



The first Desktop Indirect Calorimetry System with research and clinical grade accuracy

- ▶ Accurate measurement of Resting Energy Expenditure using ventilated canopy (dilution technique)
- ▶ Monitor patient's energy requirements simply and effectively
- ▶ Affordable, portable, compact, and easy-to-use with built-in printer
- ▶ Validated vs. Gold Standard technique



The Fitmate GS is the first portable desktop indirect calorimeter using the dilution technique for accurate measurements of Resting Energy Expenditure (REE, RMR) in a clinical setting. Provided with a compact blower and a canopy hood, it is the ideal companion for bedside applications and interdisciplinary nutritional monitoring by hospital Nutrition Support Teams (NST).

The use of a ventilated hood make the test highly comfortable, allowing patients to breathe freely. The ventilated hood can also be used for long periods of time with minimal discomfort and no air leaks from the system.

The Fitmate GS allows **reliable**, accurate, easy, and quick measurement without the need of consumable and complicated calibration procedures with gas cylinders.

Applications

The nutritional care and management of bed-ridden and critically ill patients requires effective nutritional support in to avoid malnutrition, improve nutritional status, and prevent negative outcomes associated with overfeeding or underfeeding (impaired immune function, impaired ventilatory drive, prolonged ventilatory dependence, increased infectious morbidity, mortality, etc.).

Inappropriate nutritional support (under- or overfeeding) can have harmful health consequences for the patient and a significant impact on costs of treatment, rate of complications, increased length of hospital stay, and mortality.

The success of nutritional support relies, therefore, on the accurately determining energy requirements and preventing an increase of negative cumulative balance so that adequate energy and nutrients can be provided to the patient.

While prediction equations are generally considered not as accurate as required for predicting the energy expenditure in a clinical setting, Indirect Calorimetry is the "Gold Standard" for determining caloric needs in bed-ridden patients and is indispensable for Nutrition Support Teams providing nutrition care to patients in different departments of the hospital.

The Fitmate GS is the ideal companion for determining proper nutrition support within different application fields such as:

- ▶ Hospital Nutrition Support Teams (NST)
- ▶ Critical Care/Intensive Care Units
- ▶ Burn units
- ▶ Eating disorders, Anorexia/Cachexia, Bariatric surgery
- ▶ Nutritional support in home care, long term care facilities, nursing homes

Accurate Resting Energy Expenditure

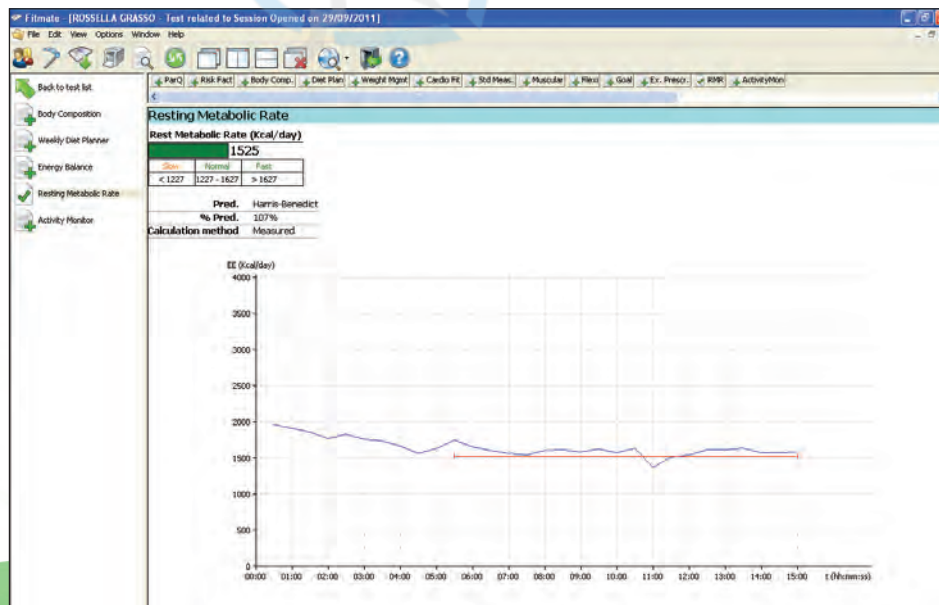
The Fitmate has been validated for the measurement of Oxygen Consumption (VO_2) and Resting Metabolic Rate (RMR/REE). It measures VO_2 and assumes a constant Respiratory Quotient (RQ), set at 0.85 (or user-defined). Oxygen uptake (VO_2) is measured in real time, with data displayed every 30 seconds. RMR testing is simple and fast, with a report printout in seconds via the built-in thermal printer.



