# GILARDONI: THE HISTORY

**Gilardoni** was born in 1947 thanks to Dott. Ing. **Arturo Gilardoni**, with the pourpose of designing, engineering and producing X-ray systems, focusing on research, quality and innovation.



**Gilardoni** is operating in the following sectors:
- ☐ Security systems
- ☐ Biomedical instrumentation
- ☐ Non-Destructive Testing instrumentation
- ☐ OEM producer (Original Equipment Manufacturer)

# GILARDONI VISION

## WHY Gilardoni

We are the only company in X-ray security that develops and produces X-ray tubes and generators in house. With this know-how, Gilardoni has the capability to supply stable data for algorithm implementations. We are the first company with LEDS system certified ECAC type C, standard 2, with single generator.

## WHAT

Our **vision** is to reach innovative results thanks to many factors:

- our research and development department
- our investments
- our mentality oriented to find practical solutions
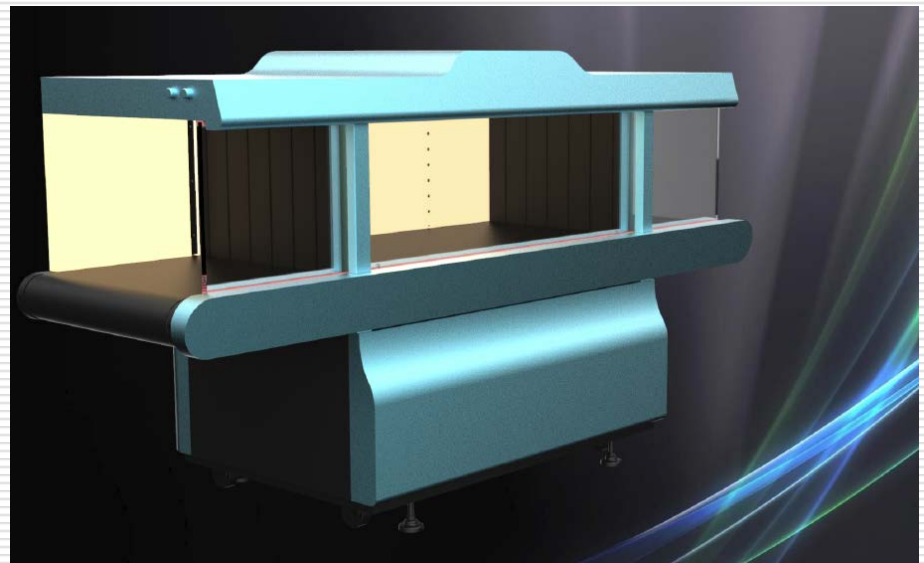


*Gilardoni* **VISION**
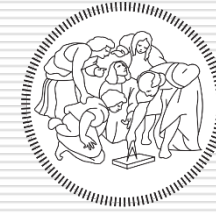
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# CERTIFICATIONS

## TSA CERTIFICATION

We are in process to certify all products of our FEP ME line.

We have already certified our **FEP ME 755 AMX**.

Cross US-Europe acceptance of certifications would make the western countries more secure and simple to travel trough.

# IMAGE QUALITY



Cooperation with "Durham University" and "Politecnico di Milano" in order to reach an improved level of image quality, improve data analysis and lightness of data analysis.

An example is the on-going R&D to perform **shape recognition**, based on artificial intelligence to alarm for threats.

# EDSCB CERTIFICATION



Artificial Neural Network:
- ☐ Auto-learning algorithm
- ☐ Adaptive nets
- ☐ Convoluted nets
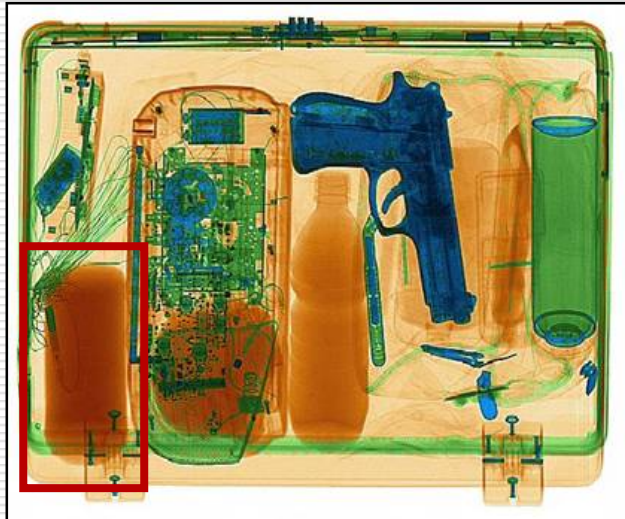
- EDSCB **standard C1** with a machine **dual view technology**.

