

# **artiCHEST**<sup>®</sup> trainer

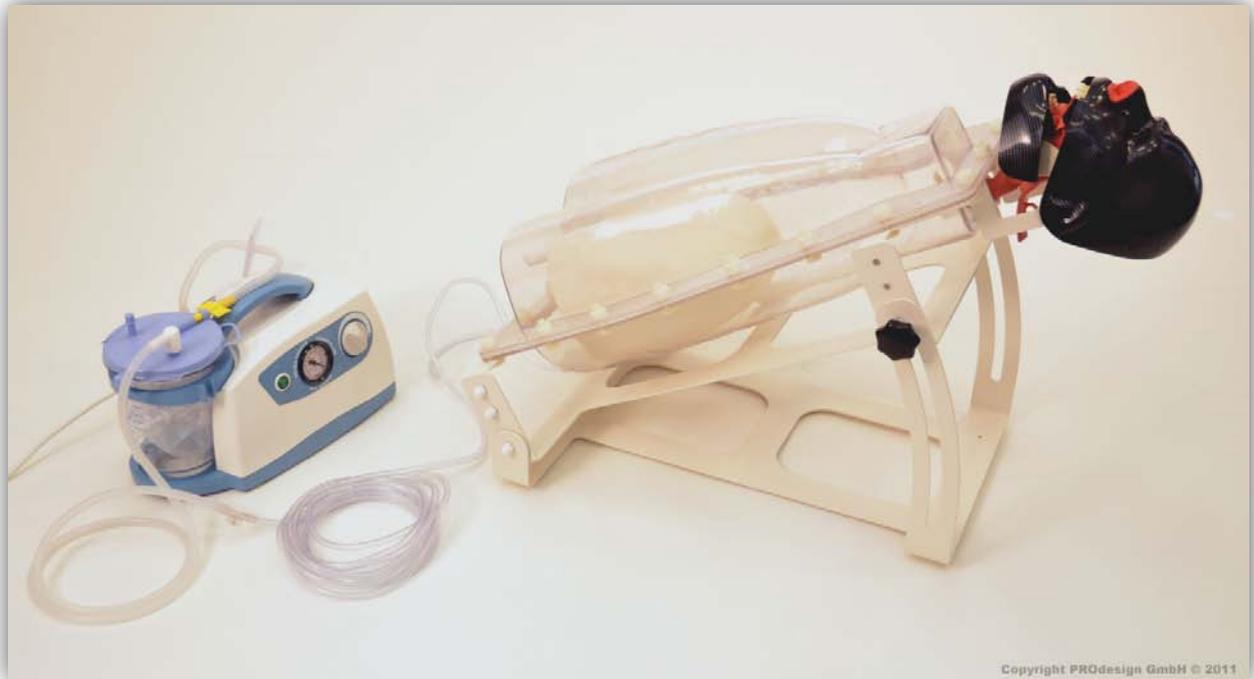
## Product Description

**artiCHEST** *trainer*  
with R.I.B.-Simulator (by Dr. Hackl)

manufacturer:

**PRO** design  
Gesellschaft für Produktentwicklung mbH

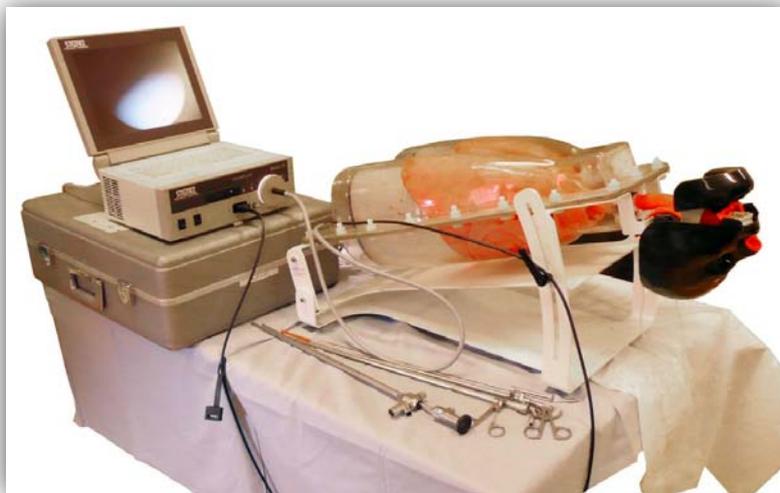
## 1. Description and Use



### 1.1 Training and Simulation

- artiCHEST trainer is a new, innovative training and simulation system for endoscopic procedures
- Allows, for the first time, the simulation of realistic situations by different intervention possibilities at a three-dimensional and fully expanded lung (interventional bronchoscopy)
- R.I.B.-Simulator is the abbreviation for “**R**ea**I**nterventional **B**leeding” – Simulator and the idea was formed by Dr. Martin Hackl, head of the bronchoscopy unit at LKH Natters, Austria  
The R.I.B.-Simulator is part of the entire artiCHEST trainer system
- With various extension possibilities and additional equipment, the training modules can be compiled according to local requirements
- With the assistance of the artiCHEST trainer you will be able to develop algorithms and application training sequences of all interventional procedures in the field of bronchoscopy, especially at the management of endobronchial haemorrhages.
- Realistic use of rigid bronchoscopic instruments, such as stent measuring forceps, optical forceps, foreign substance alligator forceps, etc.

