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Experiences and perspectives



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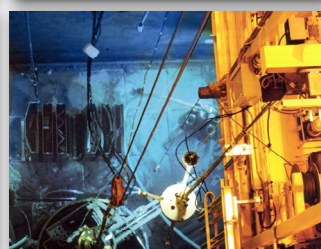
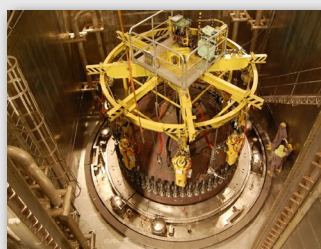
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EDITORIAL

THE ATTACK, THE (BEST) DEFENSE?

In this space we have defended many times (and will continue to do so) the merits of maintaining nuclear energy in our country's generation capacity. We have seven nuclear reactors operating in Spain today, and these seven units contributed 19.7 % of the net electricity produced in the mainland electricity system (while noting that the nuclear park accounts for 5.0 % of the total installed capacity in the SIE) in 2022. In quantity, this is a non-negligible value and not easy to replace at present. In terms of quality, we should value the stability that this type of synchronous generation provides to the grid and the contribution to greenhouse-gas emission control that nuclear energy represents.

In short, nuclear energy is a consolidated reality in Spain, a resource we have had for more than 50 years and, technically, it is in a condition to continue being a future option. The scheduled closure dates for the nuclear plants we have today are not, in any case, a technical necessity due to the state of the installations but simply a political criterion.

Technically, we have plenty of arguments to defend the capacity of the Spanish nuclear industry and our country's nuclear plants, so that they are considered and defended as a long-term resource. We have been communicating this and will keep doing so so that our voice reaches as many people as possible. We know the need and importance of a social license for our continuity and consider that having information and knowledge to defend this license is fundamental. We work for and through our channels, responding to requests that reach us from various forums to make that knowledge and information available to society. We talk about our daily work, our profession, and a field that, as professionals, we can explain, narrate, and answer questions about.

We always speak about ourselves; we defend the continuity of the operation of nuclear plants in Spain by providing our data, basing ourselves on our information, and grounding our argumentation in the nuclear sector.

Our defence never constitutes an attack on other technologies. Our approach is a holistic vision, and we do not believe in the maxim that "attacking is the best defence." We think that who we are, what we contribute, is enough for nuclear energy and its contribution to the Spanish electricity system to be considered a future option and not simply dismissed arbitrarily. Hopefully, hopefully, all points of view were (and are) defended in the same way.

All points of view are good, all information is valid, but please, let's stop attacking in order to defend. That is not the model. ■

INTRODUCTION

OVERVIEW OF THE SPANISH NUCLEAR FLEET IN 2025

The Conference “Spanish Nuclear Power Plants in 2025. Experiences and Perspectives,” organized by the Sociedad Nuclear Española (SNE), once again brought together on March 5, 2026, the main professionals of the sector at the Escuela Técnica Superior de Ingenieros Industriales of the Universidad Politécnica de Madrid. This meeting, already consolidated as one of the reference events in the Spanish nuclear calendar, constitutes a privileged space to analyze the performance of the nuclear fleet during the last year, share operational experiences, and reflect on the present and future challenges of the sector.



As in every edition, the Conference was structured around a program that combined institutional interventions, technical sessions, and spaces for exchange among professionals. The opening included the participation of representatives from the academic, institutional, and sectoral fields, highlighting the relevance of this forum for the technical community and for the energy system as a whole. In this regard, the interest generated by the detailed analysis of the operation of nuclear power plants was emphasized, especially in an evolving energy context, where reliability of supply and stability of the electrical system are acquiring increasing importance.

Once again, the core of the Conference consisted of the technical sessions in which the directors of the Spanish nuclear power plants presented the operating results corresponding to 2025. These interventions made it possible to provide a rigorous and transparent view of the performance of the nuclear fleet, addressing key aspects such as safety, production, radiological protection, flexible operation, and modernization investments. The high availability of the facilities, the maintenance of indicators at excellence levels, and the sustained contribution to electricity generation once again demonstrated the fundamental role of nuclear energy as a reliable and emission-free source.

Likewise, the Special Session provided, by Lieutenant Colonel Luis Antonio Rodríguez Álvarez de Lara (Head of GIETMA), a complementary perspective by focusing on nuclear emergency management, highlighting the capabilities of the Unidad Militar de Emergencias (UME) and its collaboration with nuclear facilities. This approach made it possible to broaden the technical vision of

the Conference toward areas related to comprehensive safety and response to extraordinary situations, underlining the existing coordination among different organizations and reinforcing confidence in protection and response systems.

Beyond its technical content, the Conference once again demonstrated its value as a professional and intergenerational meeting point. The participation of experts with extensive experience together with young engineers and students reflected the vitality of the sector and its ability to attract talent. This exchange of knowledge and experiences contributes to strengthening the safety culture, operational excellence, and knowledge management, essential elements for the future of nuclear energy in Spain.

In this context, the holding of the General Assembly of members of the Sociedad Nuclear Española at the end of the Conference acquires full meaning. The coincidence of both events on the same day responds to the desire to take advantage of the presence of a large number of members and professionals of the sector, thus facilitating active participation in the association's life. The Assembly constitutes the fundamental governing body of the SNE, in which key issues for the organization are addressed, strategic lines are shared, and the involvement of its members is encouraged.

In short, the Operational Experiences Conference of the Spanish nuclear power plants reaffirms, in every edition, its dual vocation: on the one hand, to serve as a showcase of the excellent performance of the nuclear fleet; and on the other, to consolidate itself as a meeting point and collective reflection forum to face, with rigor and knowledge, the challenges of the energy future.





LUIS ANTONIO RODRÍGUEZ ÁLVAREZ DE LARA

Head of GIETMA. Military Emergency Unit

Text: MATILDE PELEGRÍ AND GEMA ORTIZ Photos: GRUPO SENDA AND UME

The Operational Experience Conference of the Spanish Nuclear Society analyzes, every year, the evolution of nuclear power plants, operational and performance results, and future plans. The 2026 Special Session featured an exceptional speaker. Lieutenant Colonel Luis Antonio Rodríguez Álvarez de Lara, head of the Technological and Environmental Emergency Intervention Group (GIETMA), presented to all attendees the mission of the Military Emergency Unit (UME), showcasing its most significant actions in the field of citizen protection, both within and outside our borders. The second part of his presentation focused on explaining the lines of collaboration between the UME and Spanish nuclear power plants. Lieutenant Colonel Rodríguez Álvarez de Lara welcomed us at the UME headquarters, in the Madrid town of Torrejón de Ardoz, to convey the main activities of this Unit, which enjoys the recognition of society and constitutes a key element in security, including that of nuclear facilities in Spain.

THE UME AND SOCIETY

The Military Emergency Unit has surpassed 20 years of history. What is the UME and what were the reasons for its creation?

Let us begin with the reasons for its creation. There was an unfortunate event, in this case, which was the wildfire that occurred in Guadalajara on July 16, 2005. In this fire, 11 people lost their lives, and this generated among the general population a different perception of what forest fires were. They were perhaps given greater importance. This led to a series of measures by the Government to tighten regulations on where fires, barbecues, and so on could be made. In other words, much stricter restrictions. It also led to a Government action, which was the creation of the Military Emergency Unit on October 7, 2005.

What is the UME, therefore?

The UME was created as a joint unit, that is, a unit made up of personnel from the Army, the Navy, and the common corps, dedicated in a specialized manner to emergencies. It was created so that the State could respond forcefully to emergencies, strengthening the response to such situations. It was configured as a military contribution to the National Civil Protection System and as a commitment of the Armed Forces to citizens.

What have been the main milestones in these 20 years of history that have remained in the memory of the unit?

There have been many. These have already been 20 years dedicated to emergencies, with more than 800 interventions, so all of them are important, without any doubt. However, I would like to highlight, because of their greater weight, forest fires. Approximately 70% of the UME's interventions are directed at forest fires, which unfortunately occur every year.

Now then, there have been milestones that perhaps left a greater mark because of their impact. We must mention the pandemic. It was a global milestone and the Military Emergency Unit had to act from minute one. It was something very significant and impactful for all members and, in general, for the country. Not only because of the intervention itself, but because, in the end, as citizens, we were also affected. Our families were affected as well and, therefore, it had, if possible, an even greater emotional implication.

And then, obviously, we must point out the Valencia DANA floods, still very present in our minds, where it was a global intervention due to the major damage caused and in which the UME became involved 100%. But not only the UME, rather the Armed Forces as a whole. The UME is the spearhead of Armed Forces emergency response, but all capabilities joined in there.

If the safety level of nuclear power plants were better understood, the perception of some people would probably change

International missions must also be mentioned, which are important milestones: following a request for assistance from another country, we deploy to the area and attempt to mitigate damage or rescue people, and so on.

And, as significant actions, the blackout, where it was the first time that the Military Emergency Unit acted as the Operational Direction of the Emergency, after situation three was declared in several autonomous communities. Filomena as well, because it was a severe winter storm, with a major impact on the population that prevented mobility in several areas of the country.

And, as a curious event, the La Palma volcano, which was also a significant intervention, where many tasks were carried out, but one of the most notable was the monitoring of emissions and the analysis of lava flows. Since the pandemic, everything has been on a large scale and with many emergencies.

You have reviewed especially complex moments... But which have been the most satisfying?

I would again point out that, as a complex moment, I insist on the pandemic. Those initial moments, for all of us who were here, I believe we will never forget them: dramatic situations that one cannot believe could happen in your own country, and to which we had to react.

It was complicated, but at the same time also satisfying, because we were able to provide a great response and help, together with the rest of the actors involved, to gradually improve the situation. The pandemic deeply affected all members of the UME, both because of some particularly complex missions and because of that inevitable emotional involvement. Many people were affected, there were many deaths and, therefore, your heart tightens when facing situations like that.

And, for the same reason, the Valencia DANA floods. We still have them very present. Obviously, we felt affected by the great number of deaths and the structural damage it caused. An enormous effort was made to deploy every possible capability. It was an intervention with a very large number of personnel in the area and it will remain in history.

And then, as satisfying moments, I would indeed like to point out all those in which people were rescued. Saving lives is the main objective in an emergency and it is the greatest satisfaction, the greatest reward we can obtain.

Very significant and emotional was the rescue in Turkey of a family — a mother with her two young children — who, after several days buried under the rubble, the UME was able to find and rescue alive. And that is something priceless. It is never forgotten.

Even though a nuclear accident is highly unlikely, we prepare for the impossible and with a very high level of detail

TECHNOLOGICAL EMERGENCIES

Emergencies caused by natural phenomena affect society as a whole and are well known. However, there are other threats arising from technological risks or environmental contamination, known as CBRN risks (nuclear, biological, chemical and radiological). When did the UME begin incorporating response systems for these risks?

