




Sustainable Competence  
in Advancing Healthcare



## COCIR **SELF-REGULATORY INITIATIVE** FOR MEDICAL IMAGING EQUIPMENT

# 3<sup>rd</sup> ANNUAL FORUM

# ECODESIGN




**COCIR SELF-REGULATORY INITIATIVE  
FOR MEDICAL IMAGING EQUIPMENT**

MAGNETIC RESONANCE EQUIPMENT  
MEASUREMENT OF ENERGY  
CONSUMPTION 2011

REVISION    x 5  
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**COCIR**  
SUSTAINABLE COMPETENCE IN ADVANCING HEALTHCARE

European Coordination Committee of the Radiological, Electromedical and Healthcare IT Industry





# ECODESIGN

- COCIR Members have been involved in Ecodesign for years, reducing environmental impacts on products through life cycle thinking and life cycle analysis while at the same time improving benefits and performances.
- **Energy efficiency** has been improved thanks to:
  - Use of already existing energy efficiency schemes, e.g. energy star for monitor and computers.
  - More efficient components: power supplies, transformers, motors, electronics, etc
  - Use of lower energy using technologies (digital vs analogic)
  - Improved detectors performances
  - Energy saving options
- **Reuse and life-time extension** have been improved drastically thanks to refurbishment of used medical devices.
- **Content of hazardous substances** has been reduced whenever possible without reducing benefits for patients.
- **The COCIR SRI highlighted additional elements:**
  - Smart modes
  - Automatic switch off of modules
  - Faster scan speed / shorter examination time
  - Influence of user behavior
  - Reduced transition times between modes



# SMART MODULES

- The COCIR SRI studied the potential for improvement of medical technologies by modularizing devices and studying reduction possibilities for modules.
- This approach showed how energy can be reduced by switching off modules which are not needed. Short reactivation times are important to allow the smart switch off and on of modules.

COMPANY NAME			
CT: ALLOCATION OF THE ENERGY CONSUMPTION PER MODULE PER MODE			
Applicable to the following CT models:	Model1, Model2, ect		
Allocations of energy use (%)	Off	Idle	Scan
Tube and generator chain			
Detector			
Power distribution unit and other power supplies			
Computation, Controls			
Cooling			
Patient table			
Gantry Motor			
	0,00%	0,00%	0,00%

CT: ALLOCATION OF THE ENERGY CONSUMPTION PER MODULE PER MODE			
Applicable to the following CT models:	Model1, Model2, ect		
Possible reduction(%)	Off	Idle	Scan
Tube and generator chain			
Detector			
Power distribution unit and other power supplies			
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Patient table			
Gantry Motor			



# IMPORTANCE OF OFF MODE/LOW POWER MODE

- The SRI calculated the energy consumption according to different use scenarios highlighting the possible savings through the use of off mode and low power modes.
- Equipping medical devices with Off mode (zero energy consumption) and Low Power modes which can be selected by users has resulted as a very important aspects strictly linked with user education on good environmental practice.
- Automatic switching to such modes is not always possible as medical devices in many cases have to be “ready to save lives”.
- Easy access and clear instruction to such modes are also very important.



# SCAN SPEED

- Scan speed has always been pursued by Companies as a clear benefit for patients and users.
- Fast acquisition technologies opened the way for new diagnostic possibilities (lungs, abdomen, heart, vascular).
- The SRI revealed the importance of scan speed given the high energy usage during scan time.
- Scan speed has a very complex influence on energy consumption according to the modality under consideration.
  1. Shorter examination time reduces the time in scan mode and increases the time spent in ready-to-scan or idle mode during the 12h daytime.
  2. Shorter examination time may as well increase the number of examinations per day. According to the use scenario and the modality it may reduce or increase the total daily energy consumption.
- In the second case, Medical Devices have anyway to maximize the benefits for patients (and users) and therefore slower scan speeds cannot be implemented as a mean for reducing energy consumption.



# USE BEHAVIOUR

- The SRI looked into user behavior through:
  - Published studies and data
  - Companies' surveys
  - Log data
- It was realized un-expectedly that already equipped low power modes (and off mode) were mostly un-used.
- Calculations also showed that savings achievable by users were several times higher than the ones achievable with technical solutions.
- Influencing user behavior by improving user's knowledge of operations, saving possibilities and achievable savings turned out to be the most effective way to achieve the goal of reducing energy consumption.