



# HORIZON EUROPE

---

## THE EU RESEARCH & INNOVATION PROGRAMME

2021 – 2027

---

Horizon Europe Cluster 5 Info Day  
3 February 2022



EUROPEAN UNION

# CLUSTER 5 Climate, Energy & Mobility

INFO DAY 2022 - 3 February 2022

# WELCOME

***Ask your questions on Sli.do - #CL5INFODAY22***

THE EU RESEARCH & INNOVATION PROGRAMME 2021 - 2027

# How to... Slido!



During the event, you can use Slido to submit your questions and comments

**1. Take out your smartphone, tablet or computer and open your browser**

**2. Go to *Slido.com* and enter**

**the event code `#CL5INFODAY22`**

**3. Ask your question or vote for an existing one**



# CLUSTER 5 Climate, Energy, Mobility



Virtual INFO DAY 2022  
3 February 2022

**Parallel sessions – 15:30 – 16:45**

**Destination 4** Highly energy-efficient and climate neutral EU building stock

Follow the streaming link: <https://europa.eu/!UmC7FF>

**Destination 3** Global leadership in renewable energy

Follow the streaming link : <https://europa.eu/!UmC7FF>

**Destination 6**

Multimodal and sustainable transport systems for passengers and goods

Follow the streaming link: <https://europa.eu/!UmC7FF>



## CLUSTER 5

### CLIMATE



### ENERGY



### MOBILITY



# HORIZON EUROPE

## INFO DAYS 2021

EFFICIENT, SUSTAINABLE AND INCLUSIVE ENERGY USE

HORIZON-CL5-2022-D4-01 & 02

**Rebecca Kanellea<sup>1</sup>, Eric Lecomte<sup>2</sup>, Pierluca Merola<sup>3</sup>**

<sup>1</sup> Project manager, CINEA C2 (Horizon Europe Energy)

<sup>2</sup> Policy officer, DG ENER B5 (Innovation, Research, Digitalisation, Competitiveness)

<sup>3</sup> Policy officer, DG ENER B2 (Energy Efficiency)



2021 – 2027

# Horizon Europe Cluster 5 Destination 4: efficient, sustainable and inclusive energy use

## The Policy Framework

- The **European Green Deal** overarching policy priority – EU’s growth strategy (12/2019)
- The **2030 Climate Target Plan** (9/2020) and **European Climate Law** (EU Journal 7/2021) – binding GHG reduction by at least 55% in 2030 and pledge to climate neutrality by 2050
- The **Renovation Wave Strategy** (9/2020) based on the 2030 Climate Target Plan –set-up the objective of doubling renovation rates by 2030
- The **Fit-for-55 – Delivering the European Green Deal** package:
  - 2021 recast **Energy Efficiency Directive** – new 2030 target 9% PEC and FEC reduction (compared to 2020 consumption), Energy Efficiency First Principle, ...
  - 2021 revision **Renewable Energy Directive** – new 2030 target 40% RES capacity (compared to 2007), binding H&C 1.1% of RES annual increase, 49% RES benchmark in buildings
  - 2021 recast **Energy Performance of Buildings Directive** – introduction of minimum energy performance standards, revision of Energy Performance Certificates, digitalization and integration of buildings in energy system



# Horizon Europe Cluster 5 Destination 4: efficient, sustainable and inclusive energy use

## Introduction to the Destination

- Targets the energy demand side, notably as regards **buildings** and **industry**
- Expected impact: efficient and sustainable use of energy, accessible for all is ensured through a clean energy system and a just transition
- Synergies with parts of Cluster 2, Cluster 3, and Cluster 6; and with the whole Cluster 4
- Two areas:
  - Technological and socio-economic breakthroughs for achieving **climate neutrality** and the transition to **zero pollution** of the **building stock** by 2050, based on inclusive and people-centric R&I
  - Increased **energy efficiency** in **industry** and reducing industry's Greenhouse Gas (GHG) and air pollutant emissions through recovery, upgrade and/or conversion of industrial excess (waste) heat and through electrification of heat generation

# Highly energy-efficient and climate neutral EU building stock

## Introduction to the area

- In line with the proposed **Fit-for-55 Package** (2021 Energy Efficiency, Renewable Energy and Energy Performance of Buildings), the **Renovation Wave** strategy and the **new European Bauhaus** initiative, new solutions to ensure the **sustainable renovation** of the existing European building stock for the well-being of its users
- Addressing **energy efficiency** in buildings:
  - More energy efficient building stocks effectively combining energy efficiency, renewable energy sources and digital and smart technologies
  - 3 topics: HORIZON-CL5-2022-D4-01-01, 02, 03 (opening: 28 April 2022, deadline: 06 September 2022)
- Addressing the **broader transformation** of the built environment:
  - Develop holistic R&I for an effective transition to sustainability thanks to a co-programmed European Partnership on a people-centric, sustainable built environment (Built4People)
  - 3 topics: HORIZON-CL5-2022-D4-02-01, 02, 03, 04, 05 (Opening: 06 September 2022, deadline: 24 January 2023)



# Industrial facilities in the energy transition

## Introduction to the area

- Focus on thermal energy management in industry:
  - Recovery, upgrade and/or conversion of industrial excess (waste) heat and through electrification of heat generation
- Strong link with Cluster 4 “Digital, Industry and Space”, where the bulk of R&I activities related to industry is addressed.
- 2 topics introduced:
  - HORIZON-CL5-2022-D4-01-04, 05 (opening: 28 April 2022, deadline: 06 September 2022)

HORIZON EUROPE CLUSTER 5 DESTINATION 4



# Highly energy-efficient and climate neutral EU building stock



# HORIZON-CL5-2022-D4-01-01

## Demand response in energy-efficient residential buildings



### Scope

Address the large but **untapped potential of the residential sector for Demand Response (DR)**.

- Investigate innovative DR solutions for the residential sector
- Ensure that the proposed solutions comply with the principle of privacy by design and with best practices on data protection. Moreover ensure that solutions allow to minimise the effort required to elicit user preferences
- Take due account of the regulatory frameworks
- Seek the best consideration of social and economic enablers in the design of the innovative solutions. Consider social innovations, notably as new tools, ideas and methods leading to active citizen engagement and as drivers of social change, social ownership, and new social practices
- Demonstrate that the proposed solutions lead to reducing costs of small demand response assets
- Demonstrate that the proposed solutions are suitable for explicit demand response, or a combination of both explicit and implicit residential demand response

# HORIZON-CL5-2022-D4-01-01

## Demand response in energy-efficient residential buildings



### Expected outcome

- Increased potential benefits, trust and acceptability of demand-response solutions for residential consumers
- Advanced asset control and aggregation approaches that enable the participation of residential buildings in commercial demand response
- Expanded pool of assets relevant for demand response in the residential sector

# HORIZON-CL5-2022-D4-01-01

**Demand response in energy-efficient residential buildings**



**Type of action: Innovation Action (TRL 6-7)**



**EU contribution: EUR 12 million**



**Deadline: 06 September 2022**

# HORIZON-CL5-2021-D4-01-02

## Renewable-intensive, energy positive homes



### Scope

Move **beyond NZEB (nearly zero-energy buildings)** for new constructions and if possible, for renovations, ensuring a high energy performance with maximum flexibility and adaptability to a changing society in a cost-effective manner

- Investigate and demonstrate approaches for the construction of new energy positive residential buildings (and /or the renovation of existing residential buildings), focus on multi-family, multi-storey buildings encompassing:
  - The design phase, integrated design and construction concepts, reconfigurable design and adaptation to different user profiles and lifestyles
  - Affordable and high performance construction products & materials and innovative processes from manufacturing to construction site
  - Renewable energy production for heating & cooling, electricity production, thermal & electrical storage including neighborhood & district sharing
  - Smart management technologies (BMS or BAS)
  - Reuse and recycling of elements, components and materials
  - Where applicable: use grey- and black waters
- Ensure that the cost of such buildings/apartments does not increase substantially compared to current local / regional practices
- Include at least three demonstration sites located in different climatic regions, spanning 12 months and ensure measurements of (as-build) building performances and involve the relevant building professionals

