



CEIDEN

PLATAFORMA TECNOLÓGICA DE ENERGÍA NUCLEAR DE FISIÓN



POLITÉCNICA

***Hybrid Meeting (virtual & in-person) on
“Nuclear Databases for Nuclear Reactor Applications
within the Spanish Nuclear Sector”***

***Welcome by
Prof. Oscar Cabellos (UPM) and Amparo Soler (NFQ)***

September 20, 2022

Universidad Politécnica de Madrid

Instituto de Fusion Nuclear “Guillermo Velarde”

ETS de Ingenieros Industriales de Madrid, Madrid, Spain



CEIDEN

PLATAFORMA TECNOLÓGICA DE ENERGÍA NUCLEAR DE FISIÓN



POLITÉCNICA

CEIDEN – “SIREN Group” on Nuclear Reactor Simulations

<https://ceiden.com/en/>

- ❑ **What is CEIDEN?** CEIDEN is a Spanish organization established for the coordination of the efforts and needs of Nuclear Fission Energy R&D&I
- ❑ **What is SIREN Working Group?**
 - The SIREN Group was established in 2016, with the purpose of elaborating a **“Catalogue of Codes”** that are used, implemented and/or developed by the organizations in the Spanish nuclear sector.
 - This catalogue is very helpful for the Spanish companies in order to disseminate their capabilities in nuclear simulation and nuclear safety (Last version: Rev2.2 – Dec. 2021)
 - Furthermore, the SIREN Group aims at promoting and disseminating its own simulation capabilities, particularly by means of the OECD/NEA Data Bank CPS (Computer Program Services) service and by organizing Workshops and Technical Meetings that gather users of these codes.



CEIDEN

PLATAFORMA TECNOLÓGICA DE ENERGÍA NUCLEAR DE FISIÓN



POLITÉCNICA

CEIDEN – “SIREN Group” on Nuclear Reactor Simulations

<https://ceiden.com/en/>



 WEB site

Information on Workshops/Meetings

Information on the SIREN group activities

CEIDEN/UPM Workshops

- » 1st CEIDEN/UPM Workshop [“Users of nuclear databases employed in calculations for nuclear energy and non-energy applications”](#), 7 May 2019, from 09:00 to 13:00h.
- » 2nd CEIDEN/UPM (virtual) Workshop [“Accident Tolerant Fuels for LWRs”](#), 20th May 2020, from 09:00 to 13:00h.
- » 3rd CEIDEN/UPM (virtual) Workshop [“Machine Learning in Nuclear Science and Technology Applications”](#), 14 May 2021, from 09:00 to 13:00h.
- » 4th CEIDEN/UPM (virtual) Workshop [“Neutronic Design on SMRs”](#), May 2022 (date to be confirmed).

Other events

- » Workshop [“Users of Neutronics Codes for Nuclear Reactor Calculations”](#), 14 September 2021, from 09:00 to 12:00h.
- » Workshop [“Databases for Nuclear Reactors Calculations”](#), September 2022 (date to be confirmed)

Javier Dies, presidente en funciones del CSN y presidente de CEIDEN, se reúne con Mariano Moreno, presidente de Enusa

Javier Dies, presidente en funciones del Consejo de Seguridad Nuclear (CSN) y presidente de la...

SIREN Group: Nuclear reactor Simulation

The SIREN Group was established in 2016, with the purpose of elaborating a “Catalogue of Calculation Codes” that are used, implemented and/or developed by the organizations in the Spanish nuclear sector.

This catalogue is very helpful for the Spanish companies in order to disseminate their capabilities in core simulation and nuclear plant safety.

Furthermore, the SIREN group aims at promoting and disseminating its own simulation capabilities, particularly by means of the OECD/NEA Data Bank CPS (Computer Program Services) service and by organizing Workshops and Technical Meetings that gather users of these codes.

