1}$
    - Justification : measurement or quality management approach

- **Dwellings ventilation is concerned by another 30 year-old regulation (1982-1983)**
  - Compulsory general layouts of ventilation installation (doors undercut, …)
  - Exhaust airflows in each humid room
    - Depending on the number of humid and main rooms of the dwelling
    - => 6 – 9 L/s/pers in a 4 bedroom-dwelling
    - Can be reduced in case of DCV systems
  - No compulsory procedure at commissioning

1. Background in France – *State of the art*

- **Most of the new dwellings: Humidity-based DCV**
  - Rewarded in the EP calculation

- **An agreement procedure for each DCV system**
  - A multizone modelling using conventional entry data (weather, dwellings, occupancy, …)
  - Per room, over the heating period :
    - CO_2 cumulative exposure indicator E_{2000} < 400.000 ppm.h
    - Number of hours $T_{RH>75\%}$ < 600 h in kitchen, 1000 h in bathrooms, 100 h in other rooms
- **The manufacturer describes for each system and for each size of dwelling, the configuration (type and number of exhaust devices + trickle ventilators) to be used**

1. Background in France – *On site ventilation performance*

- **In France, since more than 20 years, 50% of buildings have non-compliant ventilation systems**
  - **Including 40% of controlled buildings with insufficient air change rates (ORTEC, 2009)**
- **Statistics on 1287 French new dwellings (Jobert, 2012) :**
  - **68% of single family dwellings of the sample have non-compliant ventilation systems**
- **Not better on low-energy houses**
  - A campaign on 21 low-energy houses (Guyot et al, 2015)
  - No house comply fully with the 2 regulations, 3.6 dysfunctions per house !
  - Shared responsibilities :
    - 43 % due to a poor design
    - 55 % due to a poor onsite installation
    - 2% due to a inappropriate using / maintenance by final user
- **=> Organisational issues due to multiple interactions between professionals during the construction phase**

2. Construction of a national consultative body on ventilation issues

- **2015 : the French ministry in charge of construction decided to invite all major actors of the ventilation field to join a working group called “Club Ventilation”**

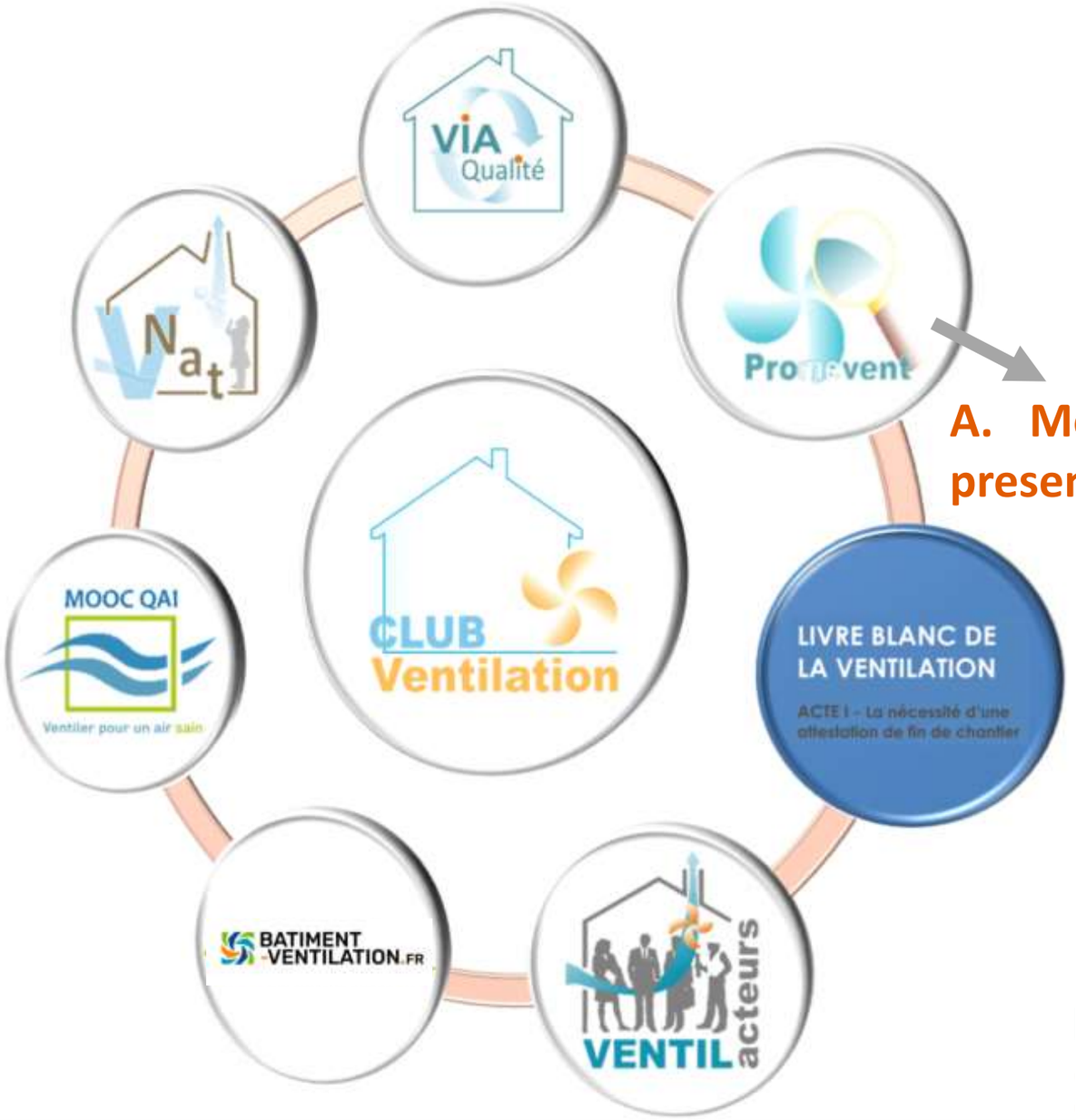
- **45 participants:**
  - building manufacturers, building managers, craftsmen, building companies,
  - label and certification and ventilation manufacturers representatives,
  - but also specialists of the ventilation field including training organisations, public agencies, engineering consultants.

