Q-NRG

Metabolic Monitor

"You can't manage what you don't measure..."

Canopy

Mask

The New Generation Metabolic Monitor for Indirect Calorimetry in Clinical Practice

COSMED

The Metabolic Company

“The first indirect calorimeter specifically designed to measure Resting Energy Expenditure (REE), providing personalized data essential for modern nutrition therapy.”

- **Individual metabolic assessment (Resting Energy Expenditure) by Indirect Calorimetry**
- **Gold Standard Technology validated both in-vitro and in-vivo**
- **User-friendly device with no warm-up or manual calibration**
- **Easy to use with on-screen instructions for efficient clinical workflow**
- **Compact and portable design, lightweight and battery powered**

Developed and introduced by COSMED, a global leader in advanced metabolic and body composition systems for both clinical and performance applications, Q-NRG is a next-generation device that bridges the gap between **nutritional monitoring** and **metabolic assessment**.

Q-NRG is the first indirect calorimeter specifically designed to measure both **Resting Energy Expenditure (REE)**, delivering the precision required for modern nutrition therapy.

In clinical nutrition, precision matters. While predictive equations([1]) are widely used, they often fall short in accurately capturing a patient’s metabolic state.

Indirect calorimetry remains the **Gold Standard** for determining true energy needs.

Q-NRG brings this standard into routine clinical practice, offering real-time, patient-specific data with clinical-grade accuracy, no warm-up time, and automated calibration, making it practical for daily use in many clinical departments.

What sets Q-NRG apart is its foundation in scientific collaboration, notably with leading institutions and the **ICALIC Trial study group**([2]), ensuring the system meets the highest standards of evidence-based care.

Its versatile design supports both **canopy hood** and **face mask** measurements, making it suitable for a broad range of patient types and overcoming many traditional barriers to indirect calorimetry.

Its compact, portable, and low-maintenance build, combined with a user-**friendly touchscreen interface**, ensures seamless integration into hospital, rehabilitation, and nutrition workflows.

Q-NRG is ideally suited for departments such as dietetics, clinical nutrition, endocrinology, delivering accurate, actionable metabolic data to optimize nutritional support.

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1 ESPEN guidelines on clinical nutrition in the intensive care unit. Singer P, et al. Clin Nutr. 2018

2 Indirect calorimetry in nutritional therapy. A position paper by the ICALIC study group. Oshima T, et al. Clin Nutr. 2017

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

4 Evaluation of the accuracy and precision of a new generation indirect calorimeter in canopy dilution mode. Delsoglio M, et al. Clin Nutr 2020

5 The clinical evaluation of the new indirect calorimeter developed by the ICALIC project. Oshima T, et al. Clin Nutr 2020

Main Features

Q-NRG is the next-generation solution for indirect calorimetry developed to meet the demands of today's fast-paced clinical environments while maintaining uncompromising accuracy.

Discover how Q-NRG combines clinical precision with operational efficiency to redefine standards in metabolic care.

INDIVIDUAL METABOLIC ASSESSMENT

Utilizing Gold Standard Indirect Calorimetry, Q-NRG delivers precise, real-time metabolic data that accurately reflects a patient's current physiological condition, particularly during periods of illness or recovery.
This high level of accuracy is essential in clinical nutrition, allowing for personalized energy prescriptions and continuous monitoring to adapt nutritional therapy as patient needs evolve.

INDIRECT CALORIMETRY, A GOLD STANDARD

Q-NRG is built on over 30 years of expertise in metabolic system design. Its accuracy has been confirmed through international multicenter in-vitro and in vivo studies, demonstrating excellent agreement vs. mass spectrometer measurements([3,4]).

FAST AND EASY OPERATION

Q-NRG is engineered to minimize operation and measurement time([5]).
Designed for clinical efficiency, Q-NRG requires no warm-up or manual calibration, allowing immediate use at the point of care. Its intuitive touchscreen interface simplifies operation, making accurate metabolic assessment fast and easy within busy clinical workflows.

