

# CEN WORKSHOP 64 PHASE 4

Design and Construction Codes for Gen II to IV nuclear facilities

## THE CEN WORKSHOP OBJECTIVES:

**Bring together and federate at European level the community of experts in the field of nuclear standards, based on AFCEN codes,**

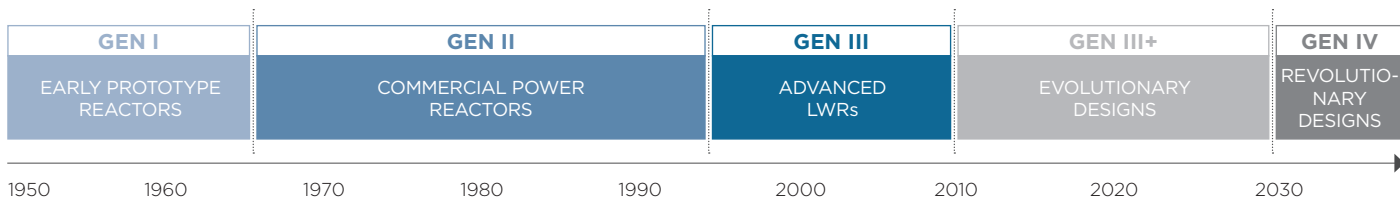
- **Promoting access to good industrial practices** for stakeholders from countries developing nuclear facilities,
- **Reducing the fragmentation** at European level of good industrial practices in the nuclear field **to improve the competitiveness** of the European nuclear industry,
- Favoring conditions for the **harmonisation of national regulations** at European level.

**Allow European operators to use AFCEN codes for their needs (Long Term Operations, spare parts, new reactors) and in their local context,**

- Taking account of **ageing**,
- Overcoming difficulties in the **supply of spare parts**,
- Promoting the development of **innovative reactors**.

**Make AFCEN codes a reference for European stakeholders,**

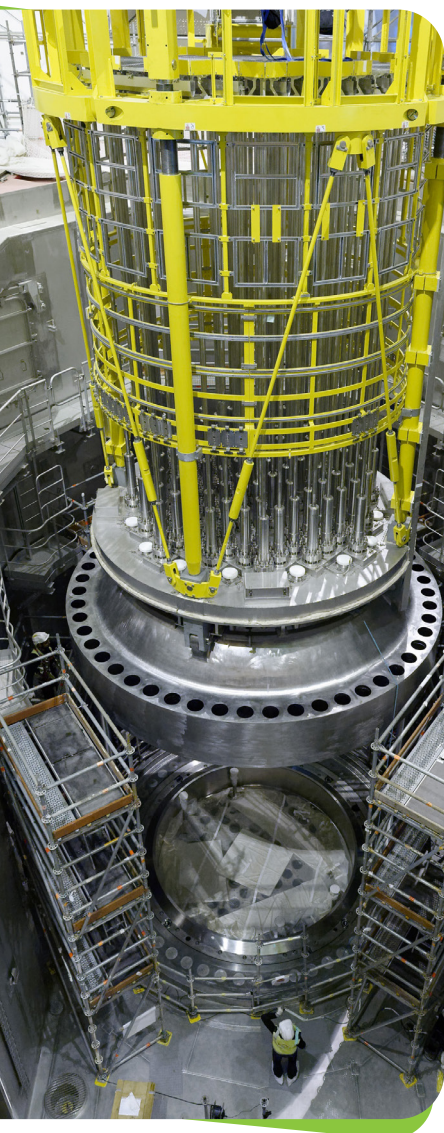
- **Providing a tool to evaluate** nuclear reactor projects based on other design & construction codes,
- Considering **specific requirements** from national regulations.



## WHAT IS A CEN WORKSHOP?

- A «project» which aims to develop best-practice recommendations in a specific area
- Open for participation of anyone willing to contribute
- Within a structure (CEN workshop) allowing a form of recognition among European stakeholders
- Initiated by AFCEN, CEN Workshop 064 (WS64) currently is the only active forum in Europe delivering recommendations on the content of nuclear codes from a panel of European experts working together.

