A leading consortium in China: Spanish Nuclear Group for Cooperation
Interview with Carmelo Palacios, General Manager at SNGC
Dynatom: Good morning/ afternoon, Mr. Palacios. Could you introduce yourself, and tell us about your background, in particular the reason you joined the Polytechnic University of Madrid.

Carmelo Palacios: I am a mechanical engineer since the beginning of the 1970s when I got my degree. I have been working all my life in international trade and commerce, specifically after 1976 in the nuclear sector.

I enrolled in the Polytechnic University of Madrid in the mid-1960s to study mechanical engineering because during school I was very good in sciences (Physics, Math and so on) and not so good in the other subjects. I liked engineering.

Additionally during the 1970s and at the same time that I was working I also studied economics at the Madrid Central University. I got my degree in economics at the end of the 1970s.

Dynatom: After your graduation as mechanical engineer, did you join immediately the nuclear market/ ENSA?

Carmelo Palacios: I was working for 5/6 years at an international trade company before I joined ENSA in 1976 where I held different positions. The most important were Purchasing Manager and lately Business Development Vice-president.

After the downfall of the Soviet Union I worked and coordinated several Spanish companies to help to improve the safety of the Ex-Soviet Nuclear Power Plants through several programs (Tacis, Phare, and also EBRD) and also through swap and barter operations.

In the 1980s I visited India many times and we supplied SGs to NPCIL before the Nuclear Supply Group (NSG) banned the supply of these components to India in 1985 and 1986.

During my time as Business Development Vice President, in addition to commercial, my responsibilities also covered the projects and ENWESA, which is the ENSA services company.

Dynatom: Where ENWESA does has its activities?

Carmelo Palacios: Mostly in Spain, also in France.

Dynatom: Can you tell us more about your achievements in ENSA?

Carmelo Palacios: I was responsible for ENSA capacities development in spent fuel transport and storage, for example the cask and rack business and worked in countries like Finland, Korea, the USA, the Chinese mainland and Taiwan and of course Spain.

In 2005, with China/Taiwan we finished a very successful turnkey project for the re-racking of the Kuosheng NPP spent fuel pool, including design, manufacture, supply and, most importantly, the erection of the racks under difficult radiological and others conditions using both Spanish and Chinese/Taiwan personnel working together to the total satisfaction of our customer, Taipower.

At the beginning of the 2000s, I contributed to the signature of the nuclear agreement between China and Spain.

I was the salesperson responsible for the contracts for casks for Daya Bay fuel transport to Lanzhou (contract signed with EEEC
and CGNPC), Racks for Lingao 3 and 4 and heat exchangers for Taiwan.

I have also been a member of the Spanish Nuclear Society Board and of other Spanish companies. I am currently serving as SNGC General Manager.

**Dynatom: Before the creation of the SNGC, did you have experience in the Chinese market?**

**Carmelo Palacios:** My first visit to China was in 1987 to participate in a Nuclear Exhibition in Beijing and then we took a long trip to visit nuclear installations in Xian, Chengdu and Shanghai. The trip was sponsored by the Chinese Nuclear Society and included about 30 westerners.

In ENSA, the first contract was for Qinshan 2 steam generators back in 1995. I was a member of the team.

Afterwards I was responsible for the contract, in 2002, between ENSA and EEEC for the two transport and storage casks to transport fuel from Daya Bay to Lanzhou, in 2007 for the supply of the spent fuel racks for Lingao 3&4, localizing the fabrication at Xian Nuclear Equipment, and in 2010 for the Taishan heat exchangers.

**Dynatom: the SNGC was created in 2006 as a result of common marketing needs from three Spanish companies, Tecnatom, ENSA and ENUSA. Can you tell us how this consortium originated?**

**Carmelo Palacios:** The three companies were collaborating from time to time in different aspects of the business. We decided to make these collaborations stable as the three original partners have significant potential synergies, which could be capitalized on in the international markets and in China in particular. The SNGC members could benefit from the increase in size resulting from the joint venture as well as from the long-term relationship between them, mainly in the Spanish market. The main objective was clear: offer the Chinese nuclear market an alternative competitive option through the combined capacities of each member company.

**Dynatom: two years later, Ringo Valves joined the consortium, and since the last 5 years this consortium has four founding partners. Do you have an expansion plan for new partners and members?**

**Carmelo Palacios:** Yes, after Ringo Valvulas joined the SNGC, we have always been open to new value-added collaborations and we are currently studying the possible participation of other partners. We want the new partners to be similar to us, in the way they sell and behave with the market.

**Dynatom: can you tell us more about the structure and operation of the SNGC, such as the election of the president?**

**Carmelo Palacios:** The SNGC structure is very simple. There are four levels to manage the consortium: Presidents, Board of Directors, Executive Committee and the General Manager.