- Training possibilities in conventional and interventional bronchoscopy (target groups: pulmonologists, internal specialists with additional qualification in the field of pulmonology, otolaryngologists and respiratory paediatricians) :
  - Inspection and lavage procedures in the bronchial tree
  - All types of biopsies including sampling from the mucous, from the lung periphery (transbronchial biopsy) or from inserted tumour tissue
  - Needle biopsies, such as TBNA and from inserted tumor tissue
  - Cryobiopsies by means of the cryosurgical probe taken from the central part of the lung or from the lung periphery
  - Application possibilities of thermal procedures such as hot biopsy forceps, electrocautery, snares, electric cutters
  - Use of the APC (Argon Plasma Coagulator)
  - Use of endobronchial blocking balloons or flexible tubes
  - Implantation and control of different silicone or metal stents
  - Training in removal of foreign bodies ( Use of foreign substance recovery implement and alligator forceps)
  - Different techniques of mechanical debulking of sutured "tumors"



- Realistic use of rigid bronchoscopic instruments, such as stent measuring forceps, optical forceps, foreign substance alligator forceps, etc.
- Simulation of different types of haemorrhages with the use of a special hygienic faultless artificial blood. You can prepare the lungs with an inserted flexible tube system to mimic emergency and life threatening situations caused by bleedings.
- Testing and application of new methods in the field of bronchoscopy, such as transbronchial biopsy (TBB) by means of the cryoprobe or valve implantation for endoscopic lung volume reduction (ELVR)

- Training of air-jet ventilation
- Clinical practice of all types of intubation e.g flexible and rigid intubation, double lumen intubation, single lung ventilation with blocking ballons (target groups: anaesthesiologists, intensive care specialists, pulmonologists, internal specialists with additional qualification in the field of pulmonology, otolaryngologists and respiratory paediatricians)
- You can create an Health Care Team Training to increase awareness and role clarity. The examiners and their teams can train different operational sequences and solve e.g. emergency cases as a team and will enhance performance on Patient Safety and quality management.

## 1.2 Ethical Aspects

- Replaces animal experiments at in vivo narcotised pigs (ethical aspects, legal barriers, costs, availability, hygiene, veterinarians, anaesthesia, experiment duration, parameterisation, disposal, etc.) and allows a realistic training of bronchoscopic interventions and many other interventions executed at the lung and the trachea.
- Uses lungs of slaughter animals which, shortly after having been slaughtered, still provide for a very realistic behaviour
- Even the use of sheep lungs is alternatively possible with adapted chest model

## 1.3 Three-dimensionality

- Anatomically formed thoracic bowl-shaped devices are similar to the human chest and have been developed for porcine lungs (organs have to be procured as fresh organs on site / locally)
- The most important factor for biopsies or needle biopsies is the genuineness effect with the natural mucous membrane and the lung volume for three-dimensional interventions as well as ventilation possibilities.

## 1.4 Technical advantages of the new overall system

- Transparent bowl-shaped devices allow a visual inspection and control of the consolidated training lung in different types of intervention
- The replacement of the training lung is uncomplicated and can be rapidly executed
- The artificial diaphragm simulates anatomic similar conditions and forces the lung into its initial position
- Combination with external ventilation by means of jet ventilation is possible

- Possibility to connect the porcine lung via flexibly-arranged latex ring membrane connector. This allows to easily reach the large bronchial tubes by means of the rigid bronchoscope
- Firm, angle-adjustable steel frame, which ensures the use of the model irrespective of the existing desk height and of the different body heights
- Due to the height adjustment that is offered by the model, extremely comfortable ergonomic access possibilities result for all kinds of interventions
- Intubation head replication provides for all intubation possibilities including real anatomic conditions (also removable)
- The training model may be used even without special intervention rooms, such as endoscopic room or operating room, being necessarily available
- The air extraction pump, which is included in the delivery, allows the operation even of two R.I.B.-Simulators / Thorax Phantoms
- The hand pump, which is included in the delivery, allows to execute a leak test of the lung organs (in case of lacerations) prior to the preparation and application

## 1.5 Users of the new artiCHEST trainer – System

Professional groups:

- Pulmonologists
- Internal specialists with additional qualification in the field of pulmonology
- Anaesthesiologists
- Intensive care specialists
- Otolaryngologists
- Respiratory paediatricians
- Thoracic surgery

Hospital training centres:

- Departments of Pneumology
- Internal medicine
- Intensive care
- Anaesthesia
- Thoracic surgery
- Medical Simulation Centres

