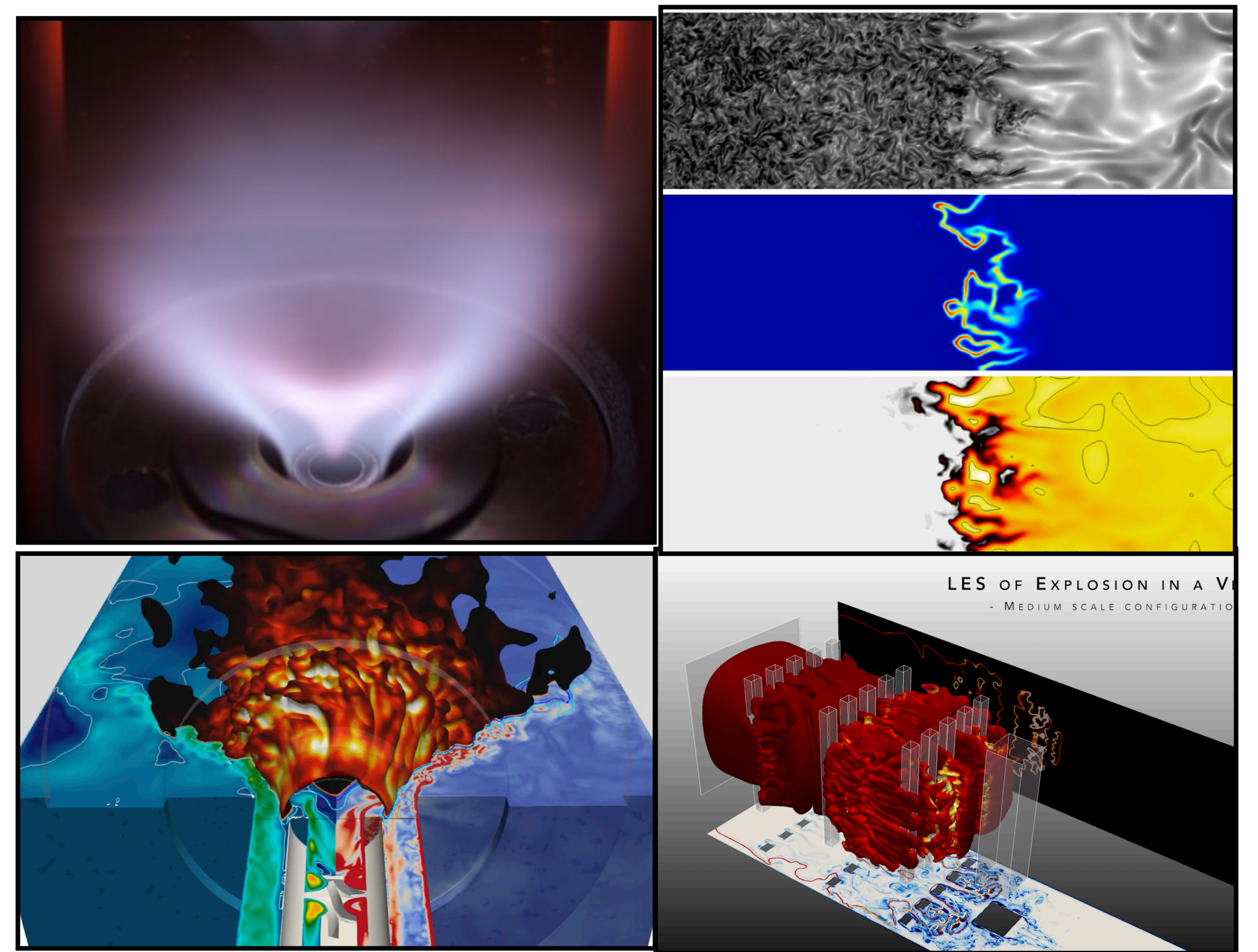


# HYDROGEN WEEK

## 1/ Follow up of HYLON PHASE 1

## 2/ Discussion of HYLON PHASE 2



With the support of:

ERC advanced grant SCIROCCO (2019-2024), SELECT-H (2023-2028), SYNERGY ERC grant HYROPE (2024-2030), SAFRAN, AIRBUS, ALSTOM, AIR LIQUIDE, GRTGAZ, TOTALENERGIES, SAINT-GOBAIN



# WHAT IS NEXT FOR PHASE1 ?

## Consolidating results presented yesterday

In the next months, we propose to gather:

- modified / improved presentations of yesterday's talks-> we can keep what you already gave but you can also send us improved results if you want to
- presentations by the groups which did not present yesterday -> we are looking forward to hearing from you !

Name	Country	INSTITUTION
Lorenzo Mazzei	Italy	Ergon research
Artur Tyliczszak	Poland	Czestochowa University of Technology
Pierre Boivin	France	Marseille Univ M2P2
Andrew Garmory	UK	Loughborough
R. Mercier	France	Safran Tech, CORIA, EM2C
Zhang Yu	USA	General Electric
Xiao Gan	USA	UTSI, Berkeley
Federico Piscaglia	ITALY	POLITECNICO DI MILANO
Sunil Patil	USA	ANSYS
Daniel Lee	USA	CONVERGE
Ainslie French	Italy	CIRA
James Massey	UK	Hopkinson Laboratory, Cambridge
Nicolas Bertier	France	ONERA
William Jones	UK	Imperial college
Salvador Navarro	UK	Imperial college
Christophe Duwig	SWE	KTH
Vishal Acharya	USA	Georgia Tech
Vishwas Verma	USA	Honeywell
Xu Wen	GER	RWTH
Olivier Colin	France	IFPEN
Javier Marrero	SPAIN	Destinus
Sandra Recio Balmaseda		DARMSTADT
Daniel Mira	SPAIN	BSC

# WHAT IS NEXT ? Consolidating results presented today

DEADLINE TO SEND US RESULTS (ALWAYS csv and ppt files, you know the format by now): **MAY 24th, 2024**

Please also provide the information we asked for:

- compressible or not
- time step
- CPU hours per ms
- number of cells

## **WHAT IS NEXT ? Consolidating results presented today**

After **MAY 24th, 2024**, we will gather your final results in a single presentation which will be sent to all of you on June 3rd for verification

# WHAT IS NEXT ? Presenting results at TNF

This presentation will be used at the TNF workshop planned before the Milano Meeting, July 20th and 21st: one single talk (approx. 1 hour) prepared by IMFT and CERFACS gathering all your contributions. All participants will be co authors

Proposition:

- tell me by Email asap if you DONT want to be included in this presentation. By default, you ll be and we'll use your contributions for this global summary file
- we will send you on June 3rd for approval.
- send us corrections for this global summary file: check your part. We need your approval.
- DEADLINE TO SEND YOUR CORRECTIONS: June 17th
- we will then correct the global summary file according to your comments to prepare the TNF presentation for July 20th, 21st

# Summary of time line for HYLON

MAY 24th

JUNE 3rd

JUNE 17th

JULY 20, 21 TNF IN MILANO

**UPDATE YOUR csv  
AND ppt FILES**

**SEND TO US**

**FINAL PRESENTATION  
SENT TO YOU**

**SEND CORRECTIONS  
TO US**

**PRESENTATION OF  
GLOBAL RESULT  
AT THE TNF  
WORKSHOP**

# WHAT IS NEXT ? Making a publication out of the results presented today

- Making a paper out of all this is a much larger work: ask B. Fiorina !
- Do we want to go for it ?
- If we do, we need authors !
- We could also send this as a paper in a conference
- We would rather propose to do MORE than writing a paper: repeat the exercise at higher pressure using KAUST data

# WHAT IS NEXT ? Going for the really tough cases

Once the results of HYLON 1 bar will be summarized and presented at TNF, we may decide to continue... IMFT and KAUST propose to collaborate to provide more data for a HYLON-type configuration **at higher pressures: HYLON PHASE 2**