The President rotates yearly from each company. I am the General Manager and I have the full support of the four companies. We have full time employees in China working for us.

**Dynatom: this consortium represents today 2,000 professionals from the nuclear industry. How the Chinese market impacted the Spanish industry?**

**Carmelo Palacios:** The Chinese market has had a significant impact on the Spanish Nuclear Industry as it has enhanced our international position and improved our competitiveness. Our technology has enabled the four companies to be on the cutting edge of the nuclear Industry.

Our presence in China has allowed us to develop new business lines (for example: fuel equipment), reinforcing the cooperation among the partners in Spain. It has also offered us the opportunity to gain visibility in front of the Spanish Administration and present
ourselves as relevant actors capable of undertaking complex projects in the international markets. Our activity in China has also served in some cases to increase the workforce with highly qualified employees for demanding projects (Tecnatom control rooms). Finally, we have received important media coverage which is not easy to obtain in other markets.

Attending at the 10th China International Exhibition on Nuclear Power Industry

_Dynatom: the SNGC is oriented to technology transfer to local organization and international cooperation; can you give us some case studies in China?_

_Carmelo Palacios: We have several examples of technology transfer and cooperation:_

ENSAs has supplied Steam Generators to China for many years. As an example we can mention the collaboration with SENPEC (former Shanghai Boiler Works). In 2000 Ensa supplied 3 SGs for Qinshan phase 2, units 1 and 2 collaborating with SENPEC which manufactured 1 SG. After that in 2008 Ensa manufactured for the same power plant units 3 and 4, one SG and SENPEC made 3 SGs. In 2012 Ensa repeated the same collaboration with SENPEC for Hainan (Changjiang). Recently, Ensa has continued the collaboration with SENPEC in the very challenging project of manufacturing 2 AP1000 SGs for Sanmen2 also with SENPEC.

Advanced technology has been used to manufacture the AP1000 SGs. Ensa is supporting SENPEC in the completion of the AP-1000 SG at SENPEC’s shop.

In other areas, ENSA has manufactured the Ling Ao 3&4 racks in CNNC Xi’an Nuclear Equipment according to a cooperation agreement between both companies.

_TECNATOM has established in Beijing a representative office and they are in the process of creating a local Chinese subsidiary company (WOFE). From this new company they would be working in the areas of control room and simulator design._

On December 11th, the signing ceremony for the contract between TECNATOM and CTEC for the Yangjiang 5 & 6 DCS back-up panel was held in CTEC.

_TECNATOM has established a Joint venture named CITEC for inspections. I may talk later about this._

We have held many seminars and workshops for different Chinese companies in which we have transferred and proposed to transfer many of our technologies and international experiences of the four companies.

The importance of a long-term relationship between companies is that it leads to more confidence and helps to enable new collaboration in future projects.

_Dynatom: Basically you match the strategy of the Chinese government: you base your business on technology transfer..._

_Carmelo Palacios: Yes we “try” to follow the market!_

_Dynatom: SNGC aims to provide an integrated offer to Chinese customers, can you tell us for example how Enusa and Tecnatom cooperated with China Jianzhong Nuclear Fuel in Yibin?_

_Carmelo Palacios: ENUSA has supplied jointly with its partner TECNATOM, fuel rod ultrasonic inspection equipment to modernize the fuel manufacturing capabilities of CJNF’s Yibin Plant. This has been the first contract for ENUSA in China and it can be considered as a good example of synergies between the SNGC partners and a great achievement in the relationship between CJNF and ENUSA. This relationship began in 2008 with the signature of a MoU and since then this relationship has consolidated over time.

Under the contract, ENUSA markets the technology implemented in its Juzbado factory and coordinates the different phases of the project, with TECNATOM as the lead manufacturer. Both companies work together in the final implementation of the technology in Yibin.
Dynatom: Do you have the similar cooperation with Baotou?

Carmelo Palacios: Not yet, but we are working on that!

Dynatom: the four companies participate Candu, VVER, EPR, AP1000, HTR and others type of reactors. Are they actively involved in Qinshan III, Tianwan, Taishan, Sanmen, Haiyang and Shidaowan?

Carmelo Palacios: The participation in Candu, VVER, EPR, AP1000 and HTR refers to the international markets. In China we are participating in Taishan (EPR), Sanmen and Haiyang (AP1000), but not in Tianwan (VVER) and Shidaowan (HTR). Ensa was awarded a contract in South Africa for the HTR technology, for the design of the vessel and stress analysis; but the project of the HTR stopped in South Africa.

