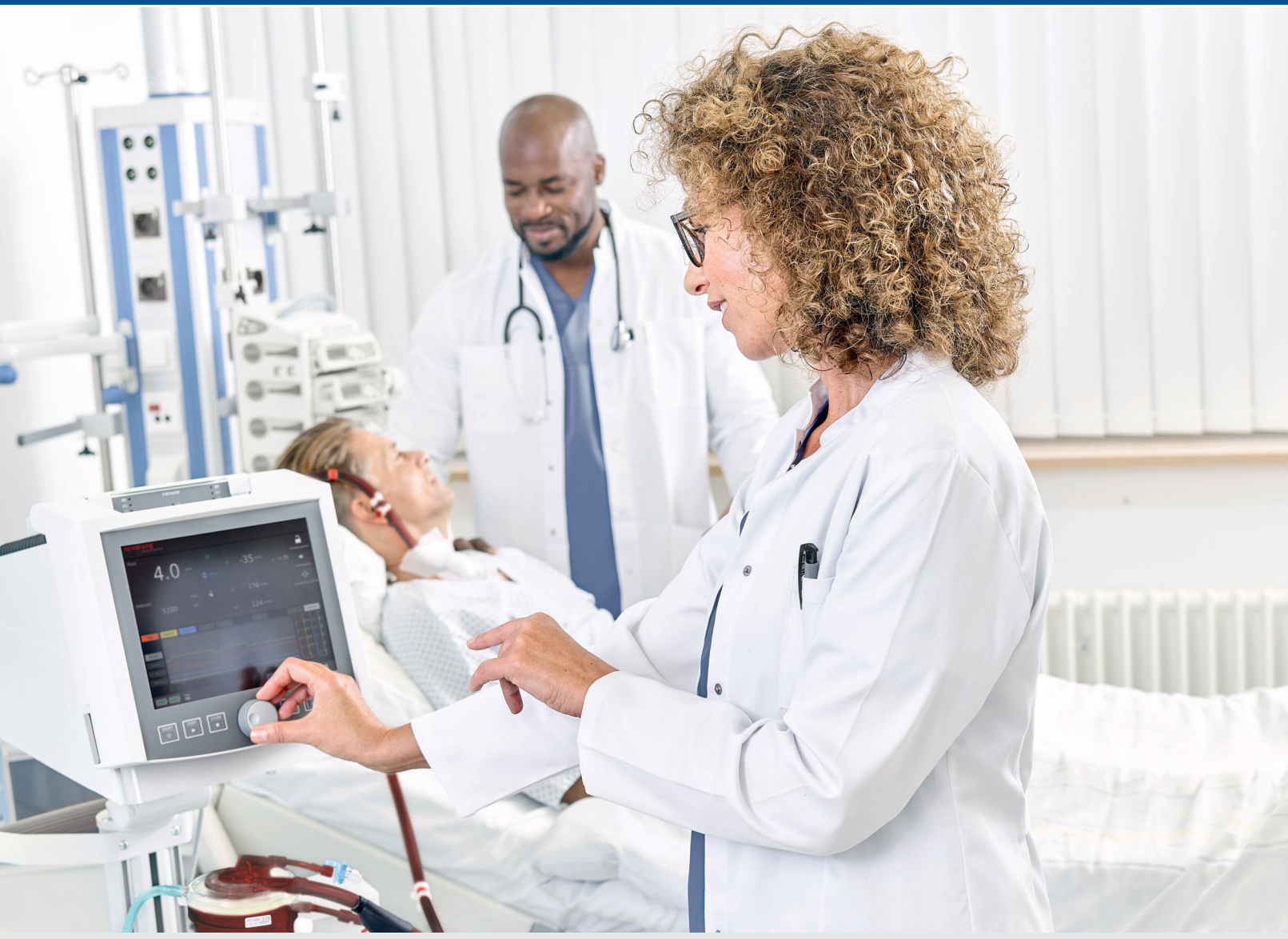
Acute Therapy Systems

Xenios Console

Universal, Reliable, Effective



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FRESENIUS MEDICAL CARE

Universal, Reliable, Effective

Extracorporeal organ support for enhanced patient well-being

Xenios, a Fresenius Medical Care Company, is a pioneer in the field of extracorporeal heart and lung support – for new dimensions in patient well-being. In contrast to standard therapies in this field, patients can remain awake, mobile, and self-determined[1)] with our extracorporeal therapies. They may then spend less time in the intensive care unit[2)], which helps to improve their prognosis of treatment[3)].

Dedicated technology combines both heart and lung support in one single platform here – a platform that is universally usable, individual, safe, and compatible with applications of our parent company, Fresenius Medical Care. Together with Fresenius Medical Care, we stand for a paradigm shift in the field of intensive care and integrative multiorgan support with pioneering technologies.

We also support implementation of our therapies with high-grade premium products. Our customers benefit from unique and individual clinical support and application-oriented service excellence.

Wide spectrum of extracorporeal support

Effective for neonates up to adults

Safety techology, intuitive handling

Universal

Wide spectrum of extracorporeal support

- Therapies for heart and lung assist on one single platform
- From neonates up to adults
- From partial CO_2 removal to full oxygenation
- VV-, VA-applications
  - ✓ ICU
  - ✓ Operating theater
  - ