Introducing The New Generation of Metabolic Monitors for Indirect Calorimetry in Clinical Practice

"You can’t manage what you don’t measure."
Introduced by COSMED, worldwide leader in the design of metabolic systems for clinical and human performance applications, Q-NRG is the first Indirect Calorimeter specifically intended for the measurement of Resting Energy Expenditure (REE) in spontaneously breathing patients and for healthy subjects.

Indirect calorimetry remains the Gold Standard in measuring energy expenditure in clinical settings, proven to have enormous advantages compared to Predictive Equations\(^1\). In fact, this measuring technology provides an individual and dynamic metabolic assessment based on the actual physical status of the subject rather than estimating it on anthropometric data.

Q-NRG is a unique product, the result of COSMED’s collaboration with world-class institutes in the field of Clinical Nutrition. Product concept and specifications have been designed together with the ICALIC Trial study group\(^2\). This collaboration made possible the development of an accurate metabolic system simple to use and at the same time able to solve all typical pitfalls of Indirect Calorimetry technology.

Q-NRG uses the Gold Standard Indirect Calorimetry technique to measure metabolic parameters. The technique itself guarantees that the results reflect each individual’s specific and existing characteristics\(^3\). Therefore, Q-NRG is the ultimate tool for research in metabolic response at resting, to develop individual weight management programs and optimize energy balance.

Q-NRG is a compact, lightweight, battery operating device. The 10” inches LCD touch-screen simplify access to all operations. Bluetooth, USB, RS-232 and LAN interfaces allow to connect the system to any hub (PC, printers, etc.).

Q-NRG has been designed to reduce operations and measurement time\(^4\). System does not require warm-up time nor user-assisted calibrations, all operations can be performed with a few taps on the screen and cleaning procedures are simplified thanks to rounded surfaces and single-use accessories.

Q-NRG usability has been designed according to best clinical practice. An intuitive workflow supports the user through all operations with main instructions prompted along the procedures and test information always accessible. Designed to be portable, the device can be easily transported between rooms.

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Q-NRG has been designed to compete with conventional metabolic system, at a fraction of the cost.

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\(^1\) Resting energy expenditure in malnourished older patients at hospital admission and three months after discharge: predictive equations versus measurements. Neelemaat F, van Bokhorst-de van der Schueren MA, Thijs A, Seidell JC, Weijs PJ. Clinical Nutrition 2012


\(^3\) Indirect calorimetry as point of care testing. Singer P, Rattanachaiwong S. Clinical Nutrition 2019

\(^4\) In vitro validation of indirect calorimetry device developed for the ICALIC project against mass spectrometry. Oshima T, et al. Clin Nutr ESPEN 2019


\(^6\) The clinical evaluation of the new indirect calorimeter developed by the ICALIC project. Oshima T, et al. Clinical Nutrition 2020
One tool for many applications

Q-NRG provides flexibility in a variety of clinical settings, assessing different patient’s conditions and with different techniques (Canopy Hood and/or Face Mask), from pediatric to adult.

**Canopy Mode.** Indirect Calorimetry through Canopy Hood is the “Gold Standard” technique to measure REE in spontaneously breathing subjects. Patient’s exhaled gases are diluted with a known airflow within a “Canopy Hood” (available in small and large size). Measurement of dilution flow and O₂/CO₂ concentrations allow the calculation of VO₂ and VCO₂. Each test utilizes a single-use veil and an anti-bacterial filter.

**Face Mask Mode.** REE measurements can be performed using an oronasal face mask on spontaneously breathing subjects whenever Canopy Hood cannot be used (special subjects, claustrophobic, etc.). The face mask (available in 5 sizes) is placed on the subject and fixed with a comfortable headcap. A turbine flowmeter is connected to the face mask to measure ventilatory parameters and a sampling line is used for the measurement of inspiratory and expiratory O₂/CO₂ concentration.

### Accessories & Options

- **Canopy Hood kit.** Available in two sizes (Large or Small), includes hood w/ adapter and corrugated tube.
- **Face Mask kit.** Includes two oronasal masks in silicone (S/M sizes), 1 head cap, and external flowmeter.
- **Gas Calibration kit.** Required for the monthly gas calibration. It includes a 3,6 Liter cylinder with certified gas mix (16% O₂, 5% CO₂, N₂ bal) and pressure regulator.
- **Flow/Volume Calibration kit.** Required for the monthly calibration, includes a 3L certified calibration syringe and adapters.
- **Cart.** Compact Cart with medical grade wheels, includes Gas cylinder holder and accessory basket, perfect for moving the system between beds or hospital departments
- **Clamp.** Pole/rail clamp with 100 mm VESA mounting plate to be used for securing Q-NRG on any Pole or Rail within a hospital setting.

PDF printout of Canopy test shows test results in a comprehensive format to facilitate metabolic assessment. Tabular data may also be included.

Canopy tests require a simple set-up by connecting the canopy hose to the blower

Canopy Hood (small or large size) utilizes a single-use veil to avoid cross contamination

Multi-use silicone oronasal face masks are available in 5 different sizes (adult and pediatric)