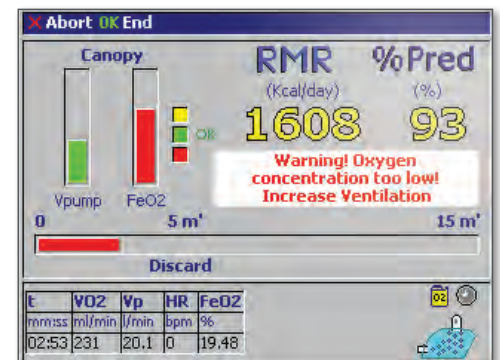
The bubble shape and removable blanket allows for easy cleaning and disinfecting of the canopy hood with a soft cloth and a non-alcoholic detergent



Five different flow rates can be set depending upon the subject's weight



Once assessment is completed data can be downloaded on the PC, measurement can be reviewed i.e. selecting custom REE interval for better steady state detection. The software allows users to save all data, make trends etc.



All measurements can be viewed in real time on the LCD screen. Warning alerts are prompted in case levels of ventilation or oxygen concentration are out of range.

*Option

The Fitmate GS ideally complements the use of a full VO_2/VCO_2 indirect calorimetry laboratory (i.e., COSMED Quark RMR). The Fitmate GS allows fast, flexible and more frequent baseline monitoring of energy requirements of all spontaneously breathing patients.

Ventilated Canopy Hood

The Fitmate GS comes with a large and comfortable transparent hood, connected to a blower that insures air flow inside the hood. The blower pumps air in at a defined flow, chosen among five different flow rates dependent on subject weight.

The patient lies in bed and comfortably breathes inside the hood, where the expired gas dilutes with room air. A sample of this mixture is then conveyed to the turbine and sampling line in order to obtain ventilation parameters and oxygen concentration.

The Fitmate GS screen prompts messages and security alerts when ventilation is not detected or when oxygen concentration is too low or high. In this case, the flow rate can be regulated by the blower in order to keep a steady concentration of O_2 inside the hood.

For safety reasons, the blower is equipped with 4 AA batteries (not rechargeable) to prevent failures due to lack of power.

REE with Face Mask

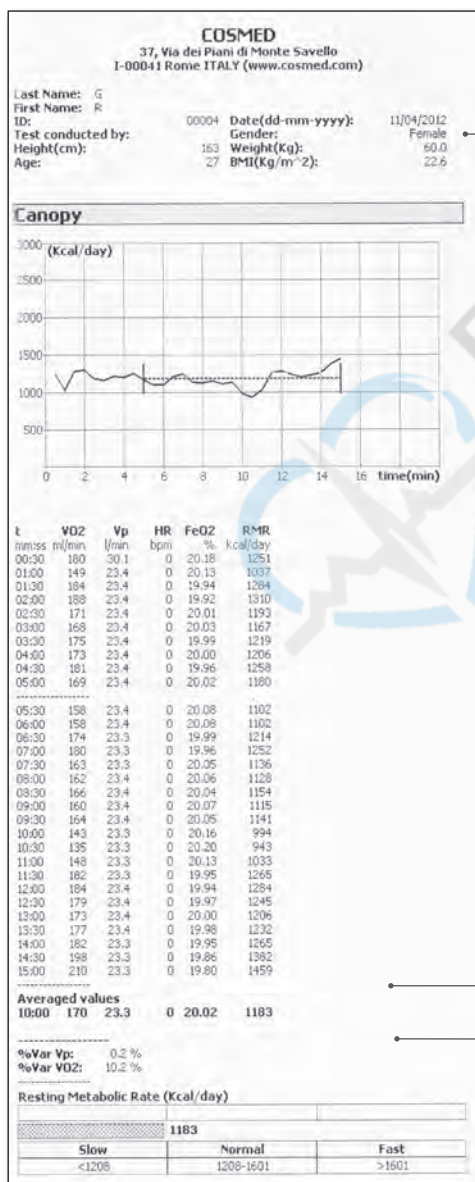
Optionally, simple breath-by-breath resting measurements can be performed with face masks. The Fitmate GS can be used either with disposable masks (universal size) or multi-use ergonomic silicone masks (5 sizes, both adult and pediatric).



RMR measurement can also be performed optionally using face masks (disposable or reusable)



Universal disposable mask and multi-use ergonomic silicone masks in 5 sizes (large, medium, small, extra small, petite)