SIMPLE CLEANING AND MAINTENANCE

Q-NRG's rounded surfaces and single-use accessories are designed to support clinical hygiene standards, making cleaning fast and straightforward.
This minimizes the risk of cross-contamination while reducing the time and effort required for routine maintenance in care settings.

DESIGNED FOR CLINICAL PRACTICE

Q-NRG is designed with clinical efficiency in mind, featuring an intuitive workflow that guides users step by step with clear on-screen instructions and easy access to test data.

Its compact, portable design allows for effortless transport between rooms, ensuring seamless integration into daily clinical routines.

LATEST TECHNOLOGIES, COMPACT DEVICE

Q-NRG is a compact, lightweight, and battery-powered device equipped with a 10-inch LCD touchscreen for straightforward, user-friendly operation.

Its versatile connectivity, including Bluetooth, USB and RS-232 ensures smooth integration with PCs, printers, and hospital information systems, supporting efficient data management in clinical environments.

AFFORDABLE

Q-NRG delivers the high-performance capabilities of traditional metabolic systems at a significantly lower cost, making advanced metabolic assessment more accessible and economically viable for a wide range of healthcare settings.

This cost-effectiveness allows clinicians to implement accurate, evidence-based nutrition care without compromising on quality.

Lateral USB ports allow easy data export for efficient data management.

Connections are designed for simplicity, with ports easly accessible to enable fast and effortless test setup.

Q-NRG's compact and portable design allows for effortless transport between rooms.

One tool for many applications

Q-NRG provides comprehensive metabolic testing delivering accurate assessments across a wide variety of clinical settings. It supports either a canopy hood or face mask, ensuring flexibility and precision in everyday clinical practice.

INDIRECT CALORIMETRY

CANOPY MODE REE

Indirect calorimetry using a canopy hood is the Gold Standard for measuring REE in spontaneously breathing subjects.

Exhaled gases are collected and diluted within a canopy hood, and by measuring dilution flow along with O_2 and CO_2 concentrations, the system accurately calculates VO_2 and VCO_2.

The canopy hood is available in a small or large size and utilizes a single use veil and an anti-bacterial filter to avoid cross contamination.

MASK MODE REE

REE measurements can be performed using a soft silicone rubber oronasal face mask that ensures confort whenever a canopy hood is not suitable, for example with claustrophobic patients.

The face mask 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 O_2/CO_2 concentration.

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

Resting Energy Expenditure (REE)

Resting Energy Expenditure (REE), or **resting metabolism**, is the amount of energy the body requires at rest to sustain vital functions such as breathing, circulation, temperature regulation, and organ activity.

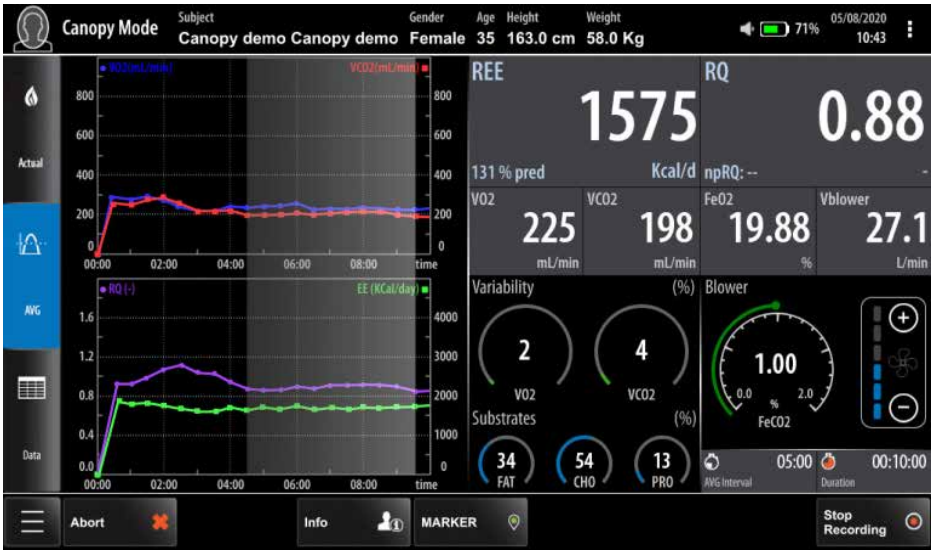
As the largest component of daily energy needs, REE forms the **foundation for determining accurate nutritional requirements**.

