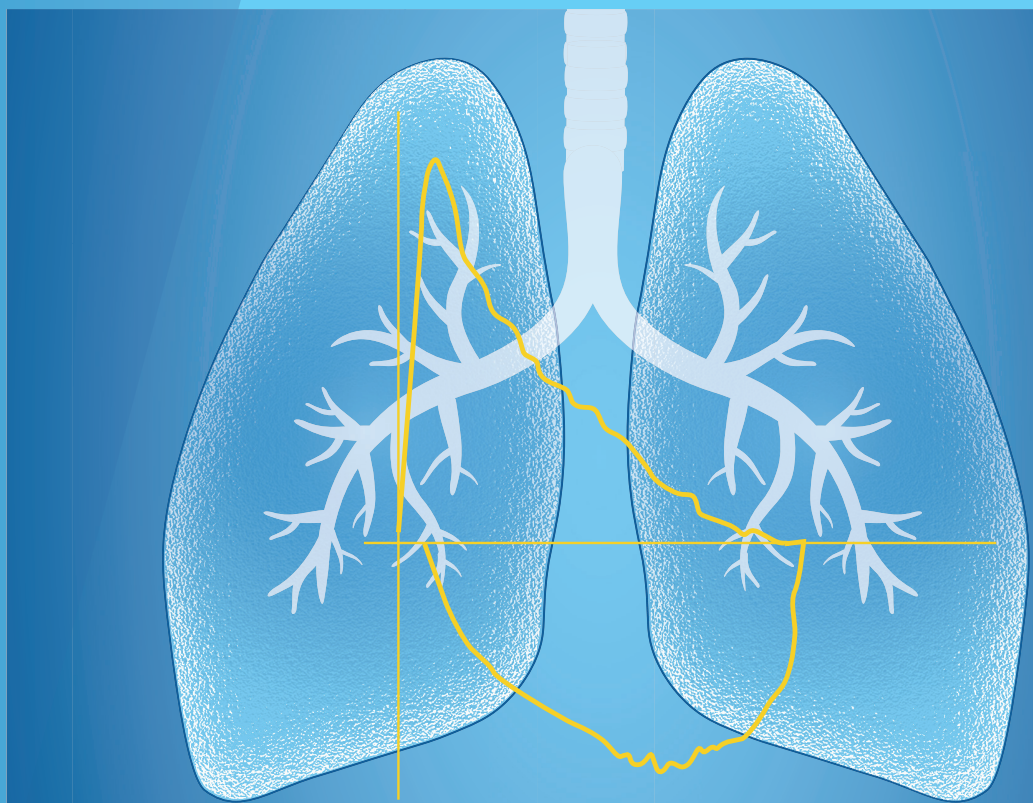


# ECO MEDICS

## PULMONARY FUNCTION TESTING



# PRECISION BREATH BY BREATH

**ECO MEDICS** develops and manufactures high precision diagnostic devices for pulmonary function testing with more than 20 years of experience.

Based in Duernten, Switzerland, the company focuses on the analysis and detection of small airway disease and lung

inflammation. The innovative design of **ECO MEDICS** products and their continuous improvement are supported by cooperation with leading scientists from around the world in order to meet the needs of the international community of pulmonologists.

## ECO MEDICS MILESTONES

- 1999** Foundation of **ECO MEDICS** and presentation of **ANALYZER CLD** for FeNO testing at ERS congress
- 2002** CE MDD approval for **EXHALYZER®D** for infant pulmonary function tests
- 2003** CE MDD approval for **ANALYZER CLD 88 SERIES** with **DENOX 88**
- 2009** Launch of **SPIROWARE®** 3.0
- 2012** Launch of N2MBW test for **EXHALYZER®D**
- 2017** Introduction of infant SF6 washout in **SPIROWARE®** 3.2
- 2020** Launch of **SPIROWARE®** 3.3 including Spirometry
- 2022** MDR approval for **EXHALYZER®D**
- 2024** Launch of **EXHALYZER®Plus** with **SPIROWARE®** 4.0 for improved user-friendliness