Dynatom: you expansion is also the result of many cooperation agreements signed with CNPRI, Xi’an Nuclear Equipment, NPIC, China Technology Engineering Company and Suzhou Nuclear Power Institute. Can you tell us if the SNGC was at the origin of this market development or this is due to individual actions?

Carmelo Palacios: A great part of this development is due to individual (company) actions. SNGC has participated on a case by case basis to a greater or lesser extent.

Dynatom: Can you elaborate more on the Joint Venture between Tecnatom and CITEC?

Carmelo Palacios: CITEC is a good example of success. It was created in 2007 and now is working at full speed.

CITEC is an inspection company created to meet the needs of pre-service (PSI) and in-service inspection (ISI) of the nuclear units of China Nuclear General (CNG). CITEC mainly covers the Chinese market and collaborates with Tecnatom in certain activities on the international market. Currently, Tecnatom owns a 25% stake in CITEC.

CITEC is a specialized company focusing on the supply of professional in-service inspection and non-destructive testing, technology research and development and technical services. Through in-service inspection technology transfer and cooperation with TECNATOM, CITEC possesses the capability for automated inspection equipment design, development, manufacture, operation and maintenance as well as technology updating, and it masters in-service inspection techniques and methods for various types of nuclear power plant reactors. According to different in-service inspection code requirements, CITEC can supply in-service inspection services for different types of nuclear power units, including the reactor pressure vessel body inspection, dissimilar metal weld inspection, steam generator tube inspection, automatic piping inspection, nuclear control rod assemblies, etc., and other major inspection items.

Dynatom: Have you offered training service as well?

Carmelo Palacios: I remember in 2008, we had Chinese engineers who came to Spain to be trained, and before that Tecnatom in 1988 trained the operators for Qinshan 1. As you know Tecnatom is owned by the Spanish Utilities: Iberdrola, Endesa and Gas Natural-Fenosa. At the beginning Tecnatom had two simulators in their office in Madrid, and in 1987-1988, the Chinese engineers came and were trained.

Dynatom: your main scope is a general marketing effort and coordination, such as participation in exhibitions, common delegation and publication. How is the finance generated to set up this organization?

Carmelo Palacios: The budget is financed by fees paid by each of the four companies according to the services provided by the SNGC. We do not have any external support. For the exhibition we have a support from ICEX, the Spanish export trade promotion, but we rely mostly on our members.
Dynatom: So do you plan to open your organization to new members to become financially independent?

Carmelo Palacios: Around 95-98% of the cost is already supported by our members. There can be supports for international exhibitions according to the international treaties signed by Spain, but this is a very small part of our budget.

Dynatom: Since 1987 you participate on regular basis to trade shows in China and recently the Spanish Institute for Foreign Trade (ICEX) supported your presence in various events. Can you tell us more about your relation with ICEX?

Carmelo Palacios: ICEX is the governmental Spanish Export Promotion Agency to help Spanish companies develop foreign trade operations. It is similar to agencies in other countries like USTDA in the USA, UK Trade & Investment (UKTI) in the UK and UBIFRANCE in France. Its activities are similar.

ICEX supports and coordinates all the Spanish nuclear companies, and not only SNGC, which require a presence at international nuclear trade conferences and exhibitions and in many other sectors of the economy. It is also a source of information.

Dynatom: ICEX has offices in Guangdong, Beijing, Shanghai and Hong Kong, do you use these offices as a platform for SNGC?

Carmelo Palacios: The Spanish embassy in China has commercial offices in these four Chinese cities. ICEX is also at these offices. We use the services of these offices and of course the Embassy, but not in Hong Kong. We use the offices in particular during the exhibitions.

Dynatom: we heard that you signed a MOU General Agreement with CNEA. The French PFCE did the same last year as well. What are the benefits for such consortium to sign with the CNEA?

Carmelo Palacios: Yes we signed an MOU with CNEA in 2011. The benefits are the exchange of information and ideas and better knowledge of the market.

We have signed different collaboration MOUs with Chinese companies such as

- Xi’an Nuclear Equipment Co. Ltd. (XNE), capital goods manufacturer.
- China Nuclear Power Research Institute (CNPRI)
- China Jianzhong Nuclear Fuel Corp. (CJNF), which operates the Yibin nuclear fuel factory
- CNNC broad scope MoU SNGC General Agreement with CNEA at Shenzhen mentioned above
- NPIC MoU for irradiated fuel inspection equipment
- Suzhou Nuclear Power Institute
- China Technology Engineering Company
- Nuclear Power Institute of China
- CNPC MoU for irradiated fuel inspection equipment
- Suzhou Nuclear Power Institute
- China Technology Engineering Company
- Nuclear Power Institute of China
- Nuclear Power Institute of China

Dynatom: What about their cooperation with NPIC on electrical penetration for European NPP? Do you consider the SNGC as the ideal partner for the global expansion of the Chinese nuclear industry?