The two main objectives of the SIREN group are:

Managing and promoting the “Catalogue of Calculation Codes”

The codes catalogue includes exclusively the organizations that have participated in this compilation project, so that it does not include information relating those organizations that have not participated. Said information could be incorporated in next versions of this document.

<https://ceiden.com/en/programas/grupo-siren-simulacion-de-reactores-nucleares/>

Workshop on “Nuclear Databases for Nuclear Reactor Applications”, September 20, 2022. (Hybrid-conference)



CEIDEN

PLATAFORMA TECNOLÓGICA DE ENERGÍA NUCLEAR DE FISIÓN



POLITÉCNICA

Currently, **18 institutions from CEIDEN** are taking part in the Catalogue: CIEMAT, CSN, EEAA, ENSA, ENSO, ENUSA, Iberdrola, IDOM, INGENICID, Naturgy, Grupo NFQ, SEA, Tecnatom, Thunder, UNED, UPC, UPM, UPV

The catalogue comprises **118 codes/databases** in total, distributed over **20 different areas**:

Site Evaluation – Ambient Dose (14)	Subchannel TH (5)
System TH (12)	Shieldings (5)
PSA (11)	CFD/TH (4)
Fuel-Thermomechanics (10)	Severe Accidents (4)
Radiation damage (8)	Databases (4)
Monte Carlo/Transport (7)	Emergency support system (3)
Cell-Fuel element (7)	Containment (2)
3D Kinetics (7)	Nuclear data processing (1)
S&U (6)	Multi-physics (1)
Inventory/Activation (6)	Fuel Cycle (1)

Catalogue of Codes

https://ceiden.com/wp-content/uploads/2021/12/SIREN_REV-2.2-DIC-2021.pdf



CEIDEN

PLATAFORMA TECNOLÓGICA DE ENERGÍA NUCLEAR DE FISIÓN



POLITÉCNICA

Catalogue of Codes

CEIDEN: Grupo Español de Simulación Integral de Reactores Nucleares (SIREN)

Institutions

Area	Code	CIEMAT	CSN	EAAA	ENSA	ENSO	ENUSA	Iberdrola	IDOM	INGECID	
1. Processing nuclear data	NJOY										
	TRIPOLI										
2. Transport calculations with Monte Carlo codes	MCNP										
	PHITS										
	FLUKA / GEANT										
	KENO / SCALE										
	PENELOPE										
3. Activation/Depletion	SERPENT										
	DARWIN										
	ORIGEN / SCALE										
	ACAB										
	MONTEBURNS										
	TRITON/SCALE										
4. Lattice codes	EVOLCODE										
	APOLLO										
	DRAGON										
	CASMO										
	FRAP-T6										
	WIMS-MARIA										
	SCALE										
5. KINETIC/3D	NEWT/SCALE										
	PARCS										
	COBAYA4										
	SIMULATE										
	SIMTRAN/SEANAP										

Expertise and categorization

- User
- Able to add new capabilities
- Bench&Validation
- Developer/Advanced User



https://ceiden.com/wp-content/uploads/2021/12/SIREN_REV-2.2-DIC-2021.pdf



CEIDEN

PLATAFORMA TECNOLÓGICA DE ENERGÍA NUCLEAR DE FISIÓN



POLITÉCNICA

- ❑ To know simulation capabilities of the various organizations and the developments that are being undertaken
- ❑ To identify experts
- ❑ To share experiences in simulation
- ❑ To foster relationships or collaborations between institutions: R&D national and international projects



Workshops

Information on the SIREN group activities

CEIDEN/UPM Workshops

- » 1st CEIDEN/UPM Workshop [“Users of nuclear databases employed in calculations for nuclear energy and non-energy applications”](#). 7 May 2019, from 09:00 to 13:00h.
- » 2nd CEIDEN/UPM (virtual) Workshop [“Accident Tolerant Fuels for LWRs”](#). 20th May 2020, from 09:00 to 13:00h.
- » 3rd CEIDEN/UPM (virtual) Workshop [“Machine Learning in Nuclear Science and Technology Applications”](#). 14 May 2021, from 09:00 to 13:00h.
- » 4th CEIDEN/UPM (virtual) Workshop [“Neutronic Design on SMRs”](#). May 2022 (date to be confirmed).

