

## COCIR SELF REGULATORY INITIATIVE FOR MEDICAL IMAGING DEVICES

COCIR member companies are committed to contributing to the challenges for a greener and more sustainable world economy by developing new environmentally performing technologies and concepts, while at the same time ensuring cutting edge performance with improved clinical value of medical imaging devices.

COCIR companies proactively committed to the European Commission to develop a Self-Regulatory Initiative under the Ecodesign Directive to reduce the environmental impact of medical imaging equipment.

In November 2012, the European Commission acknowledged the initiative recognising the benefits for society and healthcare.



## COCIR GUIDELINES FOR USERS ON SAVING ENERGY

GOOD ENVIRONMENTAL PRACTICE

# X-RAY

OCTOBER 2015

*The goal of this brochure is to raise awareness of operators, users and health care professionals and inform them about good practices to operate X-ray equipment to lower the environmental impact by reducing unnecessary energy consumption.*

*COCIR strongly believes that the greatest gains can be realised when manufacturers and users partner to optimise the use of technology.*

### ENERGY CONSUMPTION IN HOSPITALS

Healthcare equipment represents 19% of a hospital's energy demand<sup>1</sup> and medical imaging equipment is a class of high-energy consuming products widely used today in hospitals, imaging centres and radiological practices. Energy-efficient medical devices play a key role in reducing environmental impacts, but achieving higher rates of energy efficiency requires better management of devices when they are not in use.

### X-RAY IMAGING TECHNOLOGY

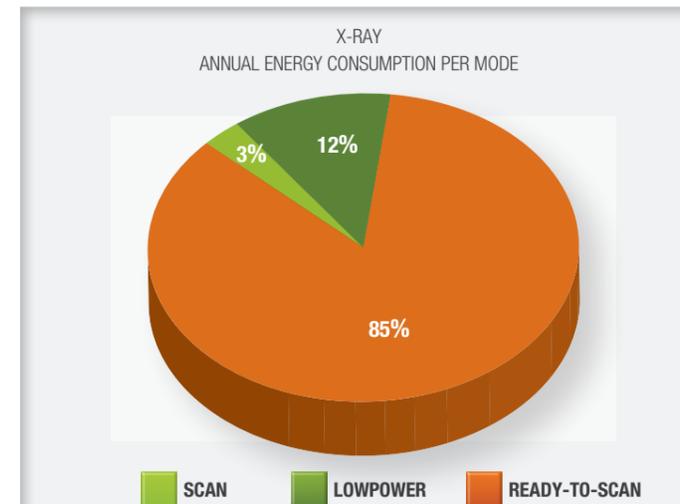
Radiography is an imaging technique that uses X-rays to view the internal structure of a non-uniformly composed and opaque object such as the human body. Radiography is a very common imaging technique and many X-ray devices can be found almost in any hospital or clinic in Europe. Despite the low energy usage compared to other modalities, the huge installed base makes energy savings significant.

### X-RAY ENVIRONMENTAL GOOD PRACTICE: SAVING ENERGY

The greatest reduction in energy usage can be achieved by proper use of the X-ray equipment and the provided energy saving options. Already existing "off" and "low-power" modes could ensure an energy saving between 50% and 64% of daily energy consumption (see figure). Nonetheless such options are not widely used by users.

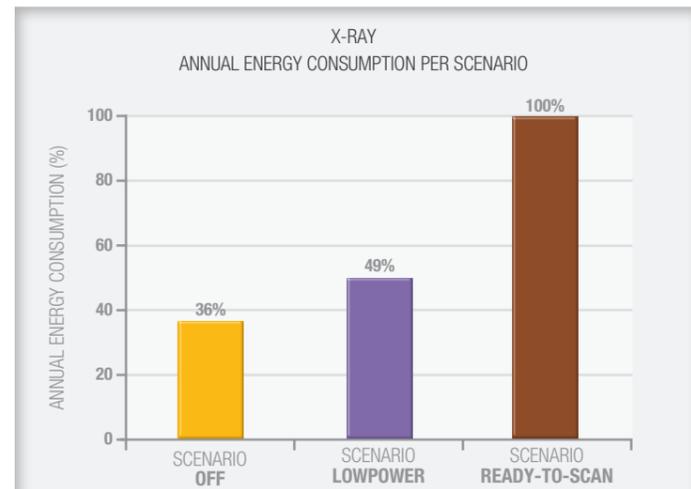


**For X-ray, the use of off mode during the night hours and weekends can save up to 3,5 MWh per year on average per equipment which is equivalent to around 450€ per year.**



### DAILY ENERGY CONSUMPTION PER MODE

X-ray devices normally work in scan mode for only a few seconds or minutes over the day. That's the time when the X-ray tube is powered to produce the required X-rays. Despite the high power requested for X-Ray generation, the energy consumption in scan mode is around 3% of the daily energy usage. This has been measured for some of the most energy intensive categories such as angiography X-rays. The energy usage in scan mode is expected to be even lower for other categories.



### DAILY ENERGY CONSUMPTION PER SCENARIO

- SCENARIO OFF:** the X-ray device is switched to Off mode during the night hours and weekends
- SCENARIO LOWPOWER:** the X-ray device is switched to low-power mode during the night hours and weekends
- SCENARIO READY-TO-SCAN:** the X-ray device works in ready-to-scan mode over 24h

### COCIR COMPANY MEMBERS:



### NATIONAL TRADE ASSOCIATIONS MEMBERS:



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### MORE INFORMATION ON THE COCIR SRI

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1. Danish Energy Saving Trust "Energy Efficiency in Hospitals and Laboratories"



## COCIR RECOMMENDATIONS FOR X-RAY USERS

### DURING PURCHASE EVALUATION

Ask for energy consumption data according to typical use scenarios and standardized methodologies as defined by the COCIR established measurement methodology.