# HORIZON-CL5-2021-D4-01-02

## Renewable-intensive, energy positive homes



### Expected outcome

Project results are expected to contribute to **all** of the following expected outcomes

- Faster transition to the next generation of new constructions and renovation of cost-effective energy positive, climate neutral residential buildings
- Streamlined integration of advanced smart technologies, renewable energy and storage solutions in residential construction and renovation projects
- Faster transition to buildings and technical elements that are capable to adapt to different user profiles and lifestyles, improving air quality, human health and well-being parameters
- Improved skills and competences among the workforce to support a rapid uptake of energy positive buildings in the residential sector



# HORIZON-CL5-2021-D4-01-02

Renewable-intensive, energy positive homes



**Type of action: Innovation Action (TRL 6-7)**



**EU contribution: EUR 12 million**



**Deadline: 6 September 2022**

# HORIZON-CL5-2022-D4-01-03

## Smarter buildings for better energy performance



Improvement and cost-reduction of technologies to predict, assess, monitor and control in real time the energy performance of buildings, including energy efficiency, renewables, storage and their optimisation

- Interoperability of systems, security and privacy by design; cost reduction of systems for integrating and optimising energy efficiency, renewables, and storage
- Energy savings from smart energy management solutions; user-friendliness and achievement of desired IEQ and user satisfaction
- Smart readiness of buildings (Directive 2010/31/EU) and digital building logbook
- Where possible, building on services/products not originally intended for energy management
- At least three demonstration sites located in different climatic regions
- Liaison and synergies with the Built4People Partnership and other relevant projects

# HORIZON-CL5-2022-D4-01-03

## Smarter buildings for better energy performance



### Expected outcome

- More innovative, affordable, user-friendly and accessible products and systems to continuously monitor and improve the energy performance of buildings
- Increased building energy performance through the optimisation and integration of different technologies, including renewable energy and storage, and services
- Easier and more systematic use smart products and services to achieve savings where energy renovation is not an option
- Higher replicability to increase number of buildings with smart building devices and digital infrastructure resulting in a higher smart readiness rating

# HORIZON-CL5-2022-D4-01-03

Smarter buildings for better energy performance



**Type of action: Innovation Action (TRL 8)**



**EU contribution: EUR 12 million**



**Deadline: 06 September 2022**

# HORIZON-CL5-2022-D4-02-01

## Designs, materials and solutions to improve resilience, preparedness & responsiveness of the built environment for climate adaptation (Built4People)



### Scope

Proposals should

- Deliver **innovative designs, materials and solutions** to improve resilience and climate proofing of the built environment (in particular new and existing buildings) in a cost-effective and reliable manner
- Cover a broad spectrum of natural risks and disasters with a particular **focus on extreme climatic events**
- Make use of **natural, as well as advanced, materials and technologies** that help combat the effects of global warming and result in increased durability, resilience and adaptability of buildings and infrastructures, including their foundations
- Develop and deploy **digital and interoperable tools** for monitoring, detection of, and response to critical situations
- Include, **built environment concepts** that are self-sustained for a certain period of time
- **Where relevant:**
  - Consider social innovation, leading to active citizen engagement and resilience, and as drivers of social change, social ownership, and new social practices
  - Investigate how the proposed approaches could apply to cultural heritage buildings
  - Rely, on self-sensing and adaptable materials, and materials with embedded sensors and actuators
- Validate the proposed solutions for **a set of locations** coherent with the risks and disasters considered in the proposal, ensuring awareness and involvement of supply chains
- Demonstrate that the proposed solutions improve the **protection of people** when experiencing disruptive events and contribute to enhance **resilience and climate proofing at a larger scale** (e.g. district, city, energy system)