In clinical settings, precise REE measurement is essential for tailoring nutrition plans, especially when patient needs vary due to illness, recovery, or metabolic disorders.

Obtaining this important value requires no efforts. A standard test only lasts 15 minutes. **Quality control** gauges are displayed in real time and at test conclusion showing the VO2 and VCO2 variability. With the "Best 5 min" button users can automatically select the steady state interval for final REE calculation based on the quality control results.

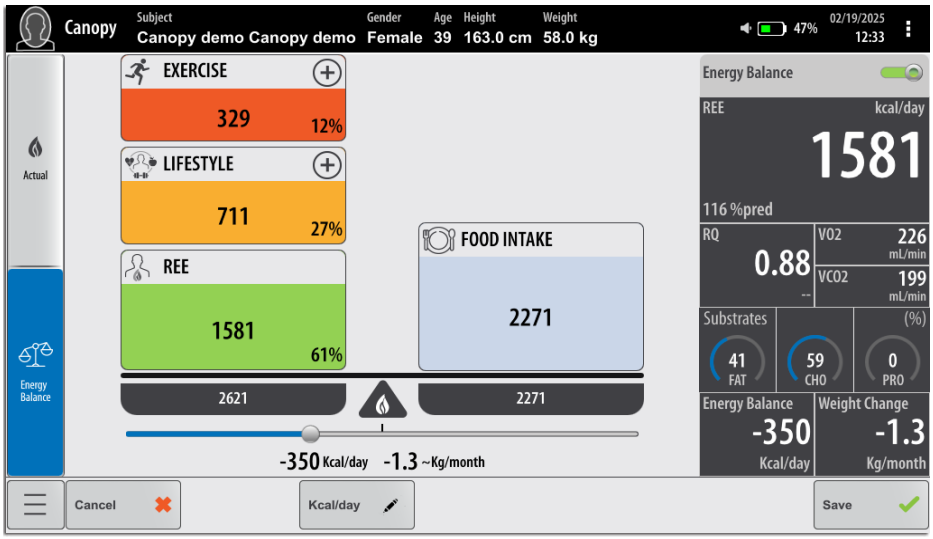
Achieving the right **Energy Balance**, the relationship between energy intake and expenditure, is key to effective weight management and recovery.

By combining direct REE measurement with estimates of lifestyle and activity levels, Q-NRG empowers evidence-based, personalized nutrition planningsupporting better metabolic health and long-term patient success.



Real Time dashboard of Canopy test shows metabolic and ventilatory data as well as widgets to verify Quality Control and understand whenever test is completed.

Using the Best 5 min button, the 5 continous minutes with the lowest VO2 and VCO2 variability are selecterd and used for final results calculation.



When Energy Expenditure related to Exercise and Lifestyle activities is entered, this is automatically added to the measured REE to compute subject's Energy Balance.

Options and Accessories

OMNIA SOFTWARE

Q-NRG is optionally compatible with OMNIA, COSMED's comprehensive software platform designed to support the full COSMED product ecosystem. With a **clean, intuitive interface**, OMNIA streamlines metabolic testing procedures, reduces training time, and delivers real-time insights, making it a powerful tool for professionals in diverse healthcare settings. When paired with Q-NRG, data can be easily transferred via **USB** or **Bluetooth®,** allowing seamless integration into clinical routines.

The device can also be remotely operated as a full metabolic cart through OMNIA, providing centralized control and real-time monitoring from a PC.