It actually began from the very start of its creation, although with relatively limited capabilities. It had some companies with technological emergency response capabilities: one in Zaragoza, at the headquarters of the 4th Emergency Battalion, and another in Torrejón, in the 1st Battalion.

These two companies had certain technological risk capabilities, but there came a moment when it was considered that they were not sufficient to meet the potential demand for this type of emergency.

And it was in 2013, specifically on May 16, 2013, when the decision was made to specifically create a unit capable of providing a specialized response to these risks: the Technological and Environmental Emergency Intervention Group, GIETMA.

How did the need arise to integrate nuclear power plants into the UME's intervention plans and what is its objective?

In the same way. If the creation took place in May 2013, by 2014 we were already present at all nuclear power plants. It happened very quickly. At that time, the then Commander General of the Military Emergency Unit, César Muro Benayas, had the concern and determination that we prepare ourselves for those events which, although unlikely, could become very dangerous and affect the population. And one of them was nuclear facilities.

Therefore, a collaboration protocol was signed with the then UNESA, now Foro Nuclear, and through that protocol all those strategies in which the Military Emergency Unit could collaborate in the event of a critical situation at nuclear facilities were studied.

Through this protocol, already in 2014 GIETMA visited all the nuclear power plants in Spain and, in each one of them, a dossier was created detailing all the strategies in which our intervention might be necessary, always in collaboration with the plant itself and clearly defining what actions could be carried out.



That dossier is updated periodically, since every year we go to one of the nuclear power plants. There we hold preliminary meetings to review the scope of the exercise, practices are carried out with the different groups — firefighting, radiological protection, maintenance personnel, communications — and, afterwards, an integrated exercise is conducted in which all these capabilities are developed.

This is done once a year at a different plant, so that every five years the complete cycle is repeated. A schedule is established with Foro Nuclear and each year a facility is visited. Last year it was at Cofrentes and this year it will be at Vandellós, foreseeably in October. We are currently coordinating dates to conduct a large-scale drill.

How do UME personnel interact with plant personnel?

The approach of these collaborations, of these exercises, is comprehensive. The aim is for the different groups to meet together: radiological protection, maintenance, communications, firefighting... Everything that requires capabilities in which the UME can provide support.

We organize ourselves into groups and, from there, all strategies and possible forms of collaboration are developed. Finally, all of this is integrated into a complex scenario where these strategies are put into practice through an integrated-scope exercise.



In 2004 the Basic Nuclear Emergency Plan, PLABEN, was approved, structuring the response to nuclear emergencies into Internal Emergency Plans and External Nuclear Emergency Plans. What role does the UME have in these Emergency Plans?

Here the role of the UME is also fundamental. In these emergency plans, the UME has capabilities to respond both to the External Emergency Plan and to the Internal Emergency Plan, as well as to support the Nuclear Safety Council.

In external emergency plans, our main tasks are aimed at supporting the population. Specifically regarding nuclear risk, these focus on the deployment of classification and decontamination stations. We can support those already established as fixed within the plans or deploy our own, with different stations in a suitable location for the evacuation of the population.

We also participate in the radiological surveillance plan, where, with our detection, identification and sampling equipment, we can obtain the necessary data and transmit it both to the Nuclear Safety Council and to the Emergency Directorate, in order to effectively advise on the resolution of the situation and the measures to be applied to the population.

As support to the Nuclear Safety Council, we collaborate in the logistics required to deploy the radiological control points established in the plans, as well as in monitoring radiation ex-

posure affecting the responders themselves, including the assignment of dosimeters.

And lastly, in support of the Internal Emergency Plan, since the UME has capabilities that allow it to act comprehensively. In this area, all the sensor systems we can deploy for the detection and identification of possible radiation or contamination are very important, as well as advising the Plan Director on the use of our resources and collaboration through software that allows predictions regarding the possible evolution of the radiological cloud and, in this way, the adoption of suitable measures to protect the population.

Who directs PLABEN?

The director of the Internal Emergency Plan is the plant director, and the director of the External Emergency Plan is currently the Government Subdelegation. Nevertheless, PLABEN is currently under review, since it has become outdated with respect to PLEGEM.

PLEGEM already establishes that those previously developed plans must be revised, and they are currently in that updating process. The main difference between both structures is that PLABEN, having been created before the establishment of the UME, does not specifically contemplate its participation and presents a structure that does not fully align with what is defined for a national-level emergency, as established by PLEGEM.

PLEGEM clearly establishes the different operational situations, develops the functions of the different responsible authorities and, specifically, precisely defines the structure of an operational situation 3, that is, a national-interest emergency. In this type of emergency, the direction of the plan corresponds to the Minister of the Interior, while the Operational Direction of the Emergency is assigned to the Commander General of the UME.

He, in turn, creates an integrated operational command in which the different action groups with the necessary capabilities to resolve the emergency participate. Depending on this command, there is an advanced command post from which all the necessary actions are executed, both for the benefit of the External Emergency Plan and in support of the Internal Emergency Plan.

In short, a new nuclear emergency plan is necessary or, at least, an update of the current one. PLEGEM is the General State Plan, therefore the new nuclear plan must align with the criteria it establishes.

GIETMA

The UME has the Technological and Environmental Emergency Intervention Group, GIETMA, of which you were one of the main driving forces, and which you have directed since September 2025. What is the mission of GIETMA? Why was its creation necessary?

In emergency management it is not possible to act in isolation: it is a joint response by all the actors involved

Just as was done with the rest of the battalions dedicated to resolving emergencies of natural origin, the need was identified to create a specialized unit in the field of technological risks. Having these capabilities distributed among different battalions was more complex, so the decision was made to centralize them at Torrejón Air Base. Thus, a unit was created with the capability to operate in all these fields: nuclear, biological, chemical emergencies and their environmental derivatives.

This is a highly complex field, since it requires a great diversity of resources and very specific personnel training. Hence the decision to concentrate these capabilities in a single location, at the Torrejón base.

One of its first actions was directing the operational deployment against the swine fever outbreak detected in the Collserola mountain range, in Barcelona, which required the activation of more than 160 specialized personnel. What lessons were learned from that experience? Could it be said that it is a clear example that risks can arise in almost any area of life?

The most important thing is that it demonstrates the adaptability of this unit's emergency response capability. No emergency is the same; each one is different and, therefore, we must have plans and procedures that are sufficiently flexible to adapt them to the specific situation we are facing. In this case, we were facing a biological risk. It was still a virus, although on this occasion it only affected animals, specifically wild boars and pigs. The procedure we had for other viruses basically consisted of adapting it to this situation.

I would therefore highlight that adaptability in the response, as well as multidisciplinary advice. By this I mean that, within the command post, we had CBRN specialists, pharmacy personnel and veterinary personnel. That joint advice, from different fields, is essential in order to guide the direction of the emergency in a much more appropriate way. I believe the main value of this intervention was precisely that: having been able to provide broader advice and develop plans and specific procedures for a concrete situation.

How many members make up the GIETMA unit?

Approximately 150. The advisory role of pharmacy personnel, specifically, is integrated into the rapid identification laboratory, which has both biological and chemical identification capabilities. Pharmaceutical personnel are part of this laboratory, while the Veterinary service belongs to the regiment to which my unit is attached.

Returning to the nuclear sector, how does GIETMA interact with the interventions previously analyzed in the field of nuclear power plants (PLABEN and PLEGEM)?

In the end, as in any other type of emergency, the UME is a State intervention element that can act in any situation, since it has a series of capabilities that can be made available to whichever emergency authority is responsible.

In the case of nuclear emergency plans, it would be the same: the UME would act comprehensively, making all the necessary capabilities available. These may range from the rescue of people to the more specific nuclear aspects, such as detection and identification, firefighting or logistical support, which is key in this type of situation. This support includes assistance to affected persons, setting up camps and supplying power through generators. In other words, the response is comprehensive, as in other plans; it simply adapts to the specific situation and the type of risk.

Deployment would take place at the moment it became necessary, using the fastest route available. It does not necessarily have to be only by land, but also by air, through helicopter support, which allows for a faster response. In fact, one of the reasons why this unit is centralized in Madrid is its proximity to the different sites, which facilitates rapid intervention.

Here, the key to success is early notification. In this case, from the nuclear power plant, through an early warning before more serious situations are triggered. This allows deployment in the shortest possible time and mitigation of both the damage and its consequences.

Risks arising from industrial facilities are limited, known and those responsible know how to act in each case. However, increasingly we face risks arising from actions generated by human beings with the intention of causing harm. How does GIETMA in particular, and the UME in general, interact with the population in order to be able to face these risks?

Unfortunately, we live in a very complex world, and the UME, as well as the Armed Forces in general, are aware of this situation. Therefore, within our preparation we try to be ready for everything — as I always say, even for the impossible — by creating highly complex scenarios that go beyond what can be imagined and preparing ourselves at that level. Among these scenarios are malicious acts that may affect some type of facility and ultimately generate an emergency requiring a response. We also prepare for that.

In any case, this preparation and response is always carried out in collaboration with other organizations, especially with the State Security Forces and Corps, as well as with the rest of the police forces and fire services. In other words, emergency management cannot be carried out in

isolation: it is a joint response by all the actors involved. The key, in this regard, is coordination among all of them.

Do you believe there is a mistaken perception within society regarding nuclear risk?

Yes, there is probably some lack of understanding about what nuclear power plants are, how they work and the level of safety they have. Safety is excellent. A nuclear power plant is intrinsically safe. Therefore, we begin from extremely high standards, difficult to find in other sectors, with highly qualified personnel who are also very aware of safety. They are conscious that, although the probability of an accident occurring is extremely small, it exists, and they prepare for it.

In fact, proof of this is the existing collaboration: even though a nuclear accident is highly unlikely, we prepare for the impossible and with a very high level of detail. I believe that society, in general, does not know these facilities well. Perhaps, from the plants themselves, more information could have been provided — I do not know exactly the reason — but the reality is that, if the safety level of nuclear power plants were better understood, the perception of some people would probably change.

Being prepared for technological emergencies requires technical training. Do you encourage young university students to direct their professional future toward the UME?

Of course, absolutely. The doors of the UME are open, especially to people who want to contribute, provide their knowledge and demonstrate commitment, which is the most important thing. When we speak about the Armed Forces, we are speaking about a commitment to society, assuming risks and with the conviction that this contribution benefits citizens. Young people are the future: we need new ideas and people who want to develop within the technological field.