# HORIZON-CL5-2022-D4-02-01

## Designs, materials and solutions to improve resilience, preparedness & responsiveness of the built environment for climate adaptation (Built4People)



### Scope

- Demonstrate that the proposed solutions contribute to improving the **overall quality of living and working in the buildings** (e.g. in terms of accessibility, comfort and well-being)
- Demonstrate **cost-effective improvement of the energy performance**, as well as the energy related operational costs after the renovation
- Demonstrate that the proposed solutions improve the use of **relevant data** such as weather forecasts or catastrophe warnings by monitoring and management systems in the built environment (e.g. to launch automatic emergency protocols to warn and protect buildings users)
- Lead **at least 3 large-scale demonstration** of the solutions in diverse geographical areas, with various local environmental, social, and economic conditions

Please note:

- This topic requires the effective contribution of **SSH disciplines**, the involvement of SSH experts, institutions and relevant SSH expertise
- Projects are encouraged to define and implement **ambitious international outreach and cooperation strategies**

# HORIZON-CL5-2022-D4-02-01

Designs, materials and solutions to improve resilience, preparedness & responsiveness of the built environment for climate adaptation (Built4People)



## Expected outcome

Project results are expected to contribute to **all** of the following expected outcomes:

- Increased awareness of the **built environment's protective role** for people and climate adaptation in case of disruptive events
- Mainstreamed **resilience** as a key feature of the built environment across its life cycle
- Improved ability of the built environment to support the **preparedness and responsiveness** to disruptive events at larger scales
- Improved ability of the built environment to contribute to the **overall quality of living and working**
- Strengthened **supply chains** for materials and solutions for a resilient and climate proof built environment, adapted to local risks



# HORIZON-CL5-2022-D4-02-01

Designs, materials and solutions to improve resilience, preparedness & responsiveness of the built environment for climate adaptation (Built4People)



**Type of action: Innovation Action (TRL 6-7)**



**EU contribution: EUR 15 million**



**Deadline: 24 January 2023**

# HORIZON-CL5-2022-D4-02-02

Solutions for the sustainable, resilient, inclusive and accessible regeneration of neighbourhoods enabling low carbon footprint lifestyles and businesses (Built4People)



## Scope

Deliver innovative **methods and solutions** for the **regeneration of neighbourhoods** that:

- use participatory **planning processes**, innovative **decision-making** & digital **applications**
- identify and integrate local sources of **raw materials** for building renovation
- include new evidence-based approaches to **quantify benefits**
- Involve all **stakeholder** groups and address **gentrification** issues
- Include concepts for **RES integration** at building and district level & for **multimodal mobility**
- optimise **energy balancing** at local level
- comply with the principles of **circular economy**
- take into account local environmental, social, and economic conditions

# HORIZON-CL5-2022-D4-02-02

Solutions for the sustainable, resilient, inclusive and accessible regeneration of neighbourhoods enabling low carbon footprint lifestyles and businesses (Built4People)



## Scope

- Where relevant, include concepts for **energy circularity** and **valorisation** of by-products and residues
- Where relevant, investigate how the proposed approaches could apply to **cultural heritage buildings**
- Implement solutions in at least **3 large-scale demonstrations** in areas with various local environmental, social, and economic conditions
- Consider **social innovation** where the proposed solutions require social change, new social practices, social ownership or market uptake
- Facilitate **awareness raising** and **capacity building** of citizens and relevant stakeholders on the principles and multi-benefits of sustainable, inclusive and accessible built environment

# HORIZON-CL5-2022-D4-02-02

Solutions for the sustainable, resilient, inclusive and accessible regeneration of neighbourhoods enabling low carbon footprint lifestyles and businesses (Built4People)