Key **customization** and **functionality** features include:

- Automated interpretations with user-defined placeholders
- Customizable printouts and reports
- Flexible export formats (PDF, XML, XLS)
- User defined view to focus on main parameters
- Advanced edit for research applications
- Advanced Energy Balance

OMNIA is built with data protection at its core, fully **compliant with GDPR and HIPAA standards.**

It features encrypted data storage, role-based access controls, and backup reminders to prevent data loss and ensure patient confidentiality.

Its network-ready configuration allows for easy data sharing across departments or institutions, supporting centralized data management.

OMNIA also integrates seamlessly with HIS/EMR systems via **HL7**, **DICOM**, and **GDT** protocols, ensuring smooth communication within existing clinical infrastructures.

Available as a **stand-alone or network** solution, OMNIA is a scalable and secure platform that empowers professionals to focus more on patient care and less on system complexity.

Real time data in Canopy Mode using the optional OMNIA Software. Intuitive gauges help users with quality control and results interpretation.


COSMED
Rome - ITALY
www.cosmed.com

Test date 10/12/2018 Time 14:50

Subject	ID	Gender	Age	D.O.B.	Weight	Height	BMI (kg/m2)
Canopy demo Canopy demo	123	Female	34	02/26/1985	58.0 Kg	163.0 cm	21.8

Predicted Set	Test Position	Agitation	Sedation	Body Temp (°C)	Resting period	Fasting period	UN (g/day)
Harris/Benedict	Undefined	N/A	N/A	0	N/A	N/A	0

Indirect Calorimetry Report - Canopy Test

REE 1575 Kcal/day
116 %pred

RQ 0.88
npRQ: --

Vp 27.1 L/min

FeCO2 1.00 %

FeO2 19.88 %

AVG Interval 05:00 min

Duration 00:10:00 min

VO2 225 mL/min

VCO2 198 mL/min

Substrates

FAT	CHO	PRO
41 (%)	59 (%)	0 (%)

Variability

VO2	VCO2
2 %	4 %

Operator Notes

Operator:

Login: Administrator Page 1 / 2 Q-NRG+ SN: 2018060015

PDF printout of Canopy test shows test results in a comprehensive format to facilitate metabolic assesment.

CANOPY TESTING SET

Includes hood w/ adapter and corrugated tube. Available in two sizes (large or small) can fit adults and childreen.

MASK TESTING SET

Includes two oronasal masks in silicone (S/M sizes), 1 head cap, 1external flowmeter and 1 flowmeter adapter.

GAS CALIBRATION

Required for the monthly gas calibration. It includes a 3,6 Liter cylinder with certified gas mix (16% O_2, 5% CO_2, N_2 bal) and pressure regulator.

FLOW/VOLUME CALIBRATION

Required for the monthly calibration, includes a 3L certified calibration syringe and adapters.

CART

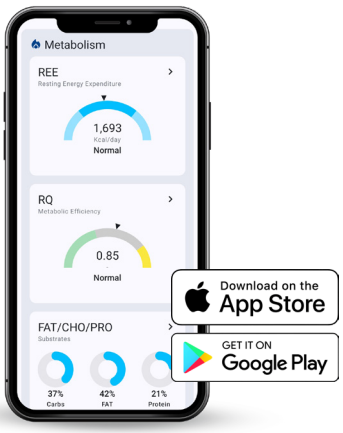
Compact cart with medical grade wheels, includes gas cylinder holder and accessory basket, perfect for moving the system between beds or hospital departments.

CLAMP

Pole/rail clamp with 100 mm VESA mounting plate to be used for securing Q-NRG+ on any pole or rail setting within an hospital setting.

MY NRG APP

My NRG App is a COSMED free app to retrieve data from Q-NRG and store into a personal database and/or sync with HealthKit® or Google Fit™. The app allows users to track their progress over time, easily comparing metabolic measurements before and after training programs or nutrition plans. This makes it an ideal companion for both clinicians and individuals seeking to monitor and optimize their metabolic health.