In recent years progress has been enormous and it is something that is not going to stop. In fact, our daily preparation covers every aspect and training is continuous. It is not enough to have completed a course last year; it is necessary to update oneself constantly. Technologies evolve, are continuously surpassed, and that also implies the permanent acquisition of new resources. In the field of detection and identification, improvement is constant, so we must adapt our resources to the most modern ones in order to improve the response to emergencies. ■

A nuclear power plant is intrinsically safe. Therefore, we begin from extremely high standards, difficult to find in other sectors, with highly qualified personnel



Professional profile

Lieutenant Colonel Luis Antonio Rodríguez Álvarez de Lara entered the General Military Academy in 2001. After completing his studies, in 2006 he was assigned as a Lieutenant to the Legion. In 2010 he was assigned to the Military Emergency Unit, where he held different positions as Company Commander Captain, notably commanding the Technological Emergency Intervention Company.

After his promotion to Major, he served for three years as Chief of Staff of the Technological and Environmental Emergency Intervention Group (GIETMA). Subsequently, after completing the Armed Forces Staff Course, he was assigned to the UME Headquarters, where he held the position of Plans Analyst and, later, was appointed Head of the Instruction and Training Area. He is currently Head of the Technological and Environmental Emergency Intervention Group (GIETMA), in addition to having completed various training courses in Spain and abroad.

He has participated in various national and international forums related to nuclear, radiological, biological and chemical (CBRN) risk. Likewise, he has collaborated as co-author in publications such as the Guide for Detection and Identification of Technological Risks and in different UME doctrinal publications on technological and environmental risks.

He has delivered conferences in various forums and participated as an instructor in multiple institutions, among them the Comprehensive Security and Emergency Training Center, the Disaster Management Course at the UME, the Basic Course on Technological and Environmental Risks, the Master's Degree in Emergencies at the Polytechnic University of Valencia, CBRN risk courses at the Military School of Health, the Faculty of Chemical Sciences at UCM, the Faculty of Biological Sciences at UCM, the National School of Civil Protection, the School of Citizen Protection of Castilla-La Mancha and the Gutiérrez Mellado University Institute, among others.



OPENING

The day began with the opening ceremony, which brought together three key figures from the institutional, academic, and industry sectors: Sergio Domínguez, director of the ETSII/UPM; Paulo J. Domingues, president of the SNE; and Jesús Tardón, deputy director general of Nuclear Energy at the Ministry for Ecological Transition and the Demographic Challenge. Their remarks are summarized below.



SERGIO DOMÍNGUEZ
Director of
ETSII/UPM

Good morning and welcome to the Palace of Industry and the Arts, which is the headquarters of the Higher Technical School of Industrial Engineers of the Polytechnic University of Madrid, the place where we now find ourselves in its assembly hall. I am aware that for many of you this is not the first time you have come through this school, but if that were the case, welcome, and I invite you from this moment onward to feel that this house is your house, from now on and forever.

I would like to begin by thanking the Spanish Nuclear Society for having, once again, chosen our school to organize this conference on nuclear power plants. Likewise, I would like to express my gratitude to the president of the Spanish Nuclear Society, Paulo

Domingues, for being with us today. Equally to Jesús Tardón, Deputy Director General for Nuclear Energy of the Ministry for Ecological Transition and Demographic Challenge. My name is Sergio Domínguez and I am the director of this house. The first thing I would like to draw attention to is the interest that an event of this nature has for us as industrial engineers, where the performance, operation and incidents that may have occurred at nuclear power plants during the year 2025 are going to be reviewed.

No one overlooks the circumstance that has been revealed to us during this last year, precisely in 2025, regarding the state of our electrical distribution network and the possible deficiencies that may have occurred in the configuration of the energy mix. In that situ-

ation, for any industrial engineer, as a person responsible for the establishment of future industrial projects, as all of you are already aware, the most important thing, one of the fundamental requirements when considering that possibility, is to guarantee a reliable energy supply. And in that context, the events of last year, where it was made evident to us that the energy mix and the distribution system were correctly dimensioned, the prominence that nuclear energy may take on from now onward as one of those firm sources that guarantee us the stability that dramatically failed, logically makes this a moment of special interest for us. Likewise, in the context in which we find ourselves in the Community of Madrid, which is added to this circumstance, where the Regional Government is making a firm commitment in support of research in this mode of energy generation within the nuclear field.

For all these reasons, all these circumstances come together, knowing moreover that within the Community of Madrid there is great interest in hosting electricity-intensive businesses, more than businesses, intensive industrial efforts, such as the current proliferation of data centers and the demand that exists for the installation of data centers in strategic points throughout Europe and especially around Madrid. All this shapes a situation in which what is being discussed today and the future of nuclear energy in general is, as I say, of the utmost interest for industrial engineers as part of our responsibility to guarantee the proper functioning of all those plants that we will have to implement from now onward.

And nothing more, I would like to reiterate my gratitude to the organizers and my gratitude to my colleagues at the Presidency, as well as to hope and wish that this conference will be of the greatest usefulness to all of you. Thank you very much.

For us, nuclear energy is of particular interest as one of the reliable sources that guarantee our stability



PAULO J. DOMINGUES
President of the
Spanish Nuclear
Society

Good morning and welcome to this annual gathering of our sector, where under the heading “Spanish nuclear power plants in 2025, experiences and perspectives” we will have the opportunity to review, together with the plant directors, the operation of our groups—our seven “treasures”—during the past year.

Before delving into this always enriching detailed view, I would, of course, like to begin my remarks with a special thanks, both on my own behalf and on behalf of the Board of Directors of the Spanish Nuclear Society, to everyone who has made this event possible. In particular, to all the members of the Programme Committee who, as every year, have piloted the organisation of this meeting. I also wish to thank the Higher Technical School of Industrial Engineers of the Polytechnic University of Madrid and its director, Sergio Domínguez, who accompany us in this opening ceremony, for the warm welcome and all the facilities that, once again, they have provided us so we can meet here today. My gratitude, and of course congratulations, also go to Jesús Tardón, Deputy General Director of Nuclear Energy of the Ministry for the Ecological Transition and the

Demographic Challenge, for joining us for the first time at this opening ceremony.

And, of course, thanks to all the plant directors—listed alphabetically: Alberto Porras, Antonio Martinavarró, Javier Sala, Jorge Martínez and Rafael Campos. You are today the true protagonists. Thanks also to our invited speaker for the special session, Lieutenant Colonel Luis Antonio Rodríguez Álvarez de Lara of the Military Emergency Unit. And, of course, thanks to everyone who, once again, fills this auditorium—professionals and students alike. I see people of different ages, of different generations, and that fills me with joy because, from here, from this platform, it seems to be one of the best possible demonstrations of the vitality and capacity of our sector.

Nuclear energy is not a relic of the past; it is a future option and, as long as we are allowed, we will continue defending it.

Before handing over to Jesús Tardón, who will officially inaugurate this day, allow me to share some reflections. I am convinced we share most of them, but we must turn them into proclamations. In this moment of debate and positioning, the voice of nuclear professionals must also be heard loud and clear. We are talking about our plants, our work, and our commitment to energy availability, to reducing emissions, and to guaranteeing supply.

Often, inertia is cited as one of the characteristics of our sector, and although I would say that 2025 has been an intense year, full of milestones and differentiating facts, it is true that there are paragraphs of this speech that all presidents have written and reiterated. Regarding previous years, for example, our contribution to the electricity system has not changed. In 2025, the seven reactors we operate produced 19.7 % of the net electricity in the mainland system, while representing only 5.0 % of the installed capacity.

They were, once again, the source that operated the most hours at full power, with a load factor of 83.1 %—that is, about 7,280 production hours equivalent to 100 % nuclear power. Our production accounts for 25.2 % of total electricity generated in Spain without emissions. With just these four figures, it is possible to affirm that we have decisively contributed to system stability, supply security, and emission reduction. This was the case in 2025 and has been historically so.

At a time when voices rise again against our continuity, the data—indisputable as they are—allow us to refute the ideology and the various myths that are invoked. Looking back and recalling the intervention in this very forum by my dear president Emilio Mínguez, we can all remember his wish to “be able to leave behind this endless discourse of reivindication, almost of pleading, from the presidents of the Spanish Nuclear Society.” It seems that, once again, I must take up his baton and once more claim ourselves as a future option.

I could fill much of the morning, and we have not come here to provide arguments for the following points:

The global turn away from nuclear – All countries except Spain, with operating reactors, are moving toward the long term, as recent statements such as those by German Chancellor Friedrich Merz, who called the German nuclear blackout a “grave strategic error,” and Belgian Prime Minister Bart De Wever, who labelled the decision to abandon nuclear energy “the stupidity of the century,” illustrate.

Growing social support for nuclear – Remember that the Real Instituto Elcano’s barometer revealed support for the continuity of Spanish nuclear plants from two out of three Spaniards.

The key role of our plants in complex situations – A few years ago, our major reference was the impact of the Filomena storm; today, the im-

Today, the importance of network stability has been consolidated in the now famous reinforced operation of the peninsular transport system, a consequence of the blackout of April 28th last year

portance of grid stability has been consolidated in the well-known reinforced operation of the peninsular transport system, a consequence of the blackout on 28 April last year.

The need for robust generation sources to attract investment and develop projects in our country.

(And numerous other points) that you have all followed, as I have, and which need not be repeated here because we are already fully convinced of them.

Instead, I would like to place special emphasis on three aspects that, as President of the SNE, I want to highlight:

The excellence of our teams—in the plants and in the companies. This excellent quality stamp is part of our DNA as nuclear professionals. We will discuss it throughout the morning. When I speak of “good practice,” I do not refer to “great years” that have also passed; I talk about overcoming challenges, adding value, as the plant directors will soon tell us, and working with responsibility and commitment—our best calling card, our contribution to the discussion and debate about our future.

I also want to focus on Almaraz. Beyond its operation, I speak of its resilience—the capability it is showing to keep working under pressure and a countdown that is not easy to manage. To this, I can only say again that you have the support of everyone in this room. We are all a bit of Almaraz and we want this uncertainty to end now, so that, as that song that has touched us all says,

“Almaraz, don’t close,” because “it still has a lot to offer.” We are all convinced of this. Keep going with strength and enthusiasm. You have all our support.

The effort of openness, transparency, and outreach that the entire sector is undertaking. From very different options, it is true, but all aimed at the same goal: gradually gaining the social support I mentioned earlier, which is essential to buttress, from a broader perspective, our request to review the shutdown schedule of our plants.

Over the past year we have seen the activity of the “Yes to Almaraz, Yes to the Future” platform, and we have also joyfully observed social and economic agents across the country taking a clear stance in favour of revising the shutdown calendar beyond today’s dates.

Reaffirming nuclear energy as a future option for Spain and as a necessary part of our electricity generation system. I ask all the nuclear professionals present today to keep working as you have done over the past year, so that our actions and good practice speak louder and clearer than any discourse. When you have the opportunity, reaffirm our contribution and the value of nuclear-origin electricity generation. For too long we have been permissive and have let others speak for us. I also ask you, without hesitation, to maintain a high level of optimism and the desire to keep fighting.