## Expected outcome

- Lasting **behavioural change** towards lower carbon footprint lifestyles and businesses
- Mainstreamed **participatory processes** in city planning
- More **sustainable, inclusive and affordable neighbourhoods** and built environment
- Improved **accessibility of neighbourhoods** through mobility solutions
- Extended **application of digital applications and tools** in complex decision-making processes
- Raised **awareness** and **increased capacity** of citizens on participatory processes
- Increased **well-being** and economic **prosperity** of citizens
- Increased attractiveness of **deep renovation**

# HORIZON-CL5-2022-D4-02-02

Solutions for the sustainable, resilient, inclusive and accessible regeneration of neighbourhoods enabling low carbon footprint lifestyles and businesses (Built4People)



Type of action: Innovation Action (TRL 6-7)



EU contribution: : EUR 15 million



Deadline: 24 January 2023

# HORIZON-CL5-2022-D4-02-03

Sustainable and resource-efficient solutions for an open, accessible, inclusive, resilient and low-emission cultural heritage: prevention, monitoring, management, maintenance, and renovation (Built4People)



## Scope

Proposals should:

- Deliver technically and socially innovative, sustainable, energy and resource-efficient solutions for the cost-effective improvement and preservation of cultural heritage built environment along all relevant aspects: inclusiveness, accessibility, resilience, environmental and energy performance
- Cover all relevant aspects of the heritage built environment's life cycle: design, renovation works, operation, monitoring and management, and maintenance
- Allow to maintain the heritage value (e.g. artistic, historic, archaeological, social and scientific) of targeted sites, while improving access and comfort of users and visitors, and reducing maintenance and operational costs
- Where relevant, rely on (adapted) historical or traditional construction techniques and materials for sustainable restoration
- Include natural low maintenance as well as advanced renovation techniques for high quality design and construction, including new digital technologies, while preserving the cultural value of the targeted sites
- Contribute to facilitate the integration renewable energy sources while respecting the aesthetic and cultural identity of the targeted buildings

# HORIZON-CL5-2022-D4-02-03

Sustainable and resource-efficient solutions for an open, accessible, inclusive, resilient and low-emission cultural heritage: prevention, monitoring, management, maintenance, and renovation (Built4People)



## Scope

Proposals should:

- Contribute to the cost-effective improvement of the energy performance, also reducing the cost of the interventions compared to traditional methods
- Ensure the involvement of relevant stakeholder groups (e.g. civil society organisations, associations, cultural heritage stakeholders such as cultural heritage protection bodies) and citizens' acceptance thanks to co-creation processes and socially innovative ideas
- Deliver and demonstrate decision-support tools for low-disruptive, optimal renovation of heritage built environment to enhance sustainability
- Clustering and cooperation with other relevant projects is strongly encouraged; e.g. with the Horizon Europe Partnership on 'Driving urban transitions'
- This topic requires the effective contribution of SSH disciplines and the involvement of SSH experts, institutions as well as the inclusion of relevant SSH expertise, in order to produce meaningful and significant effects enhancing the societal impact of the related research activities
- This topic should consider social innovation as driver of social change, new social practices, social ownership and/or market uptake

This topic implements the co-programmed European Partnership on 'People-centric, Sustainable Built Environment' (Built4People).



# HORIZON-CL5-2022-D4-02-03

Sustainable and resource-efficient solutions for an open, accessible, inclusive, resilient and low-emission cultural heritage: prevention, monitoring, management, maintenance, and renovation (Built4People)



## Expected outcome

Project results are expected to contribute to **all** of the following expected outcomes:

- Increased availability and enhanced overall performance, including with regard to cost-effectiveness, of solutions applicable to the reliable and respectful historical renovation of heritage buildings, preserving their architectural and cultural identity
- Demonstrated potential of sustainable, energy and resource-efficient historical renovation of heritage buildings
- Better protection of the value and long-term inclusiveness, accessibility and usability of cultural heritage sites
- More cost-effective and less disruptive modernisation and preservation of the heritage built environment
- Enhanced prevention and monitoring of the heritage built environment.
- More important role of the cultural heritage in deployment, showcasing and replication of solutions for a sustainable built environment

