



# Small hospitals can offer big care

With the Mammo DR Retrofit, Agios Dionysius Hospital, Greece, finds that any hospital – no matter the size – can offer its patients and staff the quality and workflow benefits of DR mammography

## **CASE STUDY**

Agios Dionysius Hospital  
Aegina Island, Greece



# Case Study

INTERVIEW WITH **NEKTARIOS LAVOUTAS**,  
B.O.D MEMBER – PROCUREMENT & TECHNICAL DEPT. MANAGER  
AND **ANGELIKI MANETOU**,  
RADIATION PROTECTION EXPERT

At Agios Dionysius Hospital, past, present and future come together in a unique partnership with a common goal: patient health. Thanks to the Captain Vassilis and Carmen Constantakopoulos Foundation, this small hospital (one of the oldest in Greece) on an island near Athens, popular with tourists, smoothly and easily transitioned from CR (computed radiography) to DR (direct radiography) mammography, with the country's first Agfa Mammo DR Retrofit<sup>1</sup>. Now the hospital's patients enjoy the confidence of fast, high-quality DR mammography for screening and diagnosis.



<sup>1</sup> DR 18M and DR 24M are not available in the US and Canada



**“** The Mammo DR Retrofit is a good choice for small hospitals. Our constant aim is to provide excellent patient care, including through lower dose potential and higher mammography image resolution. The Retrofit is helping us achieve our goals on all these levels.”

**Nektarios Lavoutas**, B.O.D Member – Procurement & Technical Dept. Manager



## Resolution, speed, image quality – and patient confidence

Despite its small size, the 25-bed Agios Dionysius Hospital offers inhabitants and the many visitors to the small, charming island of Aegina a range of imaging services including CT, US, X-ray, bone density scanning and mammography. The hospital went digital for mammography in 2014, with Agfa's CR 30-Xm computed radiography solution<sup>2</sup> dedicated to mammography. "Agfa was chosen based on its better image quality and fast image processing," explains Mr. Lavoutas, B.O.D Member – Procurement & Technical Dept. Manager.

As a district hospital, Agios Dionysius Hospital strives to ensure that patients can avoid the stress of travelling off the island for their medical imaging exams, while keeping up with tech-

nological advancements. So in 2018 the hospital carried out a comparative research of the DR mammography solutions on the market. Based on its findings, the hospital's board of trustees and purchasing committee recommended Agfa's Mammo DR Retrofit to the Captain Vassilis and Carmen Constantakopoulos Foundation, which made the purchase for the hospital. "We chose the Mammo DR Retrofit for the better image resolution, the speed and quality of the MUSICA image processing, and the ability to use lower radiation doses," describes Mr. Lavoutas. "In addition, we knew the solution would give our patients greater confidence in the high standard of medical diagnosis and health-care quality from our hospital."

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<sup>2</sup> CR 30-Xm is not available in the US and Canada.

 For all medical imaging exams, the desired goal is high image quality and lower dose potential. In testing the Agfa DR detectors, both parameters were found to be extremely good.”

**Angeliki Manetou**  
Radiation Protection Expert



## Big benefits ‘in an instant’ for any hospital

The vendor-neutral Mammo DR Retrofit makes it easy for any hospital – regardless of size or budget – to upgrade its X-ray mammography modalities to DR, ‘in an instant’. The digital flat-panel X-ray detectors are specially designed for DR mammography and fit into standard buckys used for analog and CR mammography. The MUSICA 3 image processing has been specially adapted for DR mammography, providing excellent mammography image quality immediately, without manual post-processing.

The implementation at Agios Dionysius Hospital was carried out on 30 January

2019. “The adoption of the system went very smoothly. The Agfa team and our own mammography (unit) technologists worked together to resolve any small issues that arose,” continues Mr. Lavoutas.



## Atomic Commission testing and approval

As required by Greece’s stringent national regulations, the Mammo DR Retrofit was tested to ensure that it meets the legal requirements and mammography quality control protocols. Radiation Protection Expert Angeliki Manetou carried out the testing on site in the hospital. While she indicates that the final judge of a mammography system is the doctor, the results of the official tests were very good. “I was engaged as a radiation protection expert by the Agios Dionysios Clinic in Aegina in March 2018. The task was to assess whether the newly obtained Agfa DR 24M detector, meets the requirements of the Greek legislation and mammography quality control protocols. As a medical physicist, I can comment on two parameters for mammography: image quality and dose. For all medical imaging exams, the desired goal is high image quality and lower dose potential.”

“In testing the Agfa DR detectors, both parameters were found to be extremely good. Regarding image quality, 14 out of the 16 details on the ACR phantom appeared – the European Federation of Organisations For Medical Physics

(EFOMP) limiting value is 10. Regarding dose, the average glandular dose (AGD) value for a 4.5 cm thickness phantom was estimated to be 1.2 mGy, compared to an EFOMP limiting value of 2.5 mGy,” Angeliki Manetou reports.

“However good the results, I should mention here that the end user and final judge of a mammography unit is the doctor. He is the one to evaluate the method, as he holds the exclusive responsibility for diagnosis of real patients,” she continues. “If I was to mention a drawback of the method, that would be the inability of the system to be evolved to a more powerful weapon in the hands of the radiologist, as would happen, for example, with a DR system with the ability to perform apart from mammography, tomosynthesis as well.”

With these results, the Mammo DR Retrofit was approved by the Greek Atomic Commission as a ‘digital’ imaging system – the first mammography DR retrofit solution to receive this approval. This enables the hospital to receive from the health ministry the higher reimbursements for digital mammography.

# Agfa Solutions

## Mammo DR Retrofit with 24M digital detector



An 'instant' **upgrade to DR mammography**



MUSICA imaging workstation, with an **intuitive interface** that offers **complete ease of use** at the point-of-care. A touch screen lets the technologist complete tasks quickly and effortlessly.



MUSICA 3 image processing software, specially adapted to DR mammography, offering the **excellent contrast** needed for mammography imaging and the potential to **reduce radiation dose** as low as reasonably achievable.



DR 24M digital flat-panel X-ray detector **specially designed for DR mammography**, fitting into standard 24x30 buckys.



Detector absorption that is compatible with the automatic exposure control (AEC) of the mammography X-ray units, for **seamless use with virtually all X-ray mammography systems**.



Cesium Iodide (CsI) scintillators and a **high-resolution pixel pitch** of 76  $\mu\text{m}$  deliver the **excellent image quality** required for DR mammography examinations.



In addition to the dose reduction potential of CsI, the high detective quantum efficiency (DQE) and the lossless automatic exposure detection (AED) feature of the detector support **the potential for lower patient radiation dose examinations**.

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**Fast printing and easy film loading** for medical hardcopies.



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### The Captain Vassilis and Carmen Constantakopoulos Foundation

The Agios Dionysius Hospital does not receive any public grants or subsidies, and all funds come from the patients' contributions for hospital fees, tests, etc. and from donations.

The Captain Vassilis and Carmen Constantakopoulos Foundation has made tremendous contributions to the operations of the hospital since 2005. This cooperation continues to the present day with Mrs. Carmen Constantakopoulos. The hospital's board of trustees turned to her for financial assistance for the modernization and upgrading of the mammography unit, and she swiftly put the required procedures in motion to acquire and implement the Mammo DR Retrofit.

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**“**The adoption of the Mammo DR Retrofit went very smoothly, with no big problems. The Agfa team and our own mammography unit technologists worked together to resolve any small issues that arose.”

**Nektarios Lavoutas**, B.O.D Member – Procurement & Technical Dept. Manager

### Agfa’s contribution:

“Our relationship with Agfa is very important to us, given that Agfa has helped us to achieve our goals, in particular better image quality and higher speed in image processing at a lower radiation dose. Agfa has thus helped us foster an environment of confidence for our patients, in terms of both receiving a sound medical diagnosis and high-level healthcare services. Agfa also responds quickly to our service needs.”



## More patients, in a smoother workflow

Implementing DR mammography has increased the satisfaction of patients and staff. “In addition to the excellent image quality and lower radiation, the faster patient throughput and image processing have enabled us to do more mammography screening tests. Our medical specialist appreciates in particular the role of the MUSICA image processing which helps improve image interpretation and aid in diagnosis. Our staff find the system easy to use and fast, which supports their workflows,” says Nektarios Lavoutas. “The patients have also noted the

improved comfort,” he comments. “All the mammography equipment is in one room, for example, for a simpler, faster workflow that is more convenient and comfortable for the patient.” He concludes: “The Mammo DR Retrofit is a good choice for small hospitals. Our constant aim is to provide excellent patient care, including through lower dose potential and higher mammography image resolution. We use our DR mammography service to encourage women to come for screenings. So the Retrofit is helping us achieve our goals on all these levels.”



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