This is an important challenge because it could be reached with stable data acquisition, implying stable x-ray output from only 2 generators, containing capital cost. Ideal solution for deployment in mid/small size airports yet implementing the "one-stop security".

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# GILARDONI: FUTURE

## INTEGRATED CHECK POINT

Today an automatic tray return system is connected to the luggage screening system.
Our aim is to integrate the system with **biometric and behavioural analysis feed to a multiplexed remote control room.**

# MULTI-VIEW TECHNOLOGY

☐ The system with multi-view technology is designed for avoiding occlusions and overlaps. The dual-view machines are already produced and, with an excellent data analysis, they are enough to reach the standard C1 for EDSCB. For the standard C2, that will make use of extremely stable energy levels and multi-spectral detectors to characterize materials, our R&D department is studying a solution.

☐ Multi-view technology is also used for the projection of the images in 3 dimensions. The purpose of this representation is to have the items divided in several layers, in order to scan all the objects contained in it.
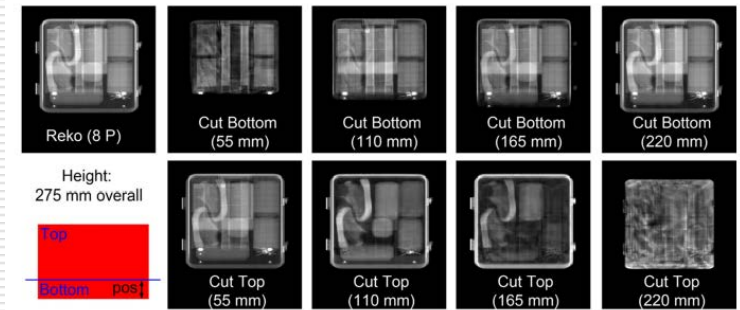
# MULTI-ENERGY TECHNOLOGY

☐ Higher number of datas to be analysed
☐ Several models of Z, optimizing the density analysis of materials
☐ Improvement of precision on energy stripping command
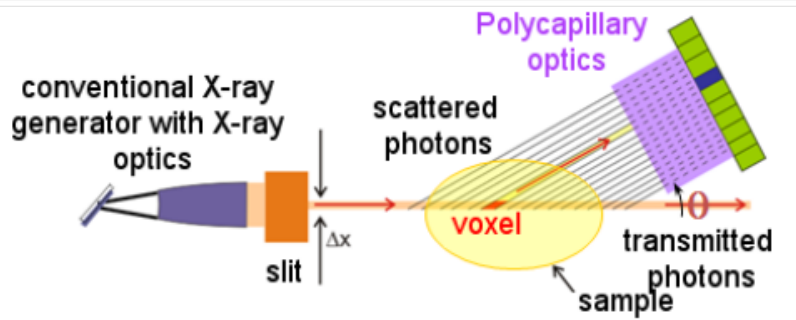


Moreover, an additional function is under verification in our department. We aim to catch the photons in a different angle, in order to improve resolution and solve overlaps.

# MULTI-ENERGY TECHNOLOGY 2

- **Multi-energy** (ME) that is introducing the spectral behaviour as a new materials identification parameter besides Zeff and density,

- **Local diffraction fast technique** that is bringing spectral pattern identification as a different new identification criteria; the design is an add-on for ME DV/MV scanners,

- **Non-gantry ME/MV <u>compact</u> new innovative tomography** , a solution that creates a very fast small footprint tomographic scanner, with only few X-ray sources and line detectors;

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