

# Beamex Case Story

**Central Nuclear de Almaraz** (Almaraz Nuclear Power Plant)  
**Spain**



Using Beamex calibration equipment  
since 1978

**beamex**

# ALMARAZ NUCLEAR POWER PLANT HAS BEEN A CUSTOMER OF BEAMEX SINCE 1978.

The Almaraz Nuclear Power Plant (CNA) has been using Beamex calibration equipment since 1978. In terms of calibration, the main goal of the CNA organisation is to guarantee safe quality production. One of the tools employed in the evaluation of these concepts is the quality system that is implemented and, specifically within this system, the procedure known as the "Calibration Plan". Metrology is a science that deals with the measurements produced by measuring systems and the instruments employed in making these measurements. It is, therefore, directly related to guaranteeing quality, reliability and safety, with all this having a significant effect on final product optimisation. In addition, the establishment of a calibration plan for measurement and test equipment, with traceability to both international and national references, is a requirement of administration for the concession of the necessary operating licence. It can quite safely be asserted that calibration is a very necessary cornerstone at CNA.

The team currently in charge of the Instrumentation Laboratory consists of six people, (the Laboratory Head, Laboratory Supervisor, two instrument specialists for calibration work and another two specialists for overall instrument management). This team looks after the needs of 45 people who are responsible for maintenance at the two CNA units. Mr. Mariano Cejalvo is the Instrument Manager at CNA.

## The situation

The basic calibration needs at CNA are for processes, transmitters, switches, controllers, indicators, final process elements, and various electronic process cabins. Calibration is performed for several reasons. "The most important ones can be summed into two reasons", Mr. Cejalvo explains. "The first reason is to prevent system degrading, since all systems



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have two types of errors - random and systematic. With the execution of the calibration plan, we can guarantee that we are within the required tolerances so that final production is not affected with respect to quality and safety", Mr. Cejalvo continues. "Second, calibration is also carried out to complement and compare the quality and reliability of the measurements by means of traceability through national and international laboratories with agreements of mutual recognition", Mr. Cejalvo concludes.

**“Enhanced equipment performance has made it possible to perform calibration operations with better uncertainty levels, with which we have improved production results”, Mariano Cejalvo reveals.**

### **The solution and main benefits**

“They must comply with current regulations and specifications. The quality/price ratio must be adequate. The level of technical support must be good and they must meet the following characteristics: safe, reliable, precise, robust, easy-to-use and with good documentation”, Mariano Cejalvo starts by explaining their buying decision criteria for calibration equipment. At the moment, they have a lot of different Beamex equipment in use, such as several MC5 Multifunction Calibrators and the PG-Series of calibration hand pumps.

Everything at CNA is considered to be a team or work group. It is possible to list several significant benefits from this viewpoint.

“Enhanced equipment performance has made it possible to perform calibration operations with better uncertainty levels, with which we have improved production results”, Mariano Cejalvo reveals. “Being more specific, by improving the measurement of the parameters associated with the determination of reactor power from 2 % to 0.4 %, enabled the power in each unit to be increased by 1.6 %, which has a very significant effect on the annual production”, Mr. Cejalvo continues. It is logical that process instrumentation, with a combined uncertainty of four parts in one thousand, must be calibrated in turn using references that have extraordinary small values of uncertainty. “Perhaps this is one of the clearest examples of the effects of a good calibration plan for production, obviously while maintaining or even improving safety”, Mr. Cejalvo concludes.



*CNA has a lot of different Beamex equipment in use, such as several MC5 Multifunction Calibrators and the PG-Series of calibration hand pumps.*

“Safety is based on never exceeding the established operating parameters (reactor power and cooling capacity, etc). Only with a measurement system that is periodically calibrated against universal references, is it possible to establish the actual operating points and their proximity to limits imposed by safety”, Mr. Cejalvo adds.

“Our opinion, based on years of experience, is that Beamex equipment is highly reliable and accurate. Because of the use they are put to here, we can also say that they are very robust. All this shows that they provide us with a high level of confidence which, when combined with excellent technical and commercial support, leads to an even greater degree of satisfaction”, Mariano Cejalvo summarizes.

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# CASE STORY IN BRIEF

## Customer profile

### Central Nuclear de Almaraz (Almaraz Nuclear Power Plant)

#### Spain

#### Business Situation

Almaraz Nuclear Power Plant (CNA) has been using Beamex calibration equipment since 1978. In terms of calibration, the main goal of the CNA organisation is to guarantee safe quality production. Safety is based on never exceeding the established operating parameters (reactor power and cooling capacity, etc). Only with a measurement system that is periodically calibrated against universal references, is it possible to establish the actual operating points and their proximity to limits imposed by safety. It can quite safely be asserted that calibration is a very necessary cornerstone at CNA.

#### Solution description

- VA instrument calibrators
- BTS101 transmitter simulators
- RTS101 resistance simulator
- PHS101 pH simulator
- PC105 pressure calibrators
- TC305 temperature calibrators
- MIC10 instrument calibrators
- MC5 multifunction calibrators
- PG-series of calibration hand pumps

#### Main benefits

- Reliability, ease-of-use, precision, robustness and regulatory compliance of Beamex calibration equipment
- Guaranty of safe production
- Improved production results
- The availability and quality of technical support

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