- **Aims:**
  - To coordinate and propose projects and studies, their results, and new proposals;
  - To propose reference texts and follow normative evolutions;
  - To support and train professionals;
  - To bring together actors;
  - To bring about a change in ventilation systems design, mounting, use and maintenance.

- **Plenary meetings: 4 to 5 times a year + working groups**

2. Construction of a national consultative body on ventilation issues

- **Connected key achievements**

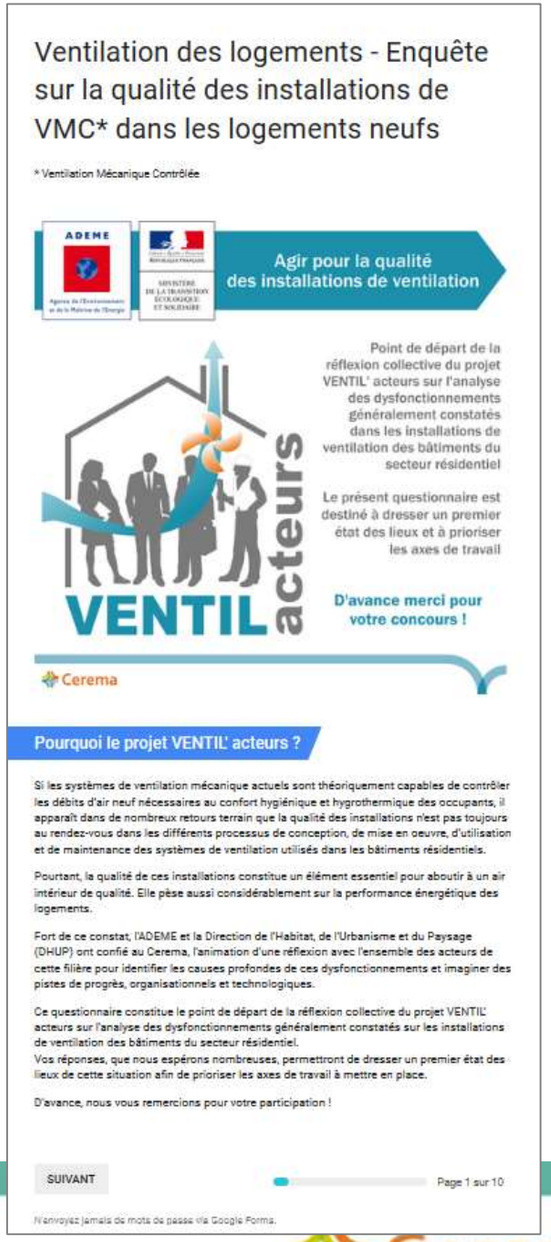


A. Melois presentation

3. Connected key achievements #1 - The Ventil'acteurs project

- **Aim**
  - to mobilize all the actors from building's sector in the field of ventilation in order to propose an action plan to eradicate each of the dysfunctions observed on mechanical ventilation installations in residential buildings
- **Mean:**
  - to collect advice and recommendations from all professional of the field, a survey is being built and published online:
  - https://docs.google.com/forms/d/e/1FAIpQLSdoO_308O_DvbINgsCh-Fl708Cfp14HRFfpKT6S4zFKcTIXaQ/formResponse

⇒ **Results will allow getting a shared overview of pitfalls and difficulties met by all the professionals with areas of improvement. Then, the action plan will be proposed in order to provide more reliable and performing ventilation installations in residential buildings.**


Ventilation des logements - Enquête sur la qualité des installations de VMC* dans les logements neufs

* Ventilation Mécanique Contrôlée

ADEME

Agir pour la qualité des installations de ventilation

VENTIL acteurs

Point de départ de la réflexion collective du projet VENTIL' acteurs sur l'analyse des dysfonctionnements généralement constatés dans les installations de ventilation des bâtiments du secteur résidentiel

Le présent questionnaire est destiné à dresser un premier état des lieux et à prioriser les axes de travail

D'avance merci pour votre concours !

Cerema

Pourquoi le projet VENTIL' acteurs ?

Si les systèmes de ventilation mécanique actuels sont théoriquement capables de contrôler les débits d'air neuf nécessaires au confort hygiénique et hygrothermique des occupants, il apparaît dans de nombreux retours terrain que la qualité des installations n'est pas toujours au rendez-vous dans les différents processus de conception, de mise en oeuvre, d'utilisation et de maintenance des systèmes de ventilation utilisés dans les bâtiments résidentiels.

Pourtant, la qualité de ces installations constitue un élément essentiel pour aboutir à un air intérieur de qualité. Elle pèse aussi considérablement sur la performance énergétique des logements.

Fort de ce constat, l'ADEME et la Direction de l'Habitat, de l'Urbanisme et du Paysage (DHUP) ont confié au Cerema, l'animation d'une réflexion avec l'ensemble des acteurs de cette filière pour identifier les causes profondes de ces dysfonctionnements et imaginer des pistes de progrès, organisationnels et technologiques.

Ce questionnaire constitue le point de départ de la réflexion collective du projet VENTIL' acteurs sur l'analyse des dysfonctionnements généralement constatés sur les installations de ventilation des bâtiments du secteur résidentiel.
Vos réponses, que nous espérons nombreuses, permettront de dresser un premier état des lieux de cette situation afin de prioriser les axes de travail à mettre en place.

D'avance, nous vous remercions pour votre participation !

SUIVANT

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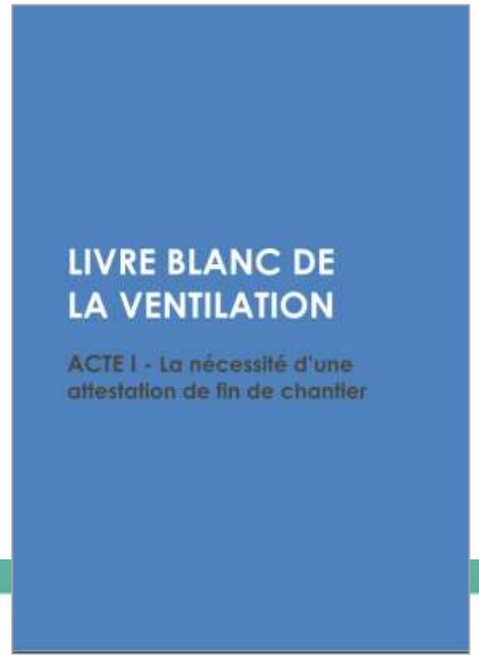
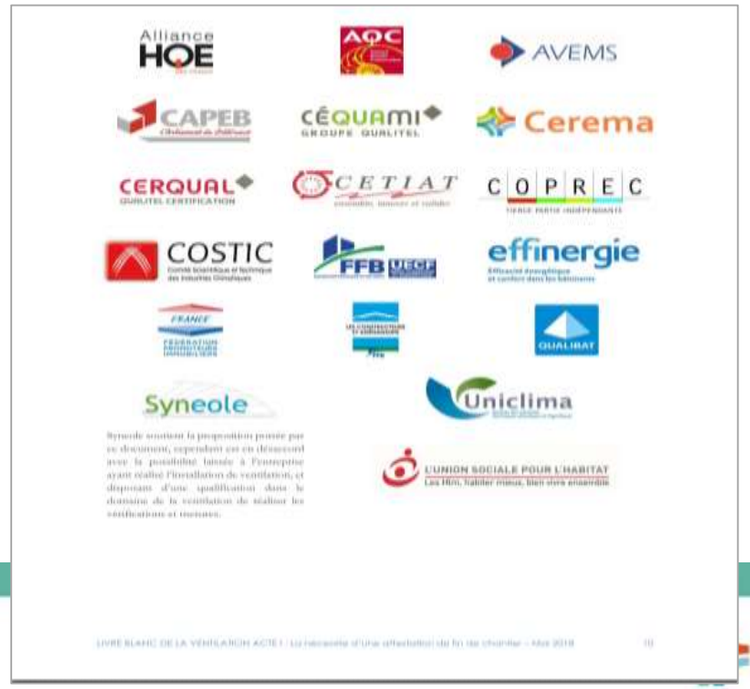
N'envoyez jamais de mots de passe via Google Forms.

3. Connected key achievements #2 - Livre blanc – Acte I

- **The "Livre blanc – Acte I" proposes:**
  - A compulsory certificate at the end of the construction work for any new building or major refurbishment with new ventilation installation
  - Certificating that airing regulation has been taken into account
    - Based on visual checks and airflows measurements on a sample
    - According to a technical baseline as the Promevent protocol (residential)
    - Accepting cost + existing protocol : 2019 for residential sector ?





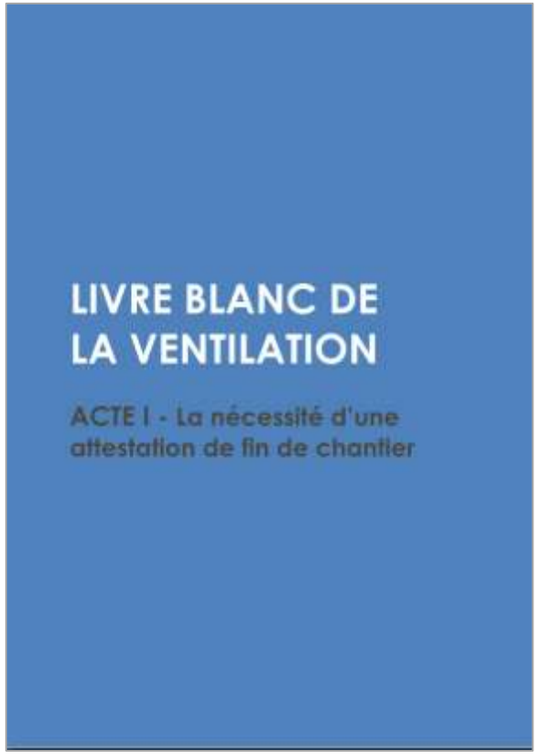
3. Connected key achievements #2 - Livre blanc – Acte I

- **The “Livre blanc – Acte I” includes Appendices**

A. State of the art of ventilation installations and indoor pollution

B. Socio-economic impacts of the proposed measure

C. Survey about recognized tools, publications and technical guidelines about ventilation installations



3. Connected key achievements #3 - A MOOC on IAQ & Ventilation

- **A Massive Open Online Course (MOOC), entitled "Ventilation: the keys to control indoor air quality", open to all actors of the building sector (including occupants)**

- **the MOOC is sequenced into 5 sections (corresponding to 5 weeks, each of them being divided into 3 modules), according to the following program:**
  A. IAQ and regulations in the building sector
  B. Ventilation and regulations in French buildings
  C. Design of a ventilation system in Residential
  D. To control a ventilation system and analyze the IAQ
  E. Implementation of actions promoting a good IAQ

A MOOC is a course of study made available over the Internet without charge. It is a free Web-based distance learning program designed for the participation of large numbers of geographically dispersed students.

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MOOC QAI
Ventiler pour un Air Sain

3. Connected key achievements #3 - A MOOC on IAQ & Ventilation

- **The educational objectives of the MOOC consist in better knowing:**
  - the sources of indoor pollutants, ventilation systems and air treatment
  - the health and economic issues related to a good IAQ
  - the regulations on IAQ and ventilation in buildings
  - the design and implementation rules of a ventilation system in residential buildings
  - the pathologies associated with the incorrect implementation of ventilation systems and to understand their impacts
  - the keys to healthy ventilation and IAQ
  - the principles of measurement audits, analysis methods, protocols of measurement and sampling procedures
  - the ways to improve IAQ
  - IAQ management methods (commissioning)

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3. Connected key achievements #3 - A MOOC on IAQ & Ventilation

- **The MOOC will be hosted by the end of March 2019, on the platform FUN of ADEME dedicated to Sustainable Buildings (https://www.mooc-batiment-durable.fr/).**

- **Launched by ADEME and Plan Bâtiment Durable from Ministry of Ecology and Solidarity Transition, the platform has two objectives:**
  - the growing competence of the professionals of the building industry and real estate on the themes of the energy transition and sustainable building in general (construction and renovation),
  - the dissemination to the general public, to a knowledge of the issues related to green building, in particular, the energy renovation of housing.

