

Latin America's special nuclear links with Spain

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The recent sixth Ibero-American Summit of leaders from Spain, Portugal and 19 states in Latin America symbolizes the good relationships and shared culture among the vast and geographically diverse Ibero-American community. Those relationships make it easier to do business with each other. For instance, Spanish companies are increasing their business in Latin America significantly.

Spain has long been a partner of the other Ibero-American countries with nuclear power programs (see Table) – namely Mexico, Brazil and Argentina. Since Spain began its nuclear program early – Zorita started up in 1968 – the cooperation of Spanish companies in the development of nuclear programs in Latin America has been important.

Mexico

The deepest relationship has been established in the areas where the human factor is important. So, when Mexico launched Laguna Verde-1, it was necessary to train the operation shifts. The selection of the training company was

not difficult: the Spanish firm Tecnatom, experienced in training all the Spanish operators. The relationship was and is very satisfactory. Tecnatom continues supporting Laguna Verde in other areas also, for example collaborating in development of their simulator.

Also for Laguna Verde, other Spanish companies played an important role. The architect-engineering company Empresarios Agrupados provided engineering support services during the design, plant testing and the beginning of operation. Equipos Nucleares, the component manufacturer, provided mechanical services during the erection and Sener, the engineering firm, provided start-up services.

In this start-up phase, the Spanish utility Iberdrola played a very important role. Based on the experience gained during the start-up of Spain's Cofrentes NPP, a team of Spanish engineers collaborated in Laguna Verde start-up. Also, Mexican personnel from this project have received training at Cofrentes NPP.

Brazil

In the case of Brazil, it is important to stress that developments of mutual interest can easily criss-cross the Atlantic! Spain's Trillo NPP operators are periodically trained in the simulator of Brazil's Angra-2 training center, the most suitable. Angra-1 operators are trained at Tecnatom in Spain.

The Spanish nuclear regulatory authority (Consejo de Seguridad Nuclear) also trains its inspectors in charge of Trillo NPP in the Angra simulator. Empresarios Agrupados has provided radiation protection services to Angra during refueling outages.

Argentina

From the beginning of the Argentinian nuclear program, Tecnatom collaborated with: the development of the Atucha Operation Manual; the inspection of the turbine and some components for Atucha and Embalse NPPs; the training of personnel with programs such as SAT (systematic approach to training), or the Atucha integral graphic simulator.

Equipos Nucleares provided the

Atucha-2 vessel head, as well as giving technical assistance to IMPSA, a local manufacturer of components.

Empresarios Agrupados has supplied consulting services to the Department of Energy of the Ministry of Economy, Public Works & Services, to assist in shaping the nuclear strategy to be applied under the reorganization of the electricity sector by the Argentinian Government.

Privatizing

The Spanish electric utilities are very active in all the privatizing projects going on in Latin America, where they have made acquisitions in the electricity sectors of Argentina, Chile, Bolivia, Peru and Brazil.

Who knows if the door is open to enter also into the operation of nuclear power plants?



Conclusion

The historical relations between the Latin American countries and Spain and Portugal, which have created a very large community with two common languages and many cultural affinities, have also been extended to the nuclear projects.

Several Spanish companies have played an important role in the development of the Latin American nuclear programs. More importantly, an extensive network of human relations facilitates the development of nuclear projects.

Latin American consumption of energy in general and electricity in particular is expected to grow significantly in the beginning of next century. So the Spanish connections will no doubt play a key role when new nuclear programs are launched.

Ibero-American NPPs in operation

Zorita	160 MWe	PWR	1968	Spain
Garoña	460 MWe	BWR	1971	Spain
Atucha-1	357 MWe	PHWR	1974	Argentina
Almaraz-1	972 MWe	PWR	1981	Spain
Angra-1	657 MWe	PWR	1982	Brazil
Asco-1	947 MWe	PWR	1983	Spain
Embalse	648 MWe	PHWR	1983	Argentina
Almaraz-2	930 MWe	PWR	1983	Spain
Cofrentes	990 MWe	BWR	1984	Spain
Asco-2	930 MWe	PWR	1985	Spain
Vandellos-2	1009 MWe	PWR	1987	Spain
Trillo-1	1066 MWe	PWR	1988	Spain
Laguna Verde-1	675 MWe	BWR	1990	Mexico
Laguna Verde-2	675 MWe	BWR	1995	Mexico

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