# HORIZON-CL5-2022-D4-02-03

Sustainable and resource-efficient solutions for an open, accessible, inclusive, resilient and low-emission cultural heritage: prevention, monitoring, management, maintenance, and renovation (Built4People)



Type of action: Research and Innovation Action (TRL 5)



EU contribution: EUR 20 million



Deadline: 24 January 2023

# HORIZON-CL5-2022-D4-02-04

Smart-grid ready and smart-network ready buildings, acting as active utility nodes (Built4People)



## Scope

- Deliver **building-to-grid integration solutions**: cost-effective, simple to use and easy to install
- Demonstrate innovative **balancing, storage and generation** services in buildings
- Demonstrate cost-effectiveness and economic viability of the proposed solutions and **business models**
- Demonstrate the use of large-scale **data exchange platforms** by different actors and sectors
- Enhance interoperability and **synergies between buildings and grids** and smart readiness of buildings
- Enhance synergies between **on-site energy storage and on-site renewable energy**
- Contribute to interoperability in the **modelling** of energy grids and buildings
- Use **big data** and develop **open access tools** available to all stakeholders
- Ensure proposed solutions **minimise potential negative** impacts

# HORIZON-CL5-2022-D4-02-04

Smart-grid ready and smart-network ready buildings, acting as active utility nodes (Built4People)



## Expected outcome

Project results are expected to contribute to **all of the following** expected outcomes

- Improved **interoperability and synergies between buildings and grids** (electricity and other energy carriers)
- Improved **interoperability with other relevant non-energy sectors** (e.g. mobility)
- Contribution to **energy system integration** at building's level
- Improved competitiveness of buildings as **flexibility assets for grid and network management**

# HORIZON-CL5-2022-D4-02-04

Smart-grid ready and smart-network ready buildings, acting as active utility nodes (Built4People)



**Type of action: Innovation Action (TRL 7)**



**EU contribution: EUR 18 million**



**Deadline: 24 January 2023**

# HORIZON-CL5-2022-D4-02-05

**More sustainable buildings with reduced embodied energy / carbon, high life-cycle performance and reduced life-cycle costs (Built4People)**



## Scope

- Demonstrate innovative design, construction and renovation methods, design and technology solutions that minimise the overall life-cycle environmental impact
- Deliver scalable full building demonstrations (both new and renovation) with validated performance measurements
- Integrate the use of low embodied carbon products and solutions; identify and integrate local sources of reused or recycled construction products and secondary raw materials in planning scenarios
- Where relevant, investigate application to cultural heritage buildings; seek integration with digital building logbooks
- Deploy advanced, market-ready prefabs and multifunctional materials and components with optimal recycling and re-using potential and optimal performance across relevant areas
- Demonstrate innovative solutions for optimal design, construction, operation and maintenance of sustainable buildings in diverse conditions (geographical, etc.)

# HORIZON-CL5-2022-D4-02-05

More sustainable buildings with reduced embodied energy / carbon, high life-cycle performance and reduced life-cycle costs (Built4People)



## Expected outcome

Project results are expected to contribute to **all of the following** expected outcomes

- Increased and more traceable reduction of the GHG emissions of buildings in design, construction, renovation, operation and end of life
- Faster market uptake of design solutions, materials, products, techniques and business models that are demonstrated to reduce significantly building related life-cycle costs and impacts, including whole life emissions, compared to current building completions
- Mainstreamed affordable high life-cycle performance, and improved circularity of buildings in construction and renovation

# HORIZON-CL5-2022-D4-02-05

**More sustainable buildings with reduced embodied energy / carbon, high life-cycle performance and reduced life-cycle costs (Built4People)**



**Type of action: Innovation Action (TRL 6-7)**



**EU contribution: EUR 18 million**



**Deadline: 24 January 2023**



HORIZON EUROPE CLUSTER 5 DESTINATION 4



# Industrial facilities in the energy transition



# HORIZON-CL5-2022-D4-01-04

Development and pilot demonstration of heat upgrade technologies with supply temperature in the range 150-250°C