Patient Data

REE Graph
Kcal/day vs. Time

Discarded Interval

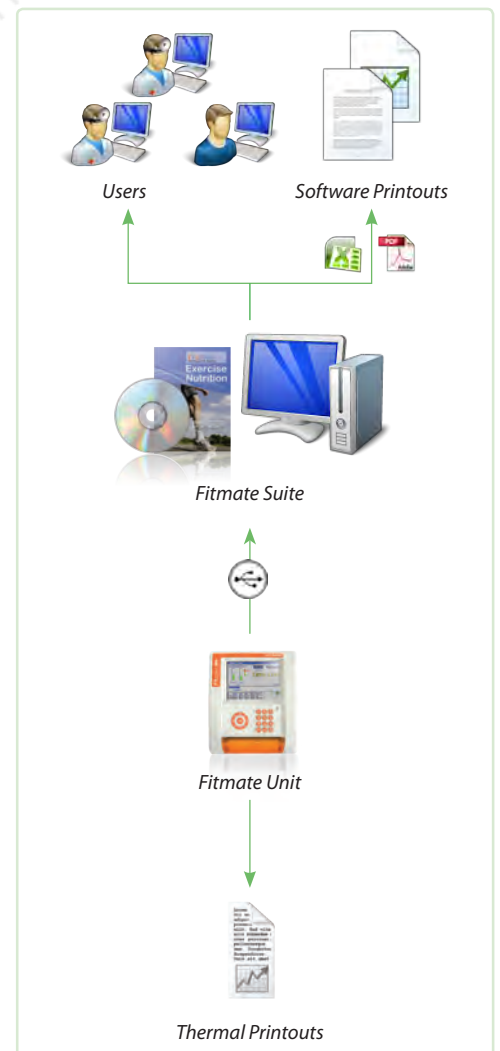
Measurement Interval

Averaged Values

Quality Control Indexes

Actual results compared with Predicted values

Printout sample of RMR measurement provided by the integrated printer upon completion of test



References

1. Nieman D, et al. Validation of COSMED's Fitmate™ in measuring oxygen consumption and estimating resting metabolic rate. *Research in Sports Medicine*, 14: 1–8 (2006)
2. Lupinski L, Singer P, et al. Comparison between the Fit Mate metabolic system and the Deltatrac II metabolic monitor in the measurement of resting energy expenditure and oxygen consumption in non-ventilated patients. *Clinical Nutrition Supplements*, 5(2): 65-66 (2010)



With an estimated lifespan of 12-18 months, the O₂ cell comes in a sealed bag and is easy to replace. Cell efficiency can be checked at anytime by the software.

Technical Specifications

Tests	w/Unit	w/Software
Nutritional Assessment		
Resting Energy Expenditure (REE, RMR)		•
Energy Balance		•
Physical Activity Monitoring*	estimated	integrated w/ Lifecorder
Other Measurements		
Body Composition (skinfold)	• (3 sites)	• (3 and 7 sites)
Standard Measurements (Blood Pressure, WHR, Resting Heart Rate, BMI)	•	
Diet Software w/Weekly Meal Planner		•
Framingham Index (Risk Analysis)		•

REE Measurement (Oxygen Consumption)

Sensor Type	GFC (Galvanic Fuel Cell)
O ₂ Measurement Range	0-25%
Sampling Rate	30 sec / 60 sec
Calibration	Automatic on room air
Warm-up Time	10 seconds
REE Accuracy	± 2%
O ₂ Accuracy	±0.02%
O ₂ Sensor Lifespan	12-18 months
Max REE/RMR Testing Time	50 min

Flowmeter

Type	Bidirectional digital turbine Ø 28mm
Flow Range	0.08-20l/s
Flow Resistance	<0.6 cmH ₂ O/l/s @ 14l/s
Accuracy Flow/Volume	±2%

Hardware (Unit)

Dimensions & Weight	24 x 20 x 8 cm (9.4 x 7.8 x 3.1 in) / 1.5kg (3.3 lb)
Display	Color LCD 320 x 240 pixels
Printer	High speed thermal printer 12 cm (4.7 inches)
Memory Capacity	200 tests (5 min per each REE measurement)

Hardware (Canopy)

Dimensions	46.8 x 32 x 22 cm (18.4 x 12.6 x 8.7 in)
Canopy Volume	18,7 l
Flow Rate Range	12-44.4 l/min
Blower Internal Battery	4 AA

Standard Packaging Includes

Fitmate GS unit, AC/DC adapter, USB cable, Fitmate PC software (CD-rom), body meter, oxygen sensor, canopy hood, canopy blower, control board

Available Languages

Firmware	Italian, English, Spanish, French, German, Portuguese, Greek, Dutch, Turkish, Chinese, Korean, Japanese, Finnish, Polish, Russian, Slovenian
Software	Italian, English, Spanish, French, German, Portuguese, Greek, Dutch, Chinese, Finnish, Russian, Slovenian

PC Configuration Required

Pentium or faster, Windows XP, VISTA (32/64 bit), Windows 7 (32/64 bit) 128 Mb RAM or more, USB, CD-rom reader, 80 Mb on HD space available

Safety & Quality Standards

Equipment complies with MDD (93/42 EEC); EN 60601-1 (safety) / EN 60601-1-2 (EMC) FDA 510(k) cleared.

COSMED is an organization whose quality management system is certified by CERMET according to UNI EN ISO 9001:2008 and UNI EN ISO 13485:2004.



COSMED USA Inc. California

1850 Bates Avenue
Concord, CA 94520
Phone +1 (925) 676-6002
Fax +1 (925) 676-6005

COSMED USA Inc. Illinois

2211 North Elston Avenue #305
Chicago, IL 60614
Phone +1 (773) 645-8113
Fax +1 (773) 645-8116

COSMED srl Headquarters

Via dei Piani di Monte Savello 37
Rome 00041 ITALY
Phone +39 06 931-5492
Fax +39 06 931-4580

Toll Free 800 426-3763 info@cosmed.com

cosmed.com