To paraphrase once again my dear professor Emilio Mínguez, I will be very happy to leave behind this tone, this “reivindication” speech. But have no doubt that if I must keep it, both here and especially in every forum where, as President of the SNE, I have the chance to give voice to nuclear professionals, I will do so with all the pride and satisfaction that representing a sector and professionals like you brings me.

Thank you for your support, thank you for your fight, and thank you for believing in our future!



JESÚS TARDÓN

Deputy General Director
of Nuclear Energy of
the Ministry for the
Ecological Transition
and the Demographic
Challenge

First of all, I would like to thank the Spanish Nuclear Society and, in particular, its President, Paulo Domingues, for the invitation to take part in this day on experiences and perspectives of Spanish nuclear power plants on behalf of the Ministry for the Ecological Transition and the Demographic Challenge. It is a great honour for me to be here today given the very high level of all the professionals participating in this event.

I begin by reiterating what Paulo has said: nuclear production in Spain during 2025 showed a slight downward trend, representing 19.7 % of the total net electricity generated in our country, according to provisional data from Red Eléctrica. With only 5.28 % of installed capacity, nuclear energy was the second-most important source in the generation mix, just behind wind, which contributed 21.6 %. In third place was solar photovoltaic with 18.4 %, already close to nuclear's 19.7 %. In any case, Spanish nuclear plants remain a fundamental pillar of reliable, low-greenhouse-gas-emission base-load energy supply, despite

the strong growth of renewables.

It is evident that these good production levels are the result of the excellent work carried out by the professionals who are part of the Spanish nuclear industry and, in particular, by the plant directors who, throughout this day, will tell us how their operations have been over the past year.

From my side, I will now inform you about the most relevant actions that are currently being developed in the Ministry.

I want to start this brief review with one of the most important topics that the Spanish nuclear sector has on the table at this moment: the orderly shutdown protocol for nuclear power plants. The fact is that, indeed, in 2019 an orderly and phased shutdown schedule was agreed, and six years later, in the last quarter of 2025, some of the plant-owning companies that signed the protocol have indicated that circumstances have changed and have acted accordingly.

The Order TED/773/2020, dated 23 July, granted Almaraz-Trillo Nuclear Plants the renewal of the operating licence for Almaraz, valid until 1 November 2027 for Unit I and until 31 October 2028 for Unit II, specifying that those dates would be the definitive cessation dates for these units.

On 30 October 2025, the General Director of CNAT submitted a request to the Sub-Directorate General Registry, asking that the operating licence for Almaraz be modified to extend its validity until 8 June 2030 for both units. Since this request seeks an extension of the licence, it is being processed by the Ministry in accordance with Article 7 "Renewal of authorisations" of the Regulation

on Nuclear and Radioactive Installations and other installations related to ionising radiation exposure (the so-called RIR), approved by Royal Decree 1217/2024.

The first paragraph of Article 7 states that licence renewals will be processed using the same procedure by which they were originally granted, attaching updated supporting documents or, where appropriate, the documentation required for each authorisation. CNAT's request was forwarded to the Nuclear Safety Council (CSN) for its mandatory report, and subsequently this body sent CNAT a complementary technical instruction requiring the submission of specific documentation in order to evaluate the request properly. On 17 February, CNAT presented to the Council and the Ministry the requested documentation, additionally identifying the letters that transmitted the updated official operating documents for the Almaraz Nuclear Plant.

Finally, on 27 February, the Ministry issued an order suspending the time limit for issuing the decision on the renewal procedure until the Council's mandatory report is issued. All of this follows the Regulation on Nuclear and Radioactive Installations mentioned above and Law 15/1980 establishing the Nuclear Safety Council. According to Article 10.1 of the RIR, the deadline for resolution is six months. Therefore, since CNAT submitted the request up to the issuance of this order, roughly four months have elapsed, leaving two months from the Council's report issuance to the final order that will resolve the file.

I now refer to another file, the so-called ATI-100 project. The 7th General Radioactive Waste Plan (7° PGRR), which we commonly know as the 7° PGRR, envisages equipping the sites of the Vandellós II, Ascó I, Ascó II, Cofrentes and Almaraz nuclear plants—four sites—with temporary spent-fuel storage capacity capable of holding all waste generated by those plants until the end of their planned operational life. It should be noted that the Trillo plant already has this capacity. All of

Spanish nuclear power plants remain a fundamental pillar in the supply of reliable baseload energy free of greenhouse gas emissions



this is being carried out through the ATI-100 project.

For the new ATIs, a storage system based on welded metal capsules with a concrete envelope has been selected, similar to the existing ATIs at Ascó and José Cabrera. The execution and installation of the four ATIS-100 facilities were authorised by resolutions of the General Directorate of Energy Planning and Coordination (DGPCE), with a prior CSN report between November 2024 and March 2025. Consequently, the construction works for these four installations are currently underway, and the owners have already requested the respective commissioning authorisations, which will be issued in due course.

I now move to the El Cabril expansion file. By DGPCE resolution, with the Council's prior report, on 17 January 2025 the execution and installation of the southeast platform for the permanent storage of low- and intermediate-activity waste (RMBA) at the El Cabril storage centre was authorised. This platform's construction is contemplated in the 7º PGRR due to the need to increase low- and intermediate-activity waste storage capacity at El Cabril. The construction will be phased: the first phase will build 12 new RMBA cells, with up

to 15 additional cells to be added as required. It is expected that during 2026 ENRESA will request commissioning authorisation for the southeast platform, and that the DGPCE will finally grant this authorisation in 2029.

Lastly, I briefly refer to the temporary storage facility file for Vandellós I. On 20 February 2025 a notice was published in the Official State Gazette announcing the public information stage for the construction project of a temporary storage facility at the Vandellós I nuclear installation (currently in a latency phase), together with its environmental impact assessment. This is part of the environmental impact evaluation for the project. The temporary facility will house waste from the pre-processing of spent fuel that is currently stored in France, as well as special waste generated during the final de-commissioning phase of the installation. The 7º PGRR foresees commissioning this temporary facility in 2027, next year, with it remaining operational until the waste is transferred to the Deep Geological Repository (AGP) for permanent disposal.

The Sub-Directorate General is currently processing the execution and installation authorisation, which is

pending the issuance of the Environmental Impact Declaration for the "La Vía" project and the Council's report. Once both documents are received, the execution and installation authorisation is expected to be granted within 2026.

I will finish now. We are working on several other files of interest, but given the time available I will only mention them briefly.

First, the drafting of a Royal Decree that amends the Regulation on Protection of Health against the risks derived from exposure to ionising radiation, approved by Royal Decree 1029/2022. The main aim of this regulation is to fully transpose Directive 2013/59 Euratom, which is currently missing one article that this Royal Decree will finally transpose. The file is at an advanced stage of processing. It will be examined by the Nuclear Safety Council, the Ministry's SCT, and subsequently subject to the Council of State's opinion, with a likely approval in the last quarter of this year.

Secondly, the files concerning requests for authorisation to modify the shutdown strategies of the plants, arising from the delegations' offices, which to date remain unresolved.

Finally, I would like to mention the follow-up version of the Artemis part of the IRRS-ARTEMIS mission of the OEIA (2018). This follow-up mission took place at ENRESA's headquarters in Madrid between 28 September and 3 October 2025. The final report is published both on the Ministry's website and on the Nuclear Safety Council's site.

I close this intervention by thanking Paulo Domingues for the opportunity to address all of you and by reiterating my recognition of all nuclear-sector workers, whose work, knowledge and dedication contribute daily to ensuring that nuclear energy plays a leading role in guaranteeing electricity supply—a good that is, without a doubt, absolutely essential to our current society.

With that, I declare the conference officially opened.

Thank you very much. ■

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SESSION I



JAVIER SALA

Director of Cofrentes
Nuclear Power Plant

COFRENTES NUCLEAR POWER PLANT

NUCLEAR SAFETY

The safety performance in 2025 solidified Cofrentes as a facility with high operational standards. According to the indicators of the Integrated Plant Supervision System (SISC), the plant kept all its metrics in the green, achieving the best position regarding nuclear safety: the owner-operator's response.

During 2025 five events were reported to the Nuclear Safety Council, all classified as INES 0. The most significant was the pre-alert of 28 April, caused by the loss of external electricity supply during the nationwide

blackout. In this demanding scenario, the three safety diesel generators started and properly energized the emergency bars, demonstrating the reliability of the systems and the team's preparedness.

OCCUPATIONAL SAFETY

Occupational safety remains a strategic pillar. In 2025 the plant recorded zero lost-time accidents, both among permanent staff and contracted companies. With more than 1.5 million hours worked, over 4,000 observations were logged, identifying 902 deviations and 31 incidents. The implementation of the "Stop Work" process has actively involved all personnel in identifying and immediately

halting unsafe activities, reinforcing a solid preventive culture.

RADIATION PROTECTION

2025, being a refuelling year, posed a demanding situation for radiation protection. Nevertheless, Cofrentes finished the year with a collective dose of 1,811 mSv-person, below the target. The maximum individual dose was 9.9 mSv, also below the internal limit. The plant continues to apply the ALARA principle rigorously and is promoting new optimisation approaches, reminding that even in years with good results there are opportunities for improvement.

SPENT-FUEL MANAGEMENT

The year closed without new container loads; the 15 existing containers remain in the ATI. The main focus was on constructing ATI 100, designed to store all spent fuel from the plant. Despite delays caused by an unusually adverse weather year, the project still targets completion in 2025, ensuring the infrastructure needed for prolonged operation and the forthcoming decommissioning phase.

PRODUCTION AND OPERATIONAL FLEXIBILITY

Cofrentes generated 7,434 GWh in 2025, representing 48 % of Valencia's electrical production. The capacity factor reached 81.8 %, with a forced unavailability factor of only 3.85 %. Three milestones defined the operational year:

A market-driven shutdown in April due to high renewable penetration and low demand.

A refuelling campaign carried out by more than 2,000 professionals from over 100 companies, meeting strict quality and safety targets.

An automatic shutdown in November caused by a ground fault in the generation breaker, which was recovered in just eleven days thanks to close

The plant kept all its indicators in the green, placing it in the best position with respect to nuclear safety: the holder's response time

collaboration between the organisation and the equipment manufacturer.

STRATEGIC PROJECTS

One of the most relevant projects of the year was the complete overhaul of one of the two spare rotors of the main electrical generator, sourced from Valdecaballeros and sent to the United States for dynamic testing and refurbishment. This 200-ton component required a highly complex international logistics operation involving specialised land and sea transport. The refurbishment will provide a fully qualified spare rotor for future use, strengthening the long-term reliability of the main generator.

