INVAP'S ORIGINS

The founding group of INVAP S.E. (an Argentine state-owned Applied Research Company), headed by Doctor Conrado F. Varotto, began to work in the early seventies at the Bariloche Atomic Center (CAB, in Spanish), dependent on the Argentine National Commission of Atomic Energy (CNEA, in Spanish).

The company was founded according to the Law No. 20.705 of State-owned Corporations. The province of Río Negro owns 100% of its common stocks and manages the firm together with the national government through the CNEA. The Board of Directors includes representatives of the national and provincial governments and of the firm employees. Although INVAP is a state-owned company, it operates as a private corporation in compliance with the Law No. 19.550 of Business Companies.

WHAT IS INVAP?

INVAP S.E. is a company that has been developing state-of-the-art technology in different fields of the nuclear, space, defense, communication, energy, security, and nuclear medicine industries for four decades, creating high value-added "technological packages". Thanks to its experience in conceiving, implementing and managing multidisciplinary and highly complex projects, INVAP is able to provide products and services complying with its customers' requirements and to go through all the stages that a project involves, from the technical advice prior to the construction agreement to the turnkey delivery of plants. As a business corporation, its income comes only from its sales to the domestic market and its exports. In the last fiscal year (2014/2015), it had a turnover of 200 million U.S. dollars.

WHERE IS IT LOCATED?

INVAP's headquarters are located in San Carlos de Bariloche. Nowadays, the company has facilities in several Argentine cities (Córdoba, Neuquén, Buenos Aires, Campana, Mar del Plata and Rosario) as well as subsidiaries and representatives in those countries to which it has made large exports (Australia, Brazil, the United States, Egypt and Venezuela).

HOW IS THE STAFF COMPRISED OF?

Around 1,400 persons work at INVAP, 85% of whom are professionals and highly qualified technicians.

The staff is represented at the conduction level by a Director whose position is renewed every three years. Candidates should have worked in the company at least five years. After having worked in INVAP for a year, each employee becomes a "bondholder", which involves profit sharing. This bond has the same value for every member of the staff.

HOW DOES INVAP OPERATE?

The company works in collaboration with different scientific and technological institutions, especially with the CNEA, the Argentine National Space Activities Commission (CONAE, in Spanish), the Argentine Company for Satellite Solutions, AR-SAT S.A., and the Ministry of Defense, agencies with which INVAP has carried out very important projects. This fluid cooperation with the National System of Science, Technology and Innovation and its customers is the key to the company's development.

WHAT DOES INVAP DO?

Its main projects are focused on the following fields: nuclear, space activities and government technical affairs, industrial technology, alternative sources of energy, information and communications technology (TICs, in Spanish) and technological services. INVAP has exported research and radioisotope production reactors to Algeria, Egypt and Australia, and has provided other twenty countries with nuclear technology services. Besides, it has manufactured low-orbit Earth observation satellites, telecommunication satellites, several industrial plants, state-of-the-art equipment for the oil, gas and water industries,

wind turbines, medical prosthesis, radar systems and radiotherapy centers, among other developments.

NUCLEAR PROJECTS

The company is internationally recognized as a reliable and up-to-date nuclear technology supplier. It has become a member of the leading group in building multi-purpose radioisotope production reactors.

As to the nuclear area, the company has clearly achieved a high competitive level, such that it exported the OPAL reactor to Australia, which selected INVAP's proposal among other seven projects belonging to large firms from the most industrialized nations. With respect to this, the experience with Australia showed that our country is able to win an important and competitive tender (200 million U.S. dollars in the year 2000) and that INVAP is able to meet the established deadlines and fully comply with its customers' requirements. Australia expressed its complete satisfaction with the company and mentioned it in many international scientific forums and conferences in which it took part.

Then, in the context of the agreement between Argentina and Brazil on the joint development of two similar 30 MW research reactors, one for each country (RA-10 and RMB respectively), INVAP worked on both reactors.

Moreover, the company is now making progress on the construction of a low-power research reactor (LPRR) for the Saudi Arabia organization called King Abdulaziz City for Science and Technology.

Besides, INVAP's services were hired again by the Centre de Recherche Nucléaire de Draria, Algeria, to increase from 1 MW to 3.5 MW the power of the NUR reactor designed and built by the company 25 years ago.

INVAP provides nuclear plants and other nuclear facilities with services, and offers tailor-made solutions to meet specific operational and maintenance needs by designing, building, manufacturing, installing and operating devices, tools and systems. These capabilities are also implemented to optimize existing nuclear systems and to replace components manufactured by other suppliers.