## 1.6 Medical References and Reference Centres

- TILAK GesmbH Innsbruck LKH Natters Pneumology
- Participation in the training course Pneumouupdate Innsbruck 2009, 2010
- Participation in the training course for interventional bronchoscopy of the Austrian Society of Pneumology -ÖGP 2010
- Oral Presentation 1st European Congress on bronchology



If you are interested in this revolutionary and future-oriented system, please feel free to either address your country representative or to contact us directly under:

PROdesign Gesellschaft für Produktentwicklung mbH  
Im Neuenacker 4, D-69253 Heiligkreuzsteinach, Germany  
fon: +49 (0)6220 92444 0  
fax: +49 (0)6220 92444 18  
[info@prodesign-entwicklung.de](mailto:info@prodesign-entwicklung.de)

To use our in-house development department, we kindly ask you to directly contact us or to address to your country representative.

## 2. Scope of Delivery and Content



### 2.1 The basic unit

With the basic equipment, you will be able to carry out entire training units in the field of interventional bronchoscopy and similar training measures.

You may easily and comfortably order, either via our representations or directly from our company, the required equipment for your training measures and seminars (except for the lungs).

If you are looking for special solutions, we offer you the possibility of an in-house development. Our development department will definitely be able to propose adequate solutions to your special applications.

#### 2.1.1 R.I.B.-Simulator / Thorax-Phantom

- anatomically formed thoracic bowl-shaped devices, consisting of 2 units, made out of transparent special plastic material
- Inside diaphragm to stabilise the lung position and anatomically correct formation of the lung, adjustable to 2 different positions for lungs of different sizes

- Elastomer-special sealing, can be purchased as spare part
- Screw set, 2 set-units, for the even fixing and sealing of the thorax phantom
- Flexible trachea connection (flexible latex ring membrane) for a realistic and material protecting passage of operation instruments
- Head replication, adjustable in inclination, highly realistic with many details, including mouth, nose, tongue, teeth, larynx and the initial part of the trachea
- Stable metal frame, adjustable to different angles (in order to adapt to the height of the desk, to the working position of the user and to the application requirements), including slip-resistant feet, allows a very simple operation

### 2.1.2 Air extraction pump

- Pump with standard bacteria filter, pressure regulation and individual instruction manual
- Special recipient for disposable bags
- 10 disposable bags to collect dripping lung liquid
- Tube set connecting pump to R.I.B.-Simulator
- Country-specific connecting cable
- Reserve tube set + filter suction pump
- Reserve sealing ring for collecting recipient

### 2.1.3 Accessories

- Side cutter (for cable retainer)
- 1x lubricant 1000ml (to be used for each lung application!)
- Cable retainer set (50 pcs.)
- Hand pump 220V/110V for lung leak test, including tubes
- Instruction manual in English language
- CD "lung preparation" (only available in English language)
- 2 stable transport box trolleys to place all components of the basic version,
  - to be able to transport by one single person
  - to transport via car and airplane
  - shock protected for critical components
  - stackable both boxes
- Various spare parts (tubes, screw set, filter, membrane)

### 3. Further Equipment

- Collecting tray for R.I.B.-Simulator / Thorax-Phantom (to be used also for preparation)
- Pre-configured bowl-shaped device for lung-punctuation training
- Disposable bacteria filter Set (3 pcs.)
- Disposable bag set (50 pcs.)
- Disposable tube set (pump and connection Thorax/Pump)

#### 3.1 Retrofit kit "duo-static-Thorax" – for the synchronous consolidation of 2 lungs (possible with 1 air extraction pump)

- Complete R.I.B.-Simulator  
(thorax, diaphragm, flexible trachea connection, Head replication, metal frame)
- Tube set with T-piece
- Individual transport box trolleys, stackable

#### 3.2 Haemorrhagic and tumour kit (for complete workshop day)

- Perforated silicone plug to carry through the blood conduits
- Single-use syringes for blood administration
- Tube set, between syringe and lung
- Special artificial blood, coagulating (special mixture)
- Application cartridges
- Perforating cannula
- Single-use scalpel
- Instant adhesive gel
- Surgical needles
- Instructions for simulating haemorrhage and tumours

#### 3.3 Workshop kit "basic equipment"

- Disposable coats
- Disposable gloves
- Preparation instrument "simple", set (scissors, haemostat, plastic scalpels)

- Preparation recipients
- Sewing material set
- Instant adhesive gel
- Cleaning cloths
- Cable retainer
- Lubricant, 1000 ml
- Side cutter
- Universal pliers

### 3.4 Workshop kit "retrofit"

- Disposal coats
- Sewing material set
- Instant adhesive gel
- 5 x Lubricant, 1000 ml
- Cable retainer

### 3.5 Cleaning set

- Cleaning agent for thorax bowls (for wet cleaning)
- Cleaning agent for vacuum pump (outside)
- Gloves, coats, mask
- Sponge, small brush, large brush