SAFETY-SYSTEM IMPROVEMENTS

During the refuelling campaign an essential upgrade was installed on the diesel generators: digital recorders to monitor the exhaust temperature of each cylinder. This modernisation allowed the detection of an anomaly in the turbo-compressor of one engine during the high-demand tests. The replacement of the equipment was

completed with technical support from other plants, demonstrating the sector's collaborative strength.

COORDINATION WITH THE UME

The coordination sessions with the Emergency Management Unit (UME) held in November were a success both technically and organisationally. Full compatibility was verified between the equipment and procedures of both organisations, including electrical, hydraulic, pneumatic connections and the operation of mobile chemical laboratories. The smooth interaction between Cofrentes specialists and UME teams highlighted joint preparedness for complex emergency scenarios.

CULTURE OF EXCELLENCE

Cofrentes continues progressing in its continuous-improvement project, aligned with WANO's "Action for Excellence" programme. A notable initiative is the project implemented for the operations-team staff, focused on talent, fundamentals and operational excellence. The programme has introduced improvements in tools, lighting, equipment manoeuvrability and advanced training on complex systems. The aim is clear: equip professionals with the means and knowledge needed to guarantee outstanding performance in every intervention. ■





SESSION II



ALBERTO PORRAS
Director of Trillo
Nuclear Power Plant

TRILLO NUCLEAR POWER PLANT

During 2025 the gross electrical energy generated by the Trillo Nuclear Power Plant was 7,500 GWh and the net production was 7,002 GWh. Trillo has avoided the emission of 3 million tonnes of CO₂ to the atmosphere, representing 3.7 % of the CO₂-free energy produced in Spain in 2025, according to official data published by Red Eléctrica Española (REE).

From 23 May 1988 to 31 December 2025, the accumulated gross electrical energy production is 303,649 GWh.

Trillo operated stably during 2025,

being available at the moments of highest energy demand (winter and summer). The longer fuel-reload duration caused the operation, availability and load factors to be lower than initially forecast for the year. During this year, for the fourth consecutive year, Trillo did not experience any automatic reactor stop.

OTHER DATA OF INTEREST

Occupational-safety records: 2025 marked the milestone of 0 accidents with medical leave, 1,008 days and 4.2 million hours without accidents with medical leave.

These extraordinary results were contributed to by the implementation of the A-ZERO (Zero Accidents) Plan of CNAT, recognised by WANO as a strength, positioning the plant as an international benchmark for occupational-risk prevention in the nuclear sector.

Thanks to its operational flexibility and its highly qualified team, Trillo is prepared to continue operating beyond November 2034, the expiry date of the current operating licence.

As of 31/12/2025, 516 fuel elements are stored in the spent-fuel pool of Trillo, representing 92.35 % of the pool's usable capacity.

During November and December 2025, two containers were transferred to the Individualised Temporary Storage (ATI), so that 441 tonnes of uranium are stored across the 42 containers that hold a total of 992 elements: 32 DPT containers and 10 ENUN32P containers.

XXXVII REFUELLING OF UNIT C (CNT)

The 37th fuel-refuelling and gener-



Also of special note are the occupational-safety records, where four consecutive refuellings have been completed without any accidents

al maintenance of Trillo began on 25 March 2025 and finished on 21 May.

In this 37th refuelling, among other activities, the following were carried out: Replacement of 32 fuel elements. Execution of tests required by the Technical Operating Specifica-





tions. Review or testing of installations, equipment and components necessary to ensure correct plant operation in the new operating cycle. More than 20,000 work orders were generated and 21 design modifications were executed.

The refuelling duration was extended by 26 days due to a combination of operational and external factors:

Additional work on the main pump, which required more time than initially foreseen.

Incidents during the heating process, obliging extra adjustments and verifications.

The unscheduled national blackout, which temporarily halted planned activities.

Several days in Mode 2 requested by the load dispatch centre in response to specific electricity-market conditions.

During this period more than forty specialised companies took part, involving over a thousand people to carry out the programmed works.

Of special note are the occupational-safety records, where four consecutive refuellings have been completed without any accidents.

In 2025 the gross electrical energy generated by the Trillo Nuclear Power Plant was 7,500 GWh and the net production was 7,002 GWh.

RELATIONS WITH THE CSN

During 2024 three events (INES 0)

were reported to the regulator (Nuclear Safety Council).

Data from the Integrated Plant Supervision System (SISC) show that Trillo has all indicators in the green and no findings above green.

INTERNATIONAL MISSIONS

In 2025 there were no WANO Peer Reviews or Follow-ups at Trillo.



ALMARAZ NUCLEAR POWER PLANT



RAFAEL CAMPOS
Director of Almaraz
Nuclear Power Plant

During 2025 the combined gross electrical energy generated by the two units of the Almaraz Nuclear Power Plant totaled 15,369 GWh (Unit 1: 7,969.4 GWh; Unit 2: 7,400 GWh) and the net production reached 14,752.1 GWh (Unit 1: 7,648.8 GWh; Unit 2: 7,103.3 GWh).

Almaraz supplies 7 % of Spain's electricity consumption, covering the needs of roughly 4 million households.

Unit I. Operated stably throughout 2025, except during periods of load reduction ordered by the dispatch centre.

16 April: Disconnected from the grid because it was not matched in the electricity market; remained offline until 6 May.

1 June: A steam-circuit intervention required a shutdown of the unit.

17 June: Automatic plant trip caused by an anomaly in a phase of the main transformer.

9–21 September: Load reduction performed for plant-maintenance work.

Apart from those intervals, the unit operated at 100 % capacity for the rest of the year.

Unit II. Similarly, operated stably for the whole year, with load reductions requested by the dispatch centre (between March and April) and during the 29th refuelling (5 October – 13 November).

Additionally, an automatic reactor shutdown occurred on 28 April due to the nationwide blackout.

Outside these periods, the unit also ran at 100 % capacity.

ADDITIONAL RELEVANT DATA

Up to 31 December, there were 533 consecutive days without any work-related accidents resulting in medical leave.

Almaraz generates 7% of Spain's electricity consumption, serving 4 million households

In 2025 the plant re-validated its WANO 1 status, remaining among the world's best-performing nuclear plants.

Three containers were transferred to the ATI-20 storage during 2025; by year-end 20 containers (totaling 640 fuel elements) were stored, filling 100 % of the ATI-20's capacity.

In May, construction began on the ATI-100 facility, which will accommodate 125 containers.

The spent-fuel pool holds 1,496 fuel elements from Unit 1 and 1,488 from Unit 2.

XXIX REFUELLING OF UNIT II

5 October: Work started on the 29th refuelling of Unit 2, the penultimate refuelling before the plant's scheduled shutdown on 31 October 2028.

The plant re-connected to the grid on 13 November, marking the start of operational cycle 30.

5. LO MÁS REPRESENTATIVO DE 2025

En espera de la continuidad

- El 30 de octubre de 2025, CNAT solicitó al MITECO (Ministerio para la Transición Ecológica y Reto Demográfico) la extensión de la autorización de explotación de los dos grupos de C.N. Almaraz hasta junio del año 2030.
- Almaraz cumple con todos los requisitos de la Revisión Periódica de Seguridad aprobada por el CSN en el año 2020, y vigente hasta el año 2030.
- NPP North Anna (Virginia, EEUU), gemela de Almaraz, cuenta con licencia para operar 80 años.
 - En EE.UU.:
 - 8 reactores: licencia 80 años
 - 80 reactores: licencia 60 años (prevén solicitar extensión hasta 80 años)

Proyecto ATI-100

Obtuvo la Declaración de Impacto Ambiental (DIA) favorable por parte del Ministerio para la Transición Ecológica y el Reto Demográfico (BOE 13/03/25).

UBICACIÓN	Zona norte de la central, al este del actual ATI-20.
CONSTRUCCIÓN	Una losa de almacenamiento para contenedores (dimensiones: 125,10 x 52,50 m).
CAPACIDAD	125 contenedores (máximo).
CONTENEDORES	Modelo basado en tecnología HI-STORM FW adaptado a ENSA-Histec.
SISTEMA	Almacenamiento en seco - HI-STORM FW versión C de la empresa Isotrac International, sistema ya licenciado y empleado en EE.UU.
OBJETIVO	Contar con un ATI de capacidad total para continuar con el descarte del combustible de piscinas más allá de 2028.

MAYO: Inicio construcción (se extenderá durante 2026).
AGOSTO: Envío al CSN la Solicitud de Autorización de la Modificación del ATI-100 (en evaluación).



5. LO MÁS REPRESENTATIVO DE 2025

Hito en accidentabilidad

En CN Almaraz
hemos cumplido
**1 año sin
accidentes**



Sigamos
haciéndolo
posible



No bajas
la guardia








4. RETOS 2026:



Mantener
la excelencia
operativa



This refuelling was the eighth consecutive refuelling without any work-related accidents, meeting dose-limit and programme-duration targets.

Over 11,000 maintenance and improvement activities were performed, including 13 design modifications required by the Nuclear Safety Council (CSN).

56 fuel elements were renewed, plus maintenance on a low-pressure turbine, seal revisions on two reactor-cooling pumps, and preventive maintenance on numerous safety systems.

An external power-supply test was also conducted using generators from the Alcántara hydroelectric plant.

RELATIONS WITH THE CSN

The integrated plant-monitoring system (SISC) shows all indicators in the green for Almaraz, with a white finding only in mitigation systems.

Throughout 2025, nine events (INES 0) were reported to the regulator (CSN).

INTERNATIONAL MISSIONS

No WANO Peer Reviews or Follow-ups were carried out at Almaraz in 2024.

2025 CHALLENGES & GOALS

- Occupational safety: 0 accidents.
- Refuelling reliability plan for Cycle 30 of Unit 2.
- Improvement of work practices and supervision.
- Move to Zero Scrams Programme.■



mantener la excelencia operativa



- 01 SEGURIDAD LABORAL
"0" Accidentes
- 02 Plan de
FIABILIDAD EN RECARGAS (Recarga 38)
- 03 Programa de
PRÁCTICAS DE TRABAJO Y SUPERVISIÓN
- 04 Renovación de
EQUIPOS DIÉSEL (GY42, GY21 y GY50)
- 05 Modernización del
SISTEMA DE CONTROL DEL REACTOR (YR)
- 06 Preparación para la
OPERACIÓN A LARGO PLAZO

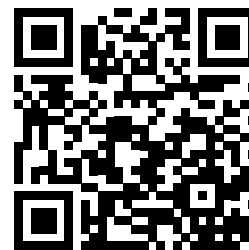
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SESSION III



**ANTONIO
MARTINAVARRO**

Director of Vandellós II
Nuclear Power Plant

VANDELLÓS II NUCLEAR POWER PLANT

SAFETY

During 2025 the plant remained in the “Owner-Operator Response” column, with all SISC indicators in green, and made 8 notifications to the Nuclear Safety Council (CSN), following the protocols established in Safety Instruction IS-10.