Carmelo Palacios: Tecnatom is working with the Nuclear Power Institute of China (NPIC).

One focus is electrical penetrations for nuclear facility containments manufactured by NPIC.

Tecnatom and NPIC have analyzed the steps to be taken to ensure their compatibility with Western standards. Different commercial opportunities have been identified at both Spanish and overseas plants. There is currently a commercial agreement with NPIC that gives Tecnatom exclusive rights to commercialize the penetrations.

Regarding your second question SNGC helps support the commercial relations between the four partners and other companies. Although this collaboration is focused on Chinese territory, it is not strictly limited to it.

Dynatom: Ringo Valvulas was established in 2000 and manufactured more than 100,000 valves for 20 NPP, using French, American and Russian standards in particular for Qinshan I and II. Do you see more pressure for localization of such valve in the Chinese market?

Carmelo Palacios: Yes, there is a lot of pressure for localization but we expect to overcome this situation. There are two important factors:

- Ringo Valvulas will obtain the ASME stamp very soon.
- Ringo Valvulas has recently finished the erection and installation of a new bay at the Zaragoza (Spain) shop. This bay has the most modern equipment that the valve industry needs for design and
fabrication of nuclear grade valves.

These facts position Ringo Valvulas as one of the leaders for the supply of nuclear valves. At this time Ringo Valvulas is supplying valves to more than 20 NPPs in 11 countries.

**Dynatom:** Ensa is one of the most successful stories for a foreign manufactures: The company manufactured casks for Daya Bay, Steam Generators (Changjiang, Qinshan II) Racks (Ling Ao II) and recently Steam Generator for the AP1000 in Sanmen and Heat Exchangers for the EPR in Taishan: Do you see this success as a direct result of a group marketing through SNGC?.

**Carmelo Palacios:** Ensa is one of the most qualified world suppliers and its portfolio is very attractive because of its diversification and high technology. Ensa started to collaborate with Chinese companies before the SNGC group was created. Nowadays, Ensa is looking for more collaboration in China, with new products and new areas. SNGC is working with Ensa to help identify new opportunities and partners. We are also looking to offer to the Chinese market a potential combined portfolio of the four Group companies.

An example of the continued efforts being made is the very recent contract for Ensa of one cask for the Chinese market that was done with the support of SNGC. SNGC is more on the marketing side and support, the sales and technical aspects are of course executed by the companies.

**Dynatom:** your website is maybe the only platform in English and Chinese that is updated on regular basis. How did you decide to create such a media?

**Carmelo Palacios:** First of all thank you very much for this acknowledgment.

From the very beginning we thought that it was very important to show to the Chinese market our capabilities and operations all over the world. We are highly specialized companies with high technology and we have to make a special effort to show everybody our capabilities. One of the main reasons for establishing the SNGC was to make us more visible.

**Dynatom:** We checked the websites of other organizations involved in the Chinese market, in particular the French ones “PFCE” and “GIIN”. Their websites shows the profile of their members. You decided to have a top notch platform of communication; can you tell us the reason?

**Carmelo Palacios:** We had several reasons: China is a very big market, and complex. We decided to promote and inform the market through a good website, regularly updated. If you are a SME, you may not have someone who can updated the website, but in SNGC we have a team dedicated to this activity. We thought from the beginning that we have good capability but we have to educate our prospects and clients. Our newsletter in Chinese is an example of our communication.

In addition to our website http://www.sngc.es/ in Chinese and English, we created a mirror website in China http://www.sngc.com.cn/only in Chinese; we launched this website in October to let our Chinese friends have a fast access to our information.

**Dynatom:** the website is not only on nuclear, do you expect to use the SNGC for other markets?

**Carmelo Palacios:** Maybe you refer to some newsletters in which we mention valves for gas and oil supplied by RINGO VALVULAS.

We have added these references in cases in which the product, the valves, supplied by RINGO VALVULAS are of high quality and difficult to design and manufacture and with requirements as demanding as nuclear, in order to show our web visitors that we are also in the top ranks of other industries.

The SNGC as such was created specifically for the nuclear sector.

**Dynatom:** how do you see the future of SNGC in China? And its impact for the overseas Chinese markets such as Argentina?

**Carmelo Palacios:** The companies of the SNGC group have a tremendous world acceptance and experience. They are extremely attractive partners to work with. We are optimistic in this area. We have been working all these years with Areva, Westinghouse, GE, so we are also looking forward a close relation with our Chinese friends in overseas markets.

For SNGC in China, we of course ambition to grow in China, to be more intensive and support the business of our members and we also start in India.