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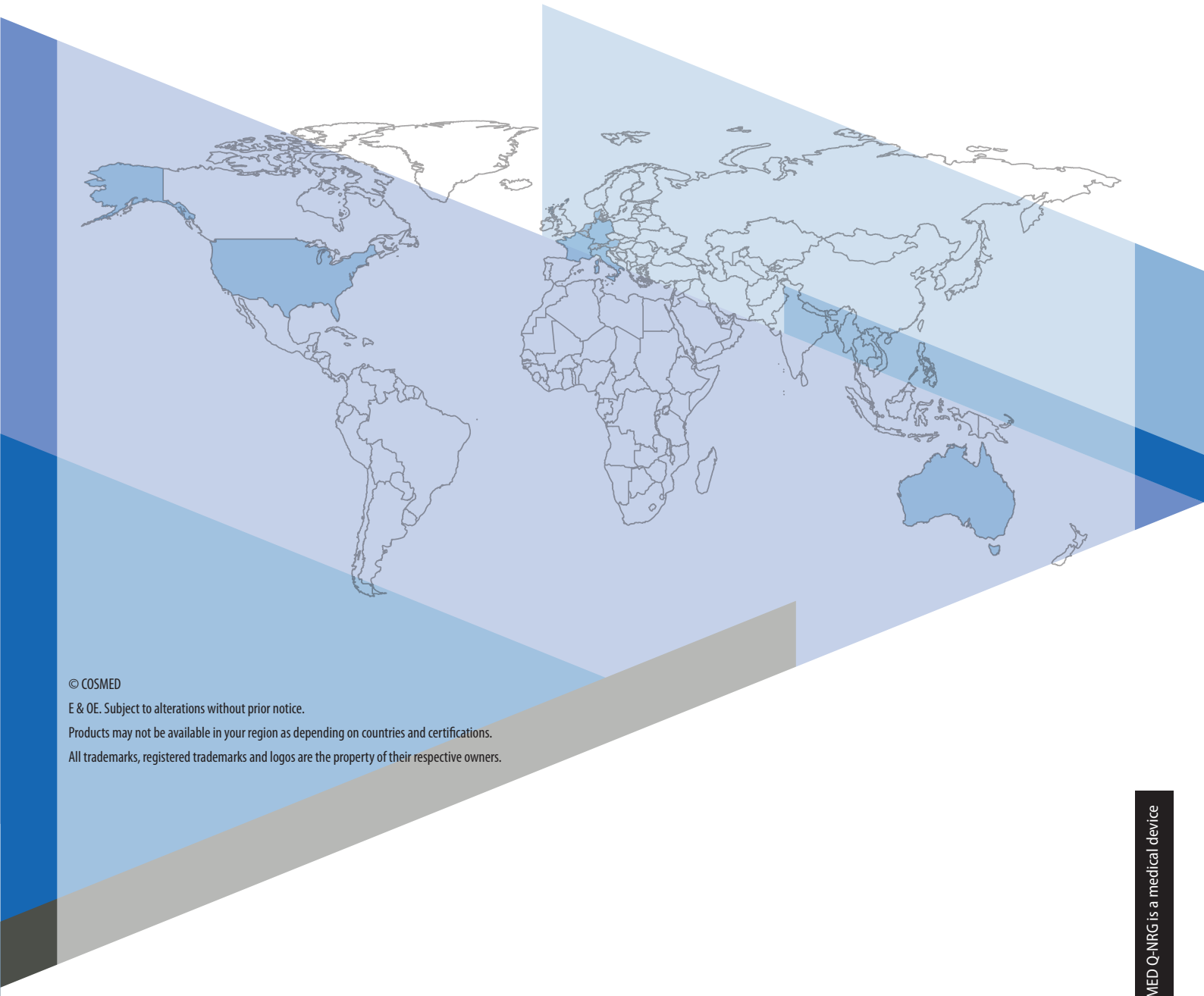

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To know more:

COSMED Q-NRG is a medical device

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