Regarding radiological protection data, progress continues in dose reduction both in years with refuelling (above 10 % since 2021) and in the average over 36 months.

Concerning industrial safety, 2025 placed special emphasis on strengthening the prevention of vital risks such as work at height, work in confined spaces, handling and hoisting of loads, and electrical risk.

PRODUCTION

Vandellós II recorded a load factor of 81 % in 2025. In total, the plant produced 7,715 GWh gross, which corresponded to an approximate saving of 3 Mt of CO₂ emissions.

OPERATIONAL EXPERIENCE

From 25 October to 10 December, Vandellós II carried out the scheduled outage to perform the works associated with the 27th fuel refuelling. Highlights included, besides the renewal of 60 fuel elements, the replacement of the BRR-B motor, eddy-current inspection of the “A” steam generator, and sludge-lancing cleaning of the three steam generators, among others.

In the primary circuit, inspections of the reactor vessel were performed as part of the long-term operation life-management programme, which will culminate in December 2027.

In the secondary circuit and turbine-generator group, a partial replacement of the high-pressure turbine blades was carried out.

Additionally, an automatic shutdown occurred due to the national grid collapse on 28 April, and a planned shutdown took place in July to address a deviation identified in the loading dock of the main switchgear.

2026 OUTLOOK

The main challenges for 2026 at Vandellós II are:

Advancement of the new spent-fuel storage project (ATI-100).

Execution of other modifications such as the construction of a refuelling water tank and works on the water-supply network to the site.

The plant also continues working to improve its operational reliability with specific plans aimed at detecting and solving issues related to equipment obsolescence and strict compliance with the plant maintenance plan, keeping an eye on its path toward long-term operation.



JORGE MARTÍNEZ
Director of Ascó
Nuclear Power Plant

ASCÓ NUCLEAR POWER PLANT SAFETY

During 2025, Ascó nuclear plant reported to the Nuclear Safety Council (CSN), following the protocols established in Safety Instruction IS-10, a total of 3 reportable events for Group 1 and 3 for Group 2, all classified as INES 0.

Regarding shutdowns, in 2025 there were two unplanned stops in Group 1: the first caused by the national electrical blackout, and the second required for radiological protection to access the containment building after an increase was observed in the containment sumps. In addition, a planned shutdown was carried out to intervene in the cooling system of the alternator stator.

For Group 2, two unplanned stops occurred due to actions of the plant's safety and protection systems (one of them, like Group 1, caused by the national grid collapse) and a planned shutdown on 3 May to perform the works related to the 29th fuel refuelling.

In 2025, Group 1 remained in the "Owner-Operator Response" column with all SISC indicators in green. Group 2, on the other hand, stayed during the second and third quarters in the "Regulator Response" column because the SISC indicator I1 recorded the national blackout shutdown.

In terms of accidents, the total frequency index of events (including those from ANAV and partner companies) stayed throughout the year below the target. During the year, messages related to industrial safety were reinforced.

Regarding radiological protection, the evolution of the individual dose shows that a good ALARA management of

the activities performed is being consolidated.

PRODUCTION

Ascó I recorded a load factor of 92.2 % in 2025, producing a total of 8,338 GWh gross, which corresponded to a CO₂-emission saving of 3.1 Mt.

Ascó II recorded a load factor of 84.2 % in 2025, producing a total of 7,577.93 GWh gross, which corresponded to a CO₂-emission saving of 2.8 Mt.

29TH FUEL REFUELLING – ASCÓ II AND OPERATIONAL EXPERIENCE

The 29th fuel outage, carried out from 3 May to 18 June, renewed 60 fuel elements in the Ascó I reactor. In total, more than 15,000 work orders were executed and 25 design modifications were implemented, aimed at improving plant reliability and safety. Notable tasks included: Replacement of the BRR-B pump body gasket. Replacement of the regulation and control systems of the polar crane. Leak test of the containment building (ILRT) + 100 % LLRT. Replacement of the access ladder to the refuelling cavity. Major overhaul of both low-pressure turbines and bearings 3, 4, 5 and 6, among others.

Another highlighted activity in Group 2 was the online chemical cleaning of the alternator stator windings with EDTA (ethylenediaminetetraacetic acid).

It should be noted that in 2025 Unit 2 of CN Ascó reached 40 years of operation, thus entering the period considered Long-Term Operation (OLP).

2026 OUTLOOK

The main challenges for Ascó nuclear plant in 2026 are:

Preparation and execution of two refuellings: Refuelling 31 for Ascó I and Refuelling 30 for Ascó II.

Completion of the works and obtaining the authorisation for the new ATI-100 storage facility.■

Ascó I recorded a load factor of 92.2% during 2025, with a total of 8,338 GWh gross produced



CLOSING

The closing session brought together representatives from the industry and the regulatory body. The following are transcripts of the speeches given by María Luisa González, Vice President of the Spanish Nuclear Society, and Juan Carlos Lentijo, President of the Nuclear Safety Council, at the closing ceremony.



MARÍA LUISA GONZÁLEZ
Vice-President of
the Spanish Nuclear
Society (SNE)

First of all, I would like to thank all of you for being present here today. The Operational Experience Day is one of the most consolidated meeting points of the Spanish Nuclear Society, together with our Annual Meeting. On this day the directors of our plants—Javier Sala, Alberto Porrás, Rafael Campos, Antonio Martínnavarro and Jorge Martínez—have, with your fantastic presentations, illustrated the excellent performance of our seven reactors.

I have seen things that I have loved, such as seeing all the indicators in green, how we nuclear plants are operating flexibly, lowering load, stopping, how we continue to invest and modernise our plants, the very high collaboration and the large number of shared services that we have among the groups that compose them, and

I hope that for many years they will keep cooperating and being an important ensemble that provides a great amount of energy to this country.

Nuclear energy is the only technology in the Spanish electric system that has been generating for more than a decade around 20 % of the electricity produced in our country. In particular, in 2025 it generated 19.7 % of the total net production, 25.2 % of the electricity without CO² emissions, and with only 5 % of the installed capacity in the Iberian power system. The Spanish nuclear fleet has produced electricity continuously and steadily without depending on external agents. In fact, in 2025 the fleet operated on average, across all plants, about 7,283 hours, which represents 83.14 % of the total hours of the year—far above the rest

of the technologies. With this it has demonstrated its reliability, its contribution to guaranteeing the stability and continuity of the electric system, in a safe, competitive and environmentally-respectful way.

Nuclear energy is a consolidated reality in Spain, as we have seen in the presentations of our directors. Our nuclear plants and the whole nuclear industry that surrounds them, which today we have well represented here, are more than ready to keep operating for many more years and to be a future option. The closure dates in our schedule or the closure date of our nuclear fleet are in no case a technical necessity. I think we have seen that abundantly. Therefore, we have more than enough reasons—technical, strategic, environmental, economic and supply-security—to defend the capacity of the Spanish nuclear industry and of our nuclear plants so that they are considered and defended as a huge long-term value for our country.

At this point you will allow me to depart a little from the script. I am here at this school where I finished my engineering studies already in the last century, specialised in Energy Techniques. Here I studied and got to know all the electricity-generation technologies and I think they all contribute and must have their place in a well-balanced electric system in every respect. In Spain we are extremely lucky. We have a lot of sun, we have wind and we have seven nuclear reactors that give us a competitive advantage in many aspects that other countries in our neighbourhood do not have. And those neighbouring countries are willing to make multi-million-euro investments to obtain what Spain already possesses. Therefore, let us not do without the nuclear park. It would be a great mistake.

In this edition, besides seeing the excellent performance of our nuclear fleet, and as has become customary, in the special session we have had a magnificent speaker, Lieutenant-Colonel of the UME, Luis Antonio Ro-

dríguez Álvarez de Lara, who is also head of the Group of Technological and Environmental Emergency Intervention (GIETMA). They have told us everything they have done and do at the national and international level, the capabilities of the UME, how they prospectively evaluate technological risk. The lieutenant-colonel and the team that accompanied us here are a privilege for us to have counted on you. The State Security Forces are also a pride for our country, and specifically the UME, which has become an essential reference in emergency management, recognised for its professionalism, sacrifice and high level of preparation. The UME is always there where it is required, inside and outside Spain. You are an example for everyone.

I will now paraphrase one of the many great statements you have made today: we must appreciate safety, we only appreciate it when we lose it. And in this I think we can draw a quite clear parallel with the national industry.

From here on, I want to thank all those who have made this meeting possible: the Programme Commission, its president and all the members who every year make a huge effort so that this event can take place. Of course, the School of Industrial Engineers that always hosts us for this event and whose director always kindly inaugurates the event. I also wanted to thank the Deputy General Director of Nuclear Energy, Jesús Tardón. And, of course, I want to thank the President of the Nuclear Safety Council, Juan Carlos Lentijo, to whom I have the honour of handing over the floor so he can close this day.

Nuclear energy is the only technology in the Spanish electricity system that has been generating around 20% of the electricity produced in our country for more than a decade



JUAN CARLOS LENTIJO
President of the Nuclear Safety Council (CSN)

In representation of the Nuclear Safety Council I want to thank you for the invitation to this closing ceremony of a new edition of the “Experiences and Perspectives of Nuclear Power Plants in 2025” day organized by the Spanish Nuclear Society. It is a pleasure for me to accompany you in the auditorium of what was my school, the Higher Technical School of Industrial Engineers. As you have already heard me say on other occasions, the day we are closing today is not only an opportunity for the directors of the different plants to present the most relevant aspects of their operation during the past year; it is also a magnificent meeting place to exchange information and review the activity that has taken place over the last year regarding nuclear power plants. Undoubtedly, an unavoidable date in the sector’s calendar.

For these reasons I would like my brief intervention—before the awarding of prizes and distinctions—to complete this “radiography” with the role that the regulatory body I preside over performed last year. In addition to the ordinary work (ins-

pections, compliance reports, design modifications, technical operating specifications, drills, etc.) that is part of the CSN routine, and without trying to list everything, I would like to highlight the following milestones.

For example, the favorable reports for all the execution and installation requests of the Individualised Temporary Storage facilities of the nuclear plants; and for the design and authorisation of the HI-STORM FW Version G container system for the temporary storage of spent nuclear fuel of the two units of the Almaraz and Ascó nuclear plants, and of Cofrentes and Vandellós II.

Although, without doubt, the most noteworthy event of the past year, you will agree with me, was the monitoring of the operational status of the plants during the widespread electricity-supply interruption—the blackout that occurred on Monday 28 April on the Iberian Peninsula—as well as the subsequent analyses. Afterwards we have analysed the implications of the event from the point of view of nuclear safety and radiological protection and we are finalising a summary report for publication.