The company also provides different services and equipment for Argentine nuclear plants such as Embalse (extension of systems' lifetime), Atucha I (engineering and equipment supply) and Atucha II (technical auditing service, engineering and general services), and it takes part in the CAREM 25 project.

Likewise, the area of Nuclear Projects of INVAP together with the CNEA successfully concluded the set-up of the Radioisotope Production Facility (RPF), which is integrated with the ETRR-2 reactor built by INVAP some years ago in Inshas, Egypt.

The company is also carrying out two projects aimed at designing and building radioisotope production plants in Algeria and India.

In Ezeiza, Argentina, INVAP is performing the engineering of a molybdenum 99 production plant and of a fuel production plant for the CNEA.

SPACE PROJECTS:

The successful completion of the SAC-D/Aquarius project, carried out by a joint mission between the CONAE and the U.S. National Aeronautics and Space Administration (NASA) together with Brazil, Canada, France and Italy, highlighted the international level achieved by INVAP, and proved to be a milestone in the contribution of the company to the space career. In the context of this project, the NASA Jet Propulsion Laboratory (JPL) —which manufactures the most complex space-qualified vehicles and equipment— designed and produced the Aquarius, valued at 280 million U.S. dollars, whose main goal is to measure the surface seawater salinity on a global scale, thus contributing to better understand the climate change phenomenon. This sophisticated instrument was integrated by Argentine scientists and technicians into the Scientific Applications Satellite SAC-D, fully developed in the country at INVAP's headquarters. On June 10, 2011, the satellite SAC-D/Aquarius was successfully launched from the Vandenberg Air Force Base, U.S.A.

Being the number one space agency worldwide, NASA's decision to work together with the CONAE and INVAP is a clear and, almost exceptional, sign of trust, in a foreign agency and company.

The Earth observation satellite program is now adding radar instruments that will permit to obtain images for the whole Argentine territory and the rest of the world no matter the light (daytime or nighttime) or weather conditions. The satellites in SAOCOM 1 constellation are in their development stage at INVAP's headquarters, and are expected to be launched in 2017. The SAOCOM 1A and SAOCOM 1B satellites comprising this constellation have the same requirements concerning design, functionality and effectiveness, so that they are being developed simultaneously. INVAP participates in this program as the supplier of the Service Platform and the central spare parts of the Synthetic Aperture Radar for the CONAE and the Italian Space Agency (ASI, in Italian).

INVAP is also working for the SARE and SABIA-Mar missions. The SARE is a constellation of Earth observation satellites equipped with radar and optical sensors, whose characteristic feature is that its satellites can share their resources, thus forming complex low-cost satellite architectures. The SABIA-Mar project (an Argentine-Brazilian satellite designed to provide information on the sea environment) has been conceived as part of a space cooperation agreement between Argentina and Brazil,

by the CONAE and the Brazilian Space Agency (AEB, in Spanish), together with several companies and organizations of both countries. This is the first joint mission aimed at the observation of the sea and coastal areas that will provide valuable information to study the marine ecosystem, carbon cycles, fishing activities and the weather, among other applications.

At the national level, INVAP is the main contractor of ARSAT S.A. to design, build, assemble and test the Argentine telecommunication satellites ARSAT 1, 2, and 3 (geostationary models that orbit at 36,000 km from the Earth) developed for the Argentine Geostationary Telecommunications Satellite System. They will be put into orbits 81° and 72° West, allocated to Argentina by the International Telecommunication Union (ITU) dependent on the United Nations. These satellites will allow the national Government to exploit some of its strategic resources and generate genuine income by providing high value-added telephone, data, Internet and TV services.

The ARSAT-1, whose assemblage at INVAP's headquarters concluded in 2013, was successfully sent into orbit on October 16, 2014. Then, the ARSAT-2 was shipped over to the Guyanese space center on August 18, 2015, to be launched on September 30, 2015.

GOVERNMENT PROJECTS

In compliance with the Decree 1407/04 creating the National System of Aerospace Surveillance and Control (SINVICA, in Spanish), INVAP manufactures secondary radars (Argentine Monopulse Secondary Radar; RSMA, in Spanish)

and primary radars (Argentine Primary Radar; RPA, in Spanish) for an effective air traffic control. They have been wholly designed by Argentine professionals and technicians.

The RSMA were designed and built by INVAP according to the requirements of the Argentine Air Force (FAA, in Spanish) and the National Civil Aviation Administration (ANAC, in Spanish) in compliance with the standards and recommendations of the International Civil Aviation Organization (OACI, in Spanish). They were approved by the proper national authority, the General Direction of Assessment and Certification of the FAA, together with OACI's expert technicians. These radars are now operating in different places of the country to cover every air commercial route.