**AT THE END OF THE WORKSHOP, THE CEN WORKSHOP AGREEMENT IS PUBLISHED BY CEN. THIS DOCUMENT CONTAINS THE RECOMMENDATIONS FROM THE WORKSHOP.**



## WHO SHOULD ATTEND CEN WORKSHOP 064 PHASE 4:

- **Stakeholders from countries developing nuclear facilities**  
WS64 will allow you to join the European community of experts and have access to AFCEN codes.
- **Safety Authorities and Technical Support Organisations**  
AFCEN codes may be used to compare with other standards used for designing and manufacturing new nuclear reactor projects.
- **Utilities**  
Integrate your needs into a set of requirements and rules proposed as a European reference, to expand your suppliers' base for spare parts designing and manufacturing
- **Manufacturers**  
Integrate your industrial practices into a set of requirements and rules with European reach, to expand the market for your products.

## NEW TOPICS FOR PHASE 4

For phase 4, in addition to the continuation of existing topics, it is envisaged to focus on topics pertaining to innovative reactors such as SMR and MSR reactors, and processes such as advanced manufacturing techniques.

## CLOSELY LINKED TO THE EURATOM HARMONISE PROJECT

The **Harmonise project**, which will start at the end of 2022 and will last for three years, deals with the harmonisation of approval processes for innovative reactors at European level. A close link between this project and WS64 will be established. Indeed, the HARMONISE project shall provide needs related to Codes and Standards for which WS64 is the only European forum able to develop solutions.

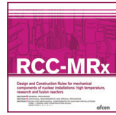


## THE WORKSHOP PHASE 4 GENERAL ORGANISATION

❖ 4 technical areas, each of them covered by an AFCEN code:



**RCC-M**  
MECHANICAL  
EQUIPMENT FOR  
GEN II-III REACTORS



**RCC-MRx**  
MECHANICAL  
EQUIPMENT FOR  
GEN IV  
INSTALLATIONS



**RCC-CW**  
CIVIL WORKS

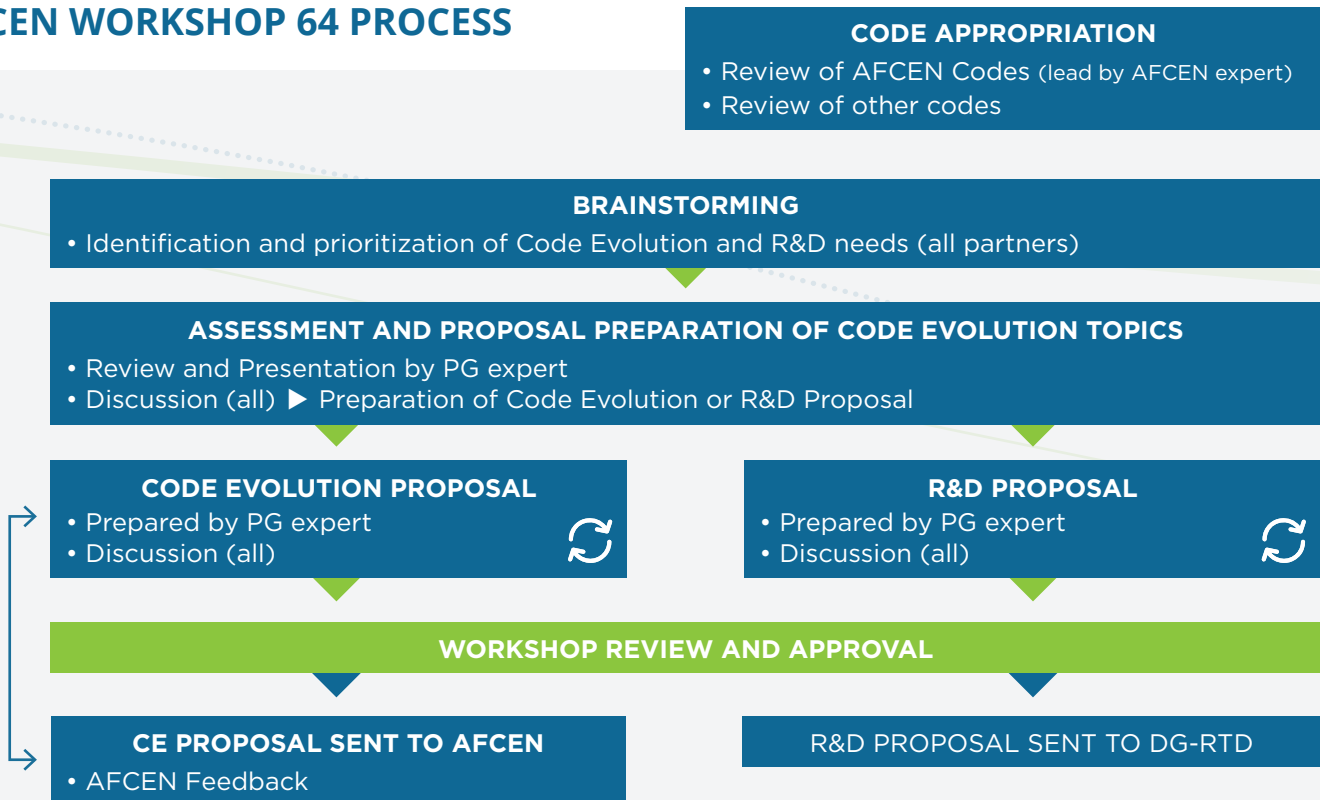


**RCC-E**  
ELECTRICAL & I&C  
SYSTEM AND  
EQUIPEMENT FOR  
GEN II-III REACTORS

❖ A working group (“Prospective Group”) of experts for each area with the goal to provide:

- Code Evolution recommendations, to be submitted to AFCEN
- R&D programme proposals, to be submitted to EC DG-RTD\*

## CEN WORKSHOP 64 PROCESS



- ❖ The Workshop and interactions with AFCEN proved operational
- ❖ Most of the PGs produced R&D programme proposals
- ❖ The Workshop is recognised by the EC as a major contribution to the harmonisation of standards regarding NPP equipment
- ❖ AFCEN is currently outlining a Phase 4 of the Workshop with the stakeholders

\* EC DG RTD - European Commission Directorate-General for Research and Innovation.

## THE AFCEN CODES IN CEN WORKSHOP 64 PHASE 3:

<b>RCC-M</b>	PWR MECHANICAL COMPONENTS	<b>RCC-MRx</b>	MECHANICAL COMPONENT FOR HIGH-TEMPERATURE, RESEARCH AND FUSION REACTORS	<b>RCC-CW</b>	CIVIL WORKS FOR PWR	<b>RCC-E</b>	ELECTRICAL & I&C SYSTEMS AND EQUIPMENTS FOR GEN II-III REACTORS
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## WORKSHOP 64 PHASE 3 BALANCE SHEET:

- ❖ **In spite of health crisis**, the workshop continued nominally with an annual rhythm of 4 or 5 remote meetings per PG, as well as one plenary meeting,
- ❖ **15 companies participated in the Workshop**: most of them have a representative in each PG
- ❖ **10 countries are represented**
  - Belgium, Finland, France, Germany, Italy, Poland, Sweden, United Kingdom
  - Switzerland, Czech Republic as well as the EC through JRC
- ❖ **All kinds of stakeholders are represented**
  - Utilities, manufacturers, design offices
  - Research centers, universities
  - Safety authorities, technical support organizations
- ❖ **Community at European level around nuclear codes has been reinforced**
- ❖ **Emergence of cross-cutting issues as small punch test** (PG1 & PG2), progressive deformation (PG1 & PG2), additive manufacturing (PG1, PG2 & PG3) and Small Modular Reactor design needs (PG1, PG2, PG3 & PG4).

Code	Code Evolutions Recommendations	R&D programme proposals	Technical papers
RCC-MRx	6	1	
RCC-M	6	2	2
RCC-CW	10	2	

## EXAMPLES OF WS 64 PHASE 3 OUTPUTS



**RCC-M & RCC-MRx:** R&D proposal structured in 7 work packages: Using the small punch test techniques for estimation of MATERIAL PROPERTIES in support of material development and in-service life management.



**RCC-CW:** Concept of robustness in design from Eurocode 0 to RCC-CW. A code evolution proposal has been drafted to support design and ageing management rules in the code, based on certain guidelines from the new draft of Eurocode 0.



**RCC-MRx:** Adaptations for components subject to NQA-1 Quality Management applied to a European facility

Code Evolution:

- Section II: additional requirements and special provisions
- REC 4000 special instructions for equipment subject to NQA-1 applied to a European facility.



**RCC-E:** a community of experts has been created for electrical & instrument & control system and equipment.

**WE ARE ADVERTISING FOR PARTICIPATION IN THE CEN WS64 PHASE 4, SO IF YOU ARE INTERESTED, PLEASE CONTACT:**

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