On the other hand, the CSN reported on all the requests for flexible-operation shutdown strategies submitted by all operating nuclear plants, in compliance with the 2024 ITC (currently under review by MITERD for a decision). In November we received a request from MITERD to produce the mandatory report on the request to modify the operating licence of Almaraz in order to extend its operation until June 2030. For that purpose we issued an ITC to request complementary information; once received, we are working on it with a view to informing during the summer.

We also approved four Safety Guides and Instruction IS-48, which establish the criteria that operational-experience programmes of nuclear plants must meet. Likewise,



we continue to follow the first phase of the dismantling of the Santa María de Garoña nuclear plant and we have positively reported on the expansion of the ATI. We also gave a favourable opinion to the construction plan of cell 31 for very low-activity waste at the El Cabril storage centre and we have updated our Emergency Response Plan.

And, although it is not directly related to nuclear power plants, I would not forget to mention the favourable reports for the authorisations of 10 new medical radioactive facilities, two of them for proton-therapy. In this sense, one of our most immediate challenges is to collaborate, within our competences, in the development of proton-therapy within the National Health System, which foresees the incorporation of ten proton-therapy radiotherapy units strategically placed, according to population criteria, in public hospitals of Andalusia, the Canary Islands, Catalonia, Galicia, Madrid, Valencia and the Basque Country, to provide coverage for patients who need these treatments. With the completion of this project, Spain will position itself as one of the world leaders in proton therapy.

From an institutional point of view the most noteworthy event was the partial renewal of the CSN plenary, but I would also highlight the meeting with the heads of the Government delegations and sub-delega-

tions of the provinces with nuclear plants to address coordination in emergency management—something that had not been done for a long time—and the day with locally elected officials of the AMAC (Association of Municipalities of the Autonomous Communities) to publicise the CSN's supervisory and control work.

We have also approved our Strategic Plan 2026-2030, whose main pillars are:

- Promotion of a Safety Culture through reinforced leadership;
- Improvement of regulatory agility, both technically (proportionality – graded approach) and administratively (digitalisation, AI, etc.);
- Modernisation of the CSN as a public-service of excellence.

Regarding international relations, in 2025 we received two IAEA follow-up missions. The Integrated Regulatory Review Service (IRRS) mission gave us the pleasant recognition of two good practices (the Digital Radiological Card and the Dosi-App for emergencies). The Integrated Review Service for Radioactive Waste and Spent-Fuel Management, Dismantling and Rehabilitation mission (ARTEMIS) also visited us. Last year we also assumed the rotating presidency of the International Nuclear Regulators Association (INRA) and the renewal of the presidency of the European

Nuclear Safety Regulators Group (ENSREG).

For the new year in which we are already immersed, some of the main activities we will carry out are:

The evident issuance of the mandatory report on the request to modify the operating licence of the Almaraz I and II nuclear plants.

The mandatory report concerning the request for execution and installation of the temporary waste storage for residues from reprocessed spent fuel for Vandellós I.

The report related to the request for the operating licence of the Juzbado fuel-fabrication plant (Salamanca).

As I mentioned earlier, regarding the proton-therapy facilities belonging to the National Health System, we will issue three mandatory reports concerning their operating-licence requests.

One of the CSN's main functions is also to propose and draft regulations. Thus, for this year our Regulatory Plan foresees the approval of

The Spanish Nuclear Society is a key player in our country for the promotion of knowledge of nuclear science and technology

11 instructions, especially in the field of radiological protection (9 revisions and 2 new ones).

To finish, I want to refer to a matter of great relevance for us: talent attraction. As a regulatory body, it is essential to have a highly qualified team equipped with the tools needed to develop and strengthen its technical knowledge and experience. This not only guarantees the safety of the workers, but also that of the environment and of society as a whole.

Taking advantage of being in a university environment, surrounded by people reflecting on their professional future, I would like to invite you to consider a career in the Superior Scale of the Nuclear Safety and Radiological Protection Corps

of the CSN. Each year we offer public-employment opportunities (12 posts in each of the last three calls), a trend that will continue in the coming years due to the generational turnover in our staff. In fact, for the 2026 Public-Employment Offer we have requested 20 positions (18 + 2, pending allocation). Our goal is to ensure a smooth transition between those who have dedicated their lives to this work and the new generations, thus facilitating knowledge transfer without affecting our mission as a regulator.

If you are looking for a professional future with impact, stability and a clear public-service vocation, this may be your opportunity. The Spanish Nuclear Society is a fundamental agent in our country for the promotion of nuclear science and technology knowledge, and this day is a magnificent example of that.

Therefore, I have only thank you for your organisation, congratulate you on this new edition, and proceed to close the event.■





Members of the Board of Directors of the Spanish Nuclear Society. From left to right, Pedro Mata Alonso, Rosa González Gandál, Miguel Sánchez López, Susana Falcón Cabrera, Marisa González González, Paulo Domingues dos Santos, Mamen Salas Cortés, Raquel Ochoa Valero, Adoración Arnaldos González, Carmen Paredes Haya and Miguel Barreiro Bugallo. (Kevin Fernández-Cosials was absent at the time of the meeting).

GENERAL ASSEMBLY OF THE SNE. Year 2026

Following the General Assembly of the Spanish Nuclear Society (SNE), the Board of Directors that will lead the organization for the next term was formed.

The new team maintains a focus on continuity based on a commitment to technical excellence, rigorous dissemination of information, and strengthening the SNE's role as a meeting point for professionals in the nuclear sector. At the same time, this renewal incorporates new perspectives that will contribute to addressing the industry's current and future challenges.

During this phase, the Board of Directors reinforces its pluralistic and multidisciplinary character, integrating professionals with extensive experience alongside new members.

Of particular note is the addition of two new board members, Kevin Fernández-Cosials and Miguel Sánchez-López, who join the team with the aim of

further promoting the Society's activities and encouraging the participation of new generations of professionals.

Composition of the Board of Directors:

President: Paulo Domingues Santos
Vice-President: Marisa González González
General Secretary: Pedro Mata Alonso
Treasurer: Miguel Barreiro Bugallo
Vowels: Adoración Arnaldos González, Susana Falcón Cabrera, Kevin Fernández-Cosials, Rosa González Gandál, Raquel Ochoa Valero, Carmen Paredes Haya, Miguel Sánchez López y Mamen Salas Cortés

The SNE thus begins a new phase in which it will continue promoting the exchange of knowledge, collaboration between entities and the dissemination of the role of nuclear energy as a key element for a secure, sustainable and decarbonized energy system. ■



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MEETING AND NETWORKING SPACE

Beyond the technical content, the conference “Spanish Nuclear Power Plants in 2025: Experiences and Perspectives” once again stood out for its social character and its role as a meeting point for professionals in the sector. Throughout the event, opportunities for exchange arose among attendees, allowing them to share their impressions in a relaxed atmosphere.

The participation of students from various universities also contributed a particularly enriching element, fostering intergenerational dialogue and introducing new talent to the nuclear field. Breaks, such as coffee and the subsequent cocktail reception, served as points of connection for attendees, solidifying the conference not only as a forum for knowledge sharing but also as a space for networking and interaction within the industry.

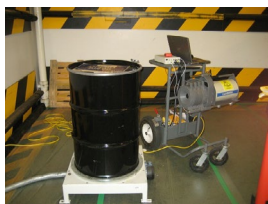




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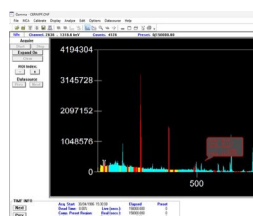
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- Boiler and turbine adjustments

REFERENCES

- Almaraz 1 & 2 NPP
- Cofrentes NPP
- Trillo NPP
- Vandellós 1 & 2 NPP
- Ascó 1 & 2 NPP
- Sta. M^a de Garoña NPP
- José Cabrera NPP
- Valdecaballeros NPP
- Andújar Uranium Plant
- Escombreras TPP
- Castellón TPP
- Aceca TPP
- Escatrón TPP
- Escucha TPP
- Alcudia TPP
- Velilla TPP
- Narcea TPP
- Elcogas TPP
- Los Barrios TPP

SNE AWARDS 2025

■ NUCLEAR SPAIN AWARD FOR BEST TECHNICAL ARTICLE IN THE NUCLEAR SPAIN MAGAZINE

INSTALACIONES PARA EL DESMANTELAMIENTO DE GRANDES COMPONENTES DE CENTRALES NUCLEARES. **Hugo Mejía**

■ NUCLEAR SPAIN AWARD FOR BEST POPULAR SCIENCE ARTICLE FROM NUCLEAR SPAIN MAGAZINE

RADIACIÓN CURATIVA: EL FUTURO NUCLEAR DEL ALZHEIMER. **Pino Díez Álvarez-Buylla**

■ BEST PAPERS 51ST ANNUAL MEETING

CALIDAD Y FACTORES HUMANOS:

- VIAJE HACIA LOS CERO DISPAROS (MTZSP). **Ángel Holguera Llamazares**

FUEL:

- OPERAHPC PROJECT: MODELLING OF COATED CLADDING HIGH-TEMPERATURE CREEP WITH OFFBEAT. **Feria F., Rodríguez S., Aguado C., Sclaro A., Herranz L.E.**

DISMANTLING AND WASTE MANAGEMENT:

- PLAN DE CARACTERIZACIÓN DE VANDELLÒS I **Gonzalo Medinilla Téllez, María Elisa Gimeno Blesa**
- INSTALACIÓN PORTÁTIL DE GESTIÓN DE RESIDUOS RADIOACTIVOS - IPRE. **Daniel Carrasco, Manuel Santibañez, Leandro Sanche, Miriam Lloret**
- METODOLOGÍA DE ELABORACIÓN DE LOS DOCUMENTOS OFICIALES DE PARADA DE C.N. ALMARAZ PARA LA OBTENCIÓN DE LA DCEX. **Celia Estévez Fernández**

COMMUNICATION AND TRAINING:

- SOLIDARIDAD EN ACCIÓN: LA RESPUESTA DEL SECTOR NUCLEAR ANTE LA DANA DE VALENCIA 2024. **Lucía Gómez Sanchis, Belén López López**

ENGINEERING, DESIGN AND INNOVATION:

- ADAPTACIÓN A LOS RESULTADOS DE LA ITC SÍSMICA EN CN VANDELLÒS II: DISEÑO DE UN TANQUE DE ALMACENAMIENTO DE AGUA DE RECARGA REFORZADO SÍSMICAMENTE. **Sara Carrasco Manzaneda, Héctor Hernández Escolano, Juan Sabater Alloza, David Martínez Verdú**
- CLEN LÍMITE DE DISEÑO CON COBRA-TF Y MÉTODOS DE MONTECARLO. **Javier Riverola y Alejandro Costa Cardona**
- IMPLANTACIÓN DE UNA CALDERA DE VAPOR AUXILIAR EN C.N. ALMARAZ. RETOS, DIFICULTADES Y LOGROS. **Maite Pérez Lagares y Gemma Vilar Carmona**

NUCLEAR MEDICINE AND RADIATION PROTECTION:

- FACTORES DE TRANSFERENCIA SUELO-PLANTA DE LAS SERIES RADIATIVAS NATURALES, 7BE Y 137CS EN UN CLIMA SEMIÁRIDO. **V.M. Expósito-Suárez, J.A. Suárez-Navarro, O.C. Lind, J. Mantero, R. García-Tenorio**

OPERATION AND MAINTENANCE:

- SISTEMA DE POSICIONAMIENTO AVANZADO 3D. **Alfonso Láin Fernández, Fernando Díaz Rodríguez, Luis Alonso Muñoz, Jose M. Zazo Martín**

ADVANCED REACTORS AND NUCLEAR FUSION:

- INTELIGENCIA ARTIFICIAL PARA LA AUTOMATIZACIÓN DE LA VALIDACIÓN Y ADQUISICIÓN DE DATOS EN EL ENSAYO ULTRASONICO DE SOLDADURAS EN EL PROCESO DE FABRICACIÓN DE LA VASIJA DE VACÍO DE ITER. **María Ortiz de Zúñiga, Ana María Camacho, Alvaro Rodríguez-Prieto**

NUCLEAR SAFETY AND LICENSING:

- IMPACTO DE LA MODELIZACIÓN DE LOS INCENDIOS PRODUCIDOS POR ARCOS DE ALTA ENERGÍA SEGÚN EL NUREG-2262 EN EL APS DE CN VANDELLÒS II. **Álvaro Fernández, Mario Rodríguez, Alberto Machado**
- ANALYSIS OF LOCA SEQUENCES IN NUSCALE WITH THE TRACE SYSTEM CODE. **Yago Martínez-González, César Queral, Kevin Fernandez-Cosials, Jorge Sánchez-Torrijos, Emilio Castro González, David Canal**

THERMOHYDRAULICS AND NEUTRONICS: SIMULATION AND EXPERIMENTATION:

- THERMAL-HYDRAULIC ANALYSIS OF PASSIVE SAFETY SYSTEMS PERFORMANCE IN ADVANCED KOREAN REACTORS DURING SBLOCA SEQUENCES USING THE TRACE CODE. **Antonio Dies Beneytez, Kevin Fernández-Cosials, César Queral**

BEST POSTER:

- SIMULACIÓN NUMÉRICA DE EDIFICIOS NUCLEARES BAJO SISMO. **Fernando Rastellini, Yeudy Vargas, José Manuel Gonzalez, Junior Ramirez, Crithian Padilla**

■ BEST DOCTORAL THESIS

- ADDITIVE MANUFACTURING OF CuCrZr VIA POWDER BED FUSION ELECTRON BEAM (PBF-EB) AS HIGH HEAT FLUX MATERIAL FOR NUCLEAR FUSION APPLICATIONS. **Francisco Javier Canillas Rodríguez**

■ BEST MASTER'S THESIS

- ANÁLISIS DE LA PERMEACIÓN DE TRITIO EN UN SISTEMA DE TRATAMIENTO DE GASES RADIOACTIVOS. **Alexia Onieva Bascón**
- FINALIST: OPTIMIZACIÓN DE LAS PROPIEDADES DE MATERIALES DE ÓXIDO DE TORIO PARA ESTRUCTURAS ALTAMENTE POROSAS CON FINES DE PRODUCCIÓN DE RADIOISÓTOPOS PARA APLICACIONES MÉDICAS. **Alberto Gil Cordero**
- FINALIST: FLUKA-Based Simulations for the Characterization of the Radiogenic Background Neutron Flux at the LNGS for HENSA Measures. **Manuel Pereda Ávila**

■ BEST RECORDS

Luis de Juan Carbonell, Marta Campos Fornes, Antonio Becerra Gutiérrez, Ania Tato Iglesias

■ INNOVATION COMPETITION

- First Prize - Equipo NAF **Jaime Andrés Santé, Jaime Valverde Hernández, Alejandro Taboada Asensio y Nikita Khvatkin Petrovsky**
- Second Prize - Equipo MAYACATO **Mar Argul, Antonio Dies Beneytez, Carlos Olmos Alonso y Yago Martínez González**
- Third Prize - Equipo KAMP **Alex Dumont, Khaoula Kharaz, Paulo Adrian Le Brun y Martín Sierra**

■ TALENT ATTRACTION COMPETITION 2025

- First Prize - CORIUM Team **Rubén Felici Rojas, Daniel Polo Ruiz y Pablo Jahard Robin**
- Second Prize - BLU Team **Pablo Lázaro Valdecantos, Óscar Lázaro Valdecantos y Mónica Rodríguez de Arellano Martín**
- Third Prize - APU Team **Marc Bengoechea Illa, Mario Vaquero Toribio y Roger Baiges Martínez**



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NE for best technical
article. **Hugo Mejía**



Award NE for best
popular science
article. **Pino Díez**



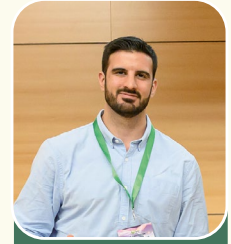
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Thermohydraulics and
Neutronics. **Antonio
Díez**



Best Poster.
Fernando Ratellini



Best Doctoral Thesis.
**Francisco Javier
Canillas**



Best Master's Thesis.
**Alexia
Onieva Bascón**



Best Record.
**Antonio Becerra
Gutiérrez**



Best Record.
**Luis de Juan
Carbonell**



Innovation Competition.
First Prize.
NAF Team



Innovation Competition.
Second Prize
MAYACATO Team



Innovation Competition.
Third Prize.
KAMP Team



Talent Attraction Contest.
First Prize.
CORIUM Team

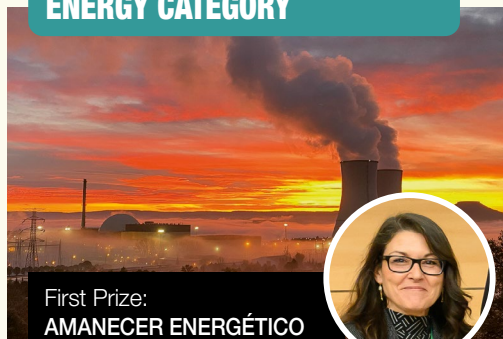


Talent Attraction Contest.
Third Prize.
APU Team

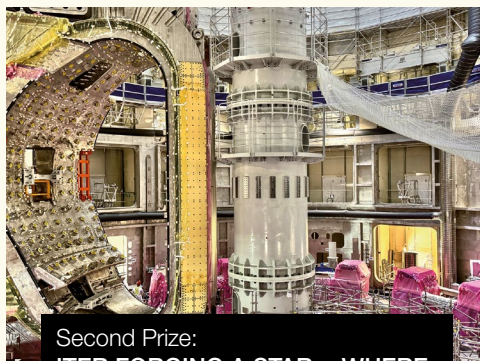
PHOTOGRAPHY CONTEST

sne 2025 framatome

BEST PHOTOGRAPHS ENERGY CATEGORY



First Prize:
AMANECEER ENERGÉTICO
Montserrat Fernandez
De La Casa



Second Prize:
**ITER FORGING A STAR. - WHERE
ENERGY WILL EMERGE FROM
DEUTERIUM AND TRITIUM**
José Luis Herranz García



Third Prize:
OVEJAS ENTRE PANELES
Montserrat Fernandez
De La Casa

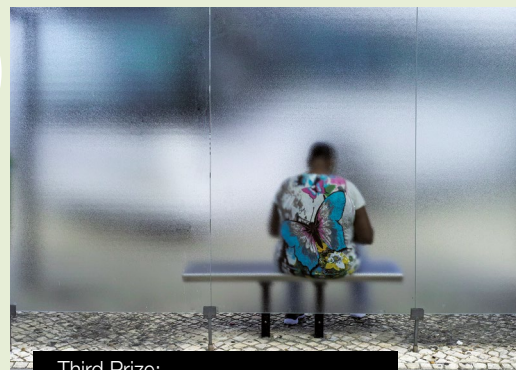
BEST PHOTOGRAPHS GENERAL CATEGORY



First Prize:
**ENTRE LA NIEBLA LA
CONEXION HUMANA Y ANIMAL**
Pino Diez Alvarez-Buylla



Second Prize:
**NEBULOSA DE MEDUSAS
¿OCÉANO O ESPACIO?**
Tania Carreira Couto



Third Prize:
**CACILHAS, AL OTRO LADO
DEL CRISTAL**
Manuel Muñoz García

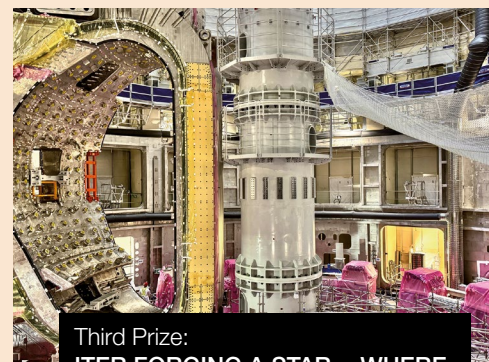
BEST PHOTOGRAPHS POPULAR JURY



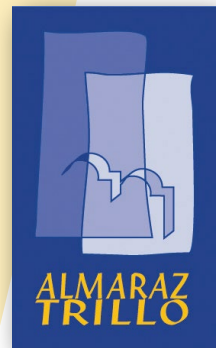
First Prize:
AMANECEER ENERGÉTICO
Montserrat Fernandez
De La Casa



Second Prize:
**SUSURROS DEL FANTASMA
- SH2-185 DESDE VALENCIA**
Javier Enrique Martínez
Ferri



Third Prize:
**ITER FORGING A STAR. - WHERE
ENERGY WILL EMERGE FROM
DEUTERIUM AND TRITIUM**
José Luis Herranz García



**Una alternativa
limpia, segura ...
y competitiva**

**En continuo
proceso
de mejora,
actualización
y modernización**



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With our **engineering services**
and EPC, we bring quality
and experience to **power**
generation projects.

+102
GIGAWATTS



+1,400
PEOPLE



+700
PROJECTS



80
COUNTRIES



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Coal, fuel oil, gas in open or combined cycles.

RENEWABLE ENERGIES

Parabolic solar, concentrating tower solar,
photovoltaic solar and wind power.

EAG



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