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3. Connected key achievements #4 - A website as a resource center : batiment-ventilation.fr

- **The need for a reference resource centre internet platform was raised by the Club Ventilation**
- **The overall objective of the project is to provide a set of online resources (regulatory information, baseline studies, feedback,...) to the attention of all the professionals of the construction on the subject of ventilation, both for new construction and for refurbishment.**
- **An inventory of existing resources will be done throughout a database. The Club Ventilation will be consulted.**
- **The website will be online in mid-2019, with launch conferences**
  - **11.04.2019** à Toulouse, **6.06.2019** à Lyon, **13.06.2019** à La Rochelle, ***undefined date*** à Bordeaux, Paris, Strasbourg

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3. Connected key achievements #4 - A website as a resource center : batiment-ventilation.fr

- **Type of Ressources :**

  Online articles / Factsheets / SERIOUS GAME / MOOC / FAQ

- **Contents of the site :**
  - A comprehensive and up-to-date information concerning the current regulations.
  - A comprehensive and accessible presentation to all audiences target of the technical principles of ventilation;
  - A bibliography extended studies and guidebooks on the topic of ventilation;
  - A frequently asked questions (FAQ);
  - A reformatting of existing content to make them suitable for a website.
  - Interactive content ("serious games") to promote the site;
  - Regular news.

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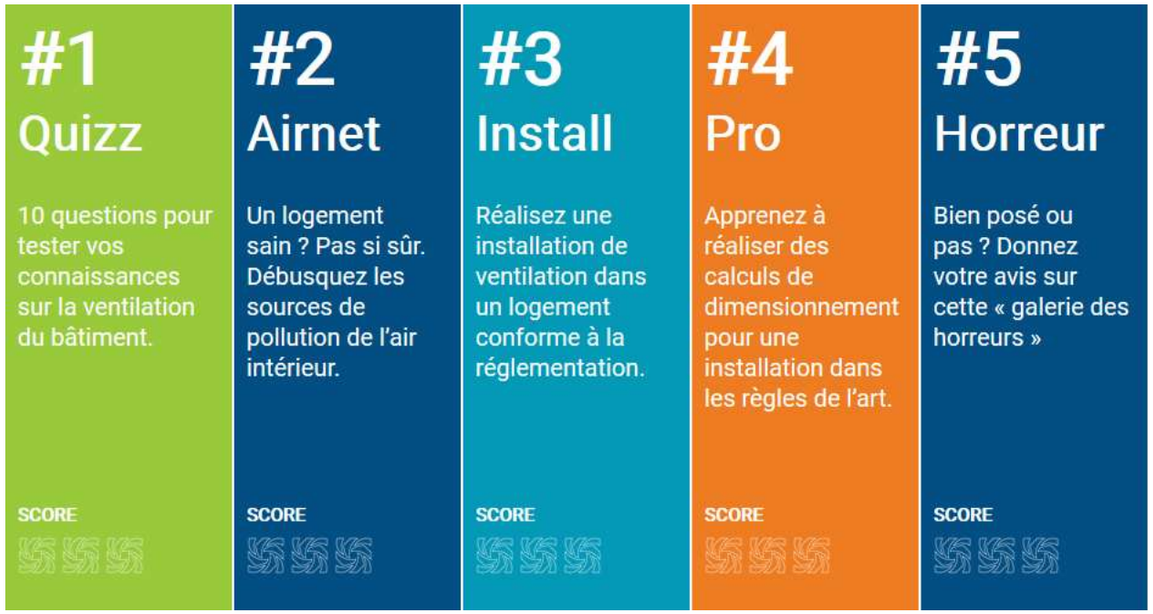
3. Connected key achievements #4 - A website as a resource center : batiment-ventilation.fr

- **SERIOUS GAME : *« ventilgame »***



VENTILGAME is intended to be a tool for promoting Ventilation Resource Centre. It has the ambition of e–informing actors of the building sector on the physical quantities essential to the design and implementation of ventilation systems, according to regulatory frames, in a fun and dynamic approach

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CETIAT

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Conclusion and perspectives

- Several major projects federating existing national and local players
- The issue of ventilation inspection : A. Melois presentation
- Feedbacks at the end of 2019
- Regulatory context is also changing

Thank you for your attention

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