Caveats:

- the KAUST burner geometry will not be exactly HYLON: new meshes will need to be created by you. It will be very close, however...
- we'll strive to provide more data than 'just' velocities and pressure losses. This could include velocity profiles + pressure losses + **NOx profiles + main species profiles**
- we will provide atmospheric and higher pressure results (10 bar)
- this is NOT ready yet and it is quite tough to do experimentally
- if we distribute results, it will be done « almost » exactly like for TNF



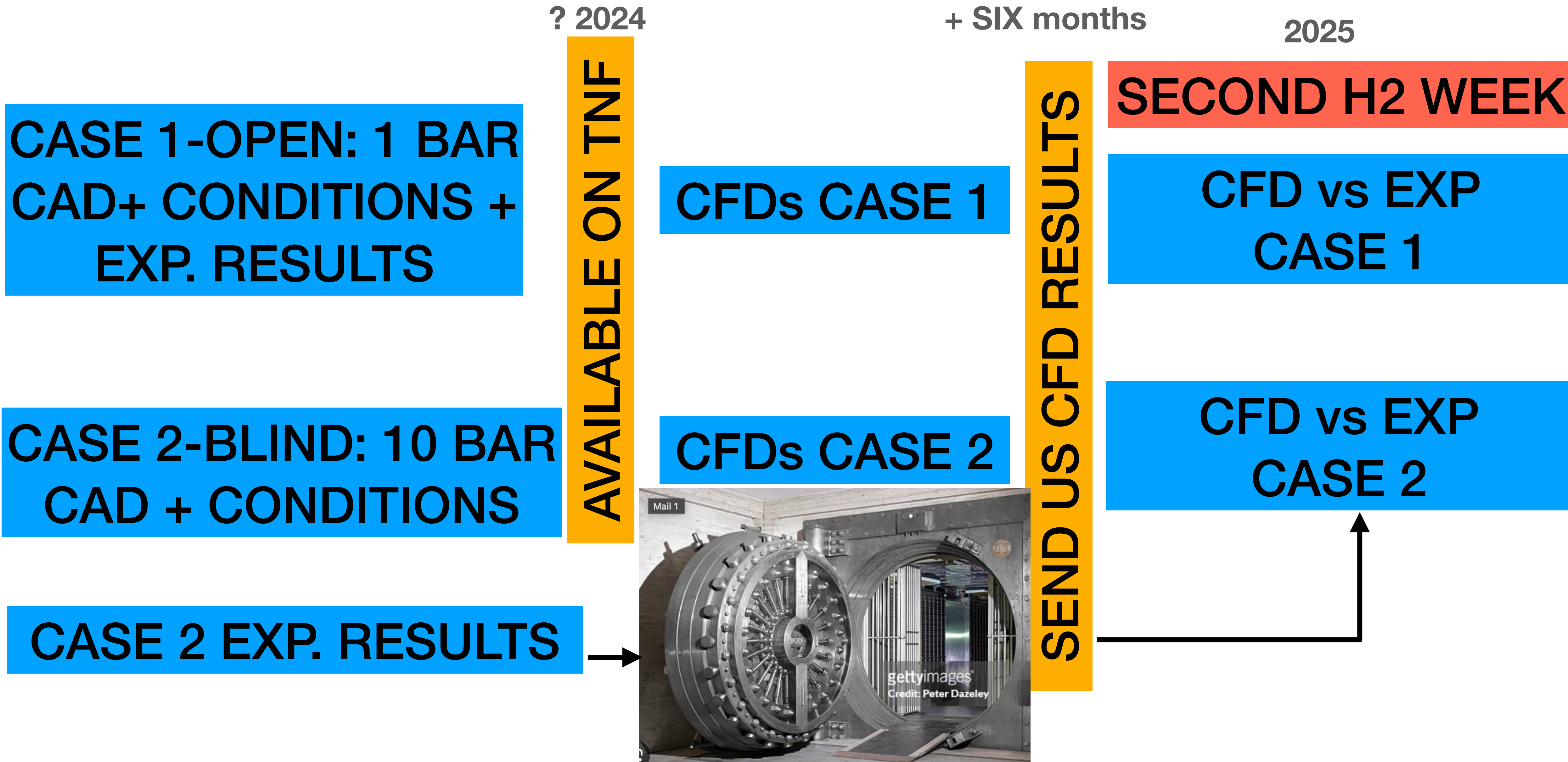
# HYLON PHASE 2 WILL CONTAIN A BLIND TEST

