




Sustainable Competence  
in Advancing Healthcare



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

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

# COCIR SRI AND THE EU GPP PROJECT




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

MAGNETIC RESONANCE EQUIPMENT  
MEASUREMENT OF ENERGY  
CONSUMPTION 2011

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**COCIR**  
SUSTAINABLE COMPETENCE IN ADVANCING HEALTHCARE

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





# COCIR SRI and GPP

- The COCIR SRI shows that the most significant improvements can be achieved by proper use of medical imaging equipment. In comparison technical solutions can bring small improvements of energy efficiency.
- For most modalities, the trend shows an increase in energy usage due to additional functionalities and improved performances.
- Spreading knowledge and awareness to user is important to achieve results.
- GPP is a powerful tool for raising awareness, training/educating purchasers, rewarding investments in ecodesign.
- For this reason COCIR contributed actively to the definition of GPP criteria for medical Devices launched by the EC in 2011 and now ready for inter-service consultation.
- COCIR is willing to continue the cooperation with EC and National authorities to improve the use of GPP.
- The DITTA ENVI Task Force is monitoring the development of GPP at global level with the objective to push for “harmonization” according to best practices defined by the COCIR SRI.



# EU GPP AWARD CRITERIA

- Points are awarded according to the daily energy consumption (kWh/day). The lower the daily energy consumption, the more points are awarded.
- The procurer needs to indicate the expected daily use patterns of the equipment ("customised scenario"), the tenderer will need to state the energy use of the equipment in the different modes. The pre-determined use scenario is a recommendation to the procurer based on average use scenarios of European hospitals. The procurer is however free to adapt the use scenario to the specific needs.



# COMPUTED TOMOGRAPHY

## CUSTOMISED USE SCENARIO

- Tenderers deliver the following values according to the methodology and test conditions in the COCIR SRI for Computed Tomography Equipment, see [www.cocir.org](http://www.cocir.org):
  - P<sub>off</sub> :Power consumption (kW) in Off mode
  - P<sub>Idle</sub> : Power consumption (kW) in Idle mode
  - P<sub>low</sub>: Power consumption (kW) in LowPower mode
  - E<sub>scan</sub>: Energy consumption during abdomen scan
  - T<sub>scan</sub>: duration of abdomen scan (from prescription to power back in idle mode)
- The daily energy consumption can be calculated with the following formula (in bold values to be determined by the purchaser, in black declared by the supplier)

$$\text{kWh/d} = P_{\text{off}} \times \mathbf{T_{\text{off}}} + P_{\text{low}} \times \mathbf{T_{\text{low}}} + \mathbf{N.\text{scan}} \times E_{\text{scan}} + P_{\text{idle}} \times (24\text{h} - \mathbf{T_{\text{off}}} - \mathbf{T_{\text{Low}}} - \mathbf{N.\text{scan}} \times T_{\text{scan}})$$

- Where:
  - N.scan is the number of scans per day. Considering the little influence of energy used in scan mode over 24 hours, results from the COCIR methodology have shown that energy usage for scan mode can be approximated very well by using the abdomen scan only.
  - T<sub>low,off</sub> is time in hours per day for each mode.
  - T<sub>scan</sub> is time duration for each scan (stated by the tenderer).



# MAGNETIC RESONANCE

## CUSTOMISED USE SCENARIO

- Tenderers deliver the following values according to the methodology and test conditions in the COCIR SRI for Magnetic Resonance Imaging Equipment, see [www.cocir.org](http://www.cocir.org) :
  - P<sub>off</sub> :Power consumption (kW) in Off mode
  - P<sub>low</sub>: Power consumption (kW) in LowPower mode
  - P<sub>ready</sub>: Power consumption (kW) in Ready-to-scan mode
  - E<sub>scan</sub>: Energy consumption during scan for 5 body regions (head, spine, abdomen, knee, angio)
  - T<sub>scan</sub>: duration of scan (including sequences scan time and a fixed ready-to-scan time defined in the COCIR methodology)
- The daily energy consumption can be calculated with the following formula (in bold values to be determined by the purchaser, in black declared by the tenderer)

$$\text{kWh/d} = P_{\text{off}} \times \mathbf{T_{\text{off}}} + P_{\text{low}} \times \mathbf{T_{\text{low}}} + \mathbf{N.\text{scan}} \times E_{\text{scan}} + P_{\text{ready}} \times (24\text{h} - \mathbf{T_{\text{off}}} - \mathbf{T_{\text{Low}}} - \mathbf{N.\text{scan}} \times T_{\text{scan}})$$

- Where:
  - N.**scan** is the number of scan for each body region:  $\mathbf{N.\text{scan}} \times T_{\text{scan}} = \mathbf{N_{\text{head}}} \times T_{\text{head}} + \mathbf{N_{\text{abdomen}}} \times T_{\text{abdomen}} + \mathbf{N_{\text{spine}}} \times T_{\text{spine}} + \mathbf{N_{\text{knee}}} \times T_{\text{knee}} + \mathbf{N_{\text{angio}}} \times T_{\text{angio}}$ .
  - T<sub>low,off</sub> is time in hours per day for each mode.
  - T<sub>scan</sub> is time duration for each scan (stated by the tenderer).



# LIMITS OF CUSTOMIZED SCENARIOS

- Scenarios and energy measurement according to the COCIR methodology (pre-defined scenarios) are defined to allow comparison of different equipment (with limitations).
- Due to the complexity of MDs, different scenarios can end up in different classification of MDs' energy performances.
- Purchasers are also interested in determining the running costs of the equipment they want to purchase, therefore custom defined scenarios are necessary.
- As many values are measured (or need to be), in order to define custom-scenarios simplifications need to be introduced.
  - **MRI**: the number of scan per day is determined by the purchaser therefore it does not reflect the equipment performances.
  - **CT**: transitions are not considered.
- To ensure comparability COCIR suggests purchasers to use pre-determined scenarios. "Harmonized standards" should be used when available.
- Custom-defined scenario should be used as an additional tool to help decisions but should not be used as the only reference



# GOOD PRACTICES

- COCIR and the SRI SC shared the results of the SRI and CT Good Environmental Practice with users. The upcoming MRI and X-ray good practices will be developed in 2014.
- GPP is the best tool to spread knowledge between users and to raise awareness. The GPP criteria have been formulated to inform the purchaser about the difference in energy consumption according to usage patterns.
- The GPP criteria references the COCIR SRI directly when referring to measurement methodologies. We expect more purchasers in the future to know the COCIR SRI and to get a better understanding of:
  - COCIR methodologies and results
  - Good Environmental Practices.
- COCIR is looking forward to continue its co-operation with the EC to support the adoption of the GPP criteria EU-wide and to review them according to state-of-the-art knowledge.