## Scope

To satisfy the need for low-medium temperature heat in the relevant industrial sectors, by upgrading lower temperature heat flows, including from renewable heat sources, ambient or waste heat

- Identify the target industrial processes; make a preliminary assessment of the most promising applications; estimate the climate and energy benefits.  
A preliminary analysis of the feasibility and GHG emissions reduction impact, of the proposed heat upgrade process is expected already in the proposal.
- Develop one or more heat upgrade technologies to raise the sink output temperature to the range 150 to 250°C. If needed investigate in new working fluids. Optimising the technical performances
- Integration and demonstration of at least one system at pilot scale, in conditions, as far as practical, similar to real industrial environment
- For at least two industrial applications, evaluate economic potential; define an exploitation strategy
- Dissemination, to the relevant Horizon Europe private-public partnerships among others

# HORIZON-CL5-2022-D4-01-04

Development and pilot demonstration of heat upgrade technologies with supply temperature in the range 150-250°C



## Expected outcome

- Validate the technical feasibility of industrial heat upgrade systems capable of supplying various industrial processes with useful heat in the (sink) temperature range of 150 – 250 °C from renewable heat sources (e.g. solar thermal), ambient heat or industrial waste heat
- Development and demonstration at pilot scale (5 – 200 kWth)
- Better awareness of the challenges and benefits of heat upgrade in the relevant industrial sectors

# HORIZON-CL5-2022-D4-01-04

Development and pilot demonstration of heat upgrade technologies with supply temperature in the range 150-250°C



Type of action: Research and Innovation Action (TRL 5)



EU contribution: EUR 3-5 million per project; total budget: Eur 10 million



Deadline: 06 September 2022

# HORIZON-CL5-2022-D4-01-05

## Development of high temperature thermal storage for industrial applications



### Scope

To satisfy the need for decoupling the heat generation from the heat use in industrial processes, in order to allow for heat exchanges between different industrial processes and so enable industrial symbiosis, or to generate heat during off-peak times and so provide energy demand flexibility:

- Cost effective and new designs for high temperature storage of industrial heat, with minimal footprint, including novel materials and designs
- Development of materials and components: thermal storage materials, container construction, insulation technology, heat exchangers with aid of computational fluid dynamics
- Integration and demonstration of the system at lab scale
- Evaluate economic potential in at least two industrial applications. Make an analysis of the potential applications and benefits in EU27 and Associated States (a preliminary version of this analysis is expected already in the proposal.) Define an exploitation strategy
- Dissemination of the technical and economic benefits, to the relevant Horizon Europe private-public partnerships among others

# HORIZON-CL5-2022-D4-01-05

## Development of high temperature thermal storage for industrial applications



### Expected outcome

- Short term (intraday or a couple of days) thermal storage systems for decoupling the heat generation from the heat use in industrial processes.
- Development of economically affordable new materials (including better basic understanding) for heat storage dedicated to medium to high temperature industrial processes
- Better awareness of the challenges and benefits of heat storage in the relevant industrial sectors

# HORIZON-CL5-2022-D4-01-05

Development of high temperature thermal storage for industrial applications



**Type of action: Research and Innovation Action (TRL 4-5 at end of project)**



**EU contribution: EUR 3-4 million per project; total budget: Eur 8 million**



**Deadline: 06 September 2022**



# Thank you!

## # HorizonEU

<http://ec.europa.eu/horizon-europe>



© European Union 2021

Unless otherwise noted the reuse of this presentation is authorised under the [CC BY 4.0](https://creativecommons.org/licenses/by/4.0/) license. For any use or reproduction of elements that are not owned by the EU, permission may need to be sought directly from the respective right holders.  
Image credits: © ivector #235536634, #249868181, #251163013, #266009682, #273480523, #362422833, #241215668, #244690530, #245719946, #251163053, #252508849, 2020. Source: Stock.Adobe.com. Icons © Flaticon – all rights reserved.