Besides, the General Direction of Military Manufacturing (FM, in Spanish) hired INVAP's services to design the Argentine Primary 3D Radar (RPA) for civil and military uses

to provide data for detection, surveillance, identification and control of the air space. The National Ministry of Defense, through the FAA, hired INVAP's services to design and build twelve RPAs to be installed and put into service in the north of the country. INVAP designed and produced for FAA a mobile version of a Primary Radar. This radar, called RAM, was delivered and put into service around mid-2011.

Furthermore, INVAP is working on the design and supply of the National System of Meteorological Radars (SINARAME) that, under the Undersecretary Office of Water Resources' management, involves the development of an integrated system of twelve meteorological radars as well as information and operation centers for meteorology and research. The first version of the meteorological radar signals (RMA1) was installed in the city of Córdoba and is now in operation. Besides, the first radars out of a series of ten are now in operation in Las Lomitas (Province of Formosa), Resistencia (Province of Chaco), Bernardo de Irigoyen (Province of Misiones) and Ezeiza (Province of Buenos Aires).

The company also manufactured for the Argentine Navy the first naval secondary radar (RSMA-N) for the Almirante Irízar icebreaker.

As regards the security area, INVAP has an optical gyro-stabilized system for aircrafts, called System of Acquisition and Propagation of Images (SADI, in Spanish). This kind of equipment is being used to equip the aircrafts of the security forces and the Navy.

INDUSTRIAL TECHNOLOGY AND ALTERNATIVE ENERGY

INVAP manufactures medium-power wind turbines (30 KW) and turnkey low-power wind systems (4.5 KW to 22 KW) with its own technology, and develops different hydrokinetic turbines for the generation of electric power from river and sea currents. It has a technology development center to produce big engineering and high performance components, and is devoted to the national development and production of shovels for high-power wind turbines. The project, financed by the Ministry of Science, Technology and Productive Innovation, is carried out by a public-private partnership comprised by INVAP, the Town Council of Cutral Co, the National University of La Plata and ITP Argentina S.A.

Moreover, INVAP is working on the engineering and construction of the center for engine and components tests and the launching platform of the Tronador II rocket belonging to the CONAE.

The company also develops and manufactures complete prosthesis for joint replacements, and provides cutting-edge engineering and equipment for the oil and gas industries, and for the treatment of water and the disposal of industrial waste effluents.

Developments in the Industrial Technology and Alternative Energy areas of INVAP have enabled import substitution, thus protecting the national industry and encouraging its sustainability and progress.

ICT's AND TECHNOLOGICAL SERVICES

INVAP develops integrated platforms to provide Digital Terrestrial Television (TDT, in Spanish) services as well as their control and monitoring centers. More than 100 TDT broadcast stations have been installed and equipped in the whole country interconnected with the ARSAT S.A.'s monitoring center in the city of Benavídez. INVAP carried out a similar project in Venezuela covering 22 TDT broadcast stations. A great number of national companies took part in these developments, which enabled the production of several components such as antennas and transmitters, creating new niche markets for manufacturing companies.

As regards the medical system area, INVAP produces radiotherapy equipment and provides radiotherapy and nuclear medicine centers with services. These turnkey systems developed in Argentina have been exported to Venezuela and Egypt. In our country, the company has developed for the CNEA nuclear medicine centers providing radiation oncology treatments through linear accelerators used for clinical purposes and high-doses brachytherapy equipment, integrated with treatment simulation and planning systems. These centers are able to produce and process radioisotopes for drug development. INVAP will also provide Argentina with the first Proton Therapy Center in Latin America, aimed at the treatment of cancer.
The company has developed an Integrated System of Technical Services for the platform of RSMA radars, designed for air traffic control in our country, so that the life cycle of the systems is wholly integrated from their inception to the end of their lifetime.

INVAP AND THE NATIONAL DEVELOPMENT

Throughout INVAP's 40-year trajectory, and thanks to the government policy of strategic procurement, the company has been able to get into important markets by exporting its high value-added technological products, as well as to attend to the needs of the national industry, thus promoting the development of Argentine science and technology and achieving recognition for the country's state-of-the-art technology.
Some examples of this course of action are the Earth observation satellites, the telecommunication satellites and the radars for airspace traffic control and defense. This strategic decision will allow the country to save money, increase the intellectual capability of Argentinians, provide new jobs to scientists and technicians, and offer real possibilities for exporting high value-added technological goods.

VISION

To be a global leading company in the field of technological projects and a protagonist in Argentina's development.

MISSION

To develop and carry out technological projects providing our customers with strategic value, in the context of a self-sustaining company. To create genuine sources of employment, encouraging the development of the staff and the communities where it operates, while protecting the natural environment.

+INFO
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