- We propose to split the data used in HYLON PHASE 2 coming out in the next year in two parts:
- experimental results available for everyone right away. For ex: measurements for a 1 or a 5 bar case
  - experimental results kept 'secret' until CFD runs are finished and sent to us. For ex, measurements for a 10 bar case

Of course, this is the ultimate test for CFD, the one we usually dont do: compute before we have the experimental data and the possibility to tune whatever we all tune.

But this is what industry really needs...

# Summary of time line for HYLON PHASE 2:



## **PHASE 2 : IN PRACTICE**

IMFT and KAUST need a few months to make sure that we can provide the experimental data

Then, we will invite the community to participate as done for HYLON PHASE 1.

# COMMUNICATION

<https://cerfacs.fr/hydrogenweek/>

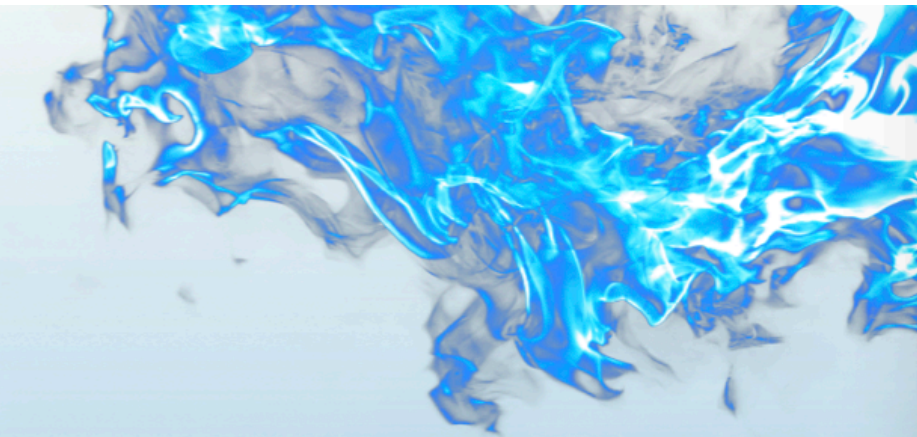
The pdf and the recordings of the Tuesday courses will be there soon  
We will continue to use this site for future communications

## HYDROGEN WEEK

Towards high pressure  
experiments and simulations

Four-day hybrid event at IMFT

26/02/2024 - 29/02/2024



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Hydrogen week in Toulouse - Feb. 26 to 29, 2024 - IMFT

### Hydrogen week in Toulouse: towards high pressure experiments and simulations February 26 to 29, 2024

Institut de Mécanique des Fluides de Toulouse (IMFT)  
2 Allée du Professeur Camille Soula, 31400 Toulouse

Institut de Mécanique des Fluides de Toulouse (IMFT), in collaboration with CERFACS and KAUST, will organize a four-day, hybrid event on hydrogen combustion from Feb. 26th to 29th, 2024. The objective of this hydrogen week is to look at the latest results obtained for hydrogen simulations and experiments.

# THANK YOU

All of you !

ERC  
IMFT  
CERFACS

Martin Vilespy, Theo Riou, Marc Chen, Kennie Chaplet, Herve Magnes, Hugo Paniez, Thierry Schuller, Laurent Selle, Matthieu Durand, Dilay Guleryuz, Nathanael Rouland, Muriel Sabater, Enrique Flores Montoya