Other events

- » Workshop [“Users of Neutronics Codes for Nuclear Reactor Calculations”](#). 14 September 2021, from 09:00 to 12:00h.
- » Workshop [“Databases for Nuclear Reactors Calculations”](#). September 2022 (date to be confirmed)



CEIDEN

PLATAFORMA TECNOLÓGICA DE ENERGÍA NUCLEAR DE FISIÓN



POLITÉCNICA

Participants in the Workshop ... 13 in-person + 23 on-line

Statistics of the Workshop

	#	Institution	Participants	#	Country	Participants
by Country	1	CIEMAT	2	11	SEA Ingenieria	1
	2	CNEA- Argentina	1	12	TSI SL	2
	3	CSN	4	13	UNED	2
	4	ENEL	1	14	UPM	4
	5	IDOM	2	15		
	6	KAERI	1	16		
	7	MOLTEX	3	17		
	8	NEA	2	18		
	9	Nfq	2	19		
	10	SCK·CEN	9			
					TOTAL	36

Start - End	Presenter	Institution	Title
9:00 – 9:05	Oscar Cabellos Amparo Soler	UPM NFQ	Welcome
9:05 – 9:15	Javier Dies	CSN	Introduction to the meeting
9:15 – 10:00	Alice Dufresne	OECD/NEA	The OECD/NEA – CPS: Activities on nuclear databases and computer programs
10:00 – 10:15	Pedro Ortego	SEA Ingenieria	SEA activities on the evaluation of integral experimental measurements compiled in SINBAD, ICSBEP and SFCOMPO
10:15 – 10:30	Oscar Cabellos	UPM	Evaluation of Nuclear Data: The JEFF Project
10:30 – 10:45	Vicente Bécares	CIEMAT	CIEMAT activities on Benchmarking and Nuclear Data Validation using ICSBEP
10:45 – 11:00	Francisco Alvarez-Velarde	CIEMAT	CIEMAT activities on Benchmarking and Nuclear Data Validation using SFCOMPO
11:00 – 11:30	Coffee break	Coffee sponsored by NFQ Advisory Services (https://nfq.es/)	
11:30 – 11:45	Nuria Garcia-Herranz	UPM	UPM activities on Benchmarking and Nuclear Data Validation using ICSBEP and IRPHEP
11:45 – 12:00	Víctor López	UNED	UNED activities in IFMIF-DONES: The role of nuclear data
12:00 – 12:15	Cristian Garrido	IDOM	IDOM activities on Benchmarking using ICSBEP, SINBAD and SFCOMPO
12:15 – 12:30	Alberto Fernández	MOLTEX	Uncertainty in chloride data for Molten Salt Reactors and the effect on reactor performance
12:30 – 12:45	Gonzalo F. García	UPM	UPM activities on Nuclear Data in medical applications
12:45 – 13:00	All – Discussions and AoB		



CEIDEN

PLATAFORMA TECNOLÓGICA DE ENERGÍA NUCLEAR DE FISIÓN



POLITÉCNICA

Some kind remarks

For all participants

- During the meeting**please** ... mute your microphones by default and unmute to speak
- Use of headphones is recommended to prevent audio feedback loops
- Please, type your questions in the chat or ask a question out loud by using Zoom's 'raise hand', if time allows.

For speakers

- You will be asked to **share your screen** and present through your desktop using Zoom
- The format of the presentation is **12min** + 2min questions
- Please, keep the presentations within the allotted time. This will allow to keep the session running to schedule
- Send your final presentation file for distributing to all participants

Many thanks for your attention!

ENJOY THE WORKSHOP!