< **2 mm**

is the diameter of small airways<sup>1</sup>

**40** times greater

is the surface of the small airways than of the central airways<sup>2</sup>

**300** million

alveoli reside in an adult lung, each ~0.2 mm in size<sup>3</sup>

**85 m<sup>2</sup>**

is the surface of the alveolar-capillary membrane<sup>3</sup>

> **330** million

people suffer from asthma worldwide<sup>4</sup>

> **250** million

COPD cases worldwide<sup>5</sup>

Every **10** seconds

a person dies of COPD<sup>5</sup>

> **70'000** people

are living with Cystic Fibrosis worldwide<sup>6</sup>

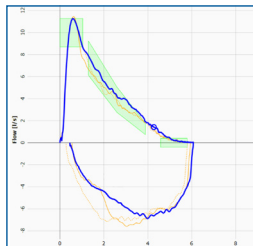
~ **500'000** people

are estimated to be affected by Primary Ciliary Dyskinesia (PCD)<sup>7</sup>

# EFFICIENT PULMONARY FUNCTION TESTING FOR INFANTS, CHILDREN AND ADULTS

Information on the small airways, central airways and inflammation level can be revealed with the **ECO MEDICS** devices **ANALYZER CLD 88** Series with **DENOX 88** and **EXHALYZER®Plus**. All tests are non-invasive and require only minimal cooperation.

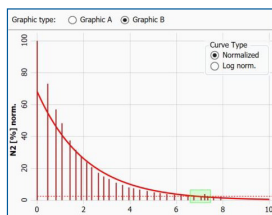
## GENERAL LUNG CONDITION



Spirometry is the most widely applied pulmonary function test and gives insight into general lung health or disease status. It measures the maximum volume of air an individual can inspire and expire with maximum effort. Spirometry measurements are based on the ultrasonic transit-time measurement technique, a benchmark in pre-

cise flow and volume measurement and enable accurate and reliable determination of the patient's pulmonary condition. Changes in the gas composition, turbulence, humidity or temperature of the respiratory flow do not influence the accuracy of the measured flow and volume.<sup>8,9</sup>

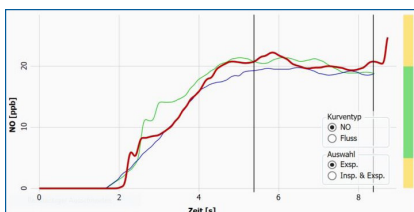
## EARLY LUNG DAMAGE AND VENTILATION INHOMOGENITY



Small airways seem to present the region of initial pathology in chronic obstructive pulmonary disease (COPD) and cystic fibrosis (CF). They can be extensively damaged before the occurrence of any symptoms. Therefore, early detection is very important for the further course of the disease. The inert gas washout method, using the single

or multiple breath technique, allows the detection of early stages of lower airway disease and associated ventilation inhomogeneity in the otherwise difficult to access small airways. The nitrogen washout is typically applied for children and adults, while the SF<sub>6</sub> washout is the recommended method for infants.<sup>10,11</sup>

## ASSESSMENT OF FeNO IN EXHALED BREATH



Nitric oxide (NO) is a biological marker of eosinophilic airway inflammation. It is produced in the lung and present in exhaled breath. As fractional exhaled NO (FeNO), the fraction from the small airways, has been found to be elevated in asthma patients, FeNO measurements can be used to diagnose asthma, to monitor the response

to anti-inflammatory medications, to verify adherence to therapy and to predict upcoming asthma exacerbations. FeNO can be easily measured by chemiluminescence, the reference method for FeNO testing. The test is simple and quick to perform and suitable for all ages, from infants to adults.<sup>12,13</sup>

## NASAL NO IN PCD SCREENING

Nasal nitric oxide (nNO) is produced in the sinus cavities and typically found at high levels. As nNO levels are extremely low in Primary Ciliary Dyski-

nesia (PCD) patients, measurement of nNO is a helpful tool in PCD screening with very high specificity.<sup>14</sup>

## ALVEOLAR NO (CaNO)

The concentration of alveolar NO can be determined by measuring NO at different flows and applying a mathe-

matical model. Alveolar NO can serve as a valuable indicator of inflammation within the small airways.<sup>13</sup>



## COMPLIANCE

All applications are based on and compliant with the guidelines published by the European Respiratory Society (ERS) and American Thoracic Society (ATS).<sup>8,9,10,11,12,13,14</sup>



## CONSISTENT QUALITY

Manufacturing in accordance to ISO 9001 and ISO 13485. The **ANALYZER CLD 88** Series with **DENOX 88** and **EXHALYZER®Plus** are approved for clinical use in Europe. All devices are manufactured in Switzerland.



## COMPETENT SERVICE

Service specialists from **ECO MEDICS** directly or sales partners around the world are always close to our customers and ready to provide quick support and service.

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