Choose equipment supplied with energy and environmental information according to the latest version of the COCIR self-regulatory initiative.

Verify the availability of information on the good environmental use of the equipment to maximise energy savings.

Seek equipment with low-power features.

Ask the manufacturer to provide technical advice on proper settings and configuration to reduce energy consumption.

Consider your typical usage scenario and needs and choose a suited X-ray device. Differences in functionality may influence energy usage.

### DURING SETUP AND USE

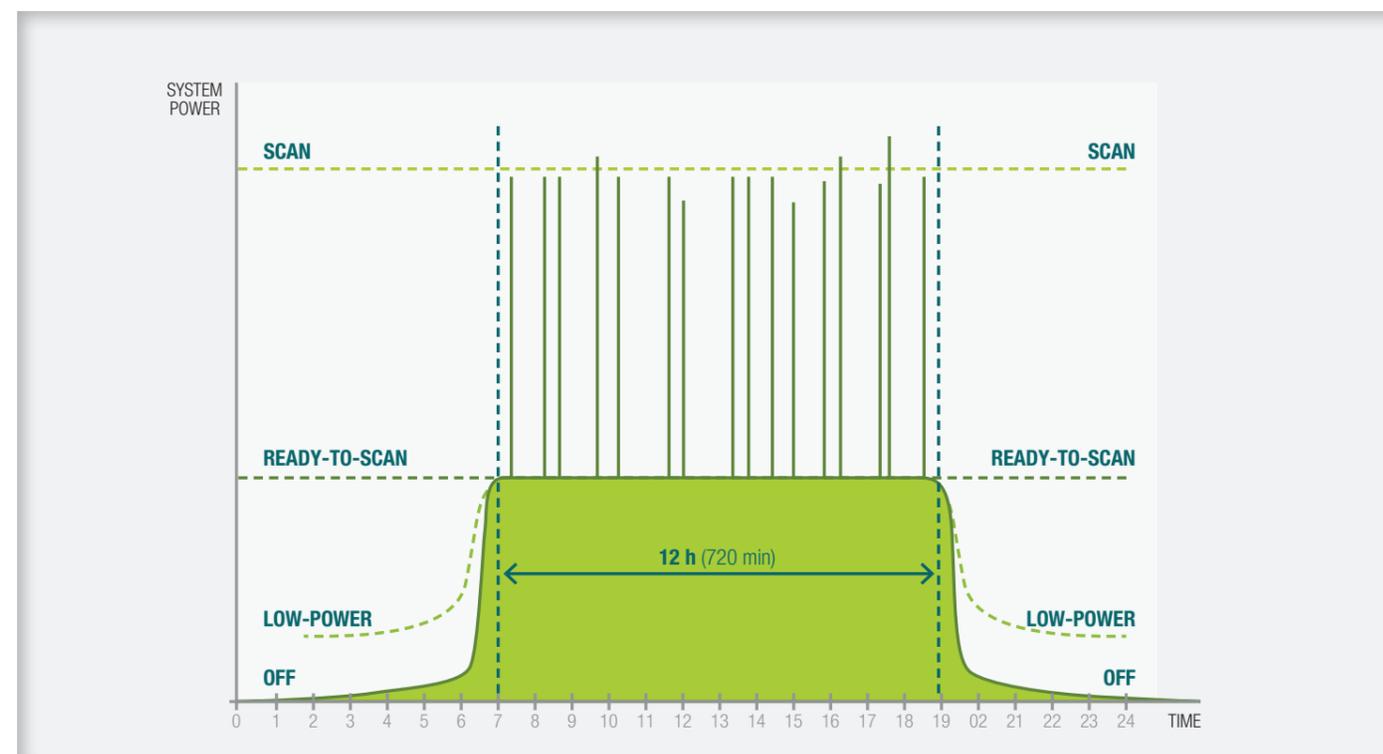
Train staff on the use, benefits and energy savings achievable with the use of low-power features.

Switch the system off or activate low-power modes during off hours, when system is not in use, considering possible clinical limitations.

Regularly consult with the manufacturer to ensure the X-ray device is configured for optimal performance and minimum energy consumption according to real-use scenarios.

Ensure proper maintenance is performed by qualified personnel to maintain clinical and environmental performance over time.

Regulate the room air-conditioning system when the x-ray device is in off mode.



Schematic representation of the power usage of an X-ray device.

### MEASURING ENERGY CONSUMPTION

COCIR developed a methodology to measure the energy consumption of X-ray systems as there are no existing recognized standards as of today.

The methodology defines the functioning modes (Off, Ready-to-scan, Scan and Low-power mode) and how to measure the power consumption in each mode. It allows calculating the annual energy usage in 3 different given scenarios: Off, Low Power and Ready-to-scan.

Data on energy consumption are used by manufacturers to improve the efficiency of their equipment and are useful to purchasers to calculate the running cost of devices.

The difference of the energy usage in the scenarios gives a clear indication of the savings which can be achieved by a proper environmental-friendly usage of the X-ray device.



The COCIR methodology allows purchasers to compare the energy consumption of X-ray systems from different manufacturers. Nonetheless measurements declared by manufacturers should be used with care as they refer to typical use scenarios which may not reflect the specific real usage.

The COCIR methodology is available for download at the COCIR website in the "Initiatives" area.

**A good environmental practice saves about 3,45 MWh per year which corresponds to around 450€ for a typical X-ray device. The longer the time in low-power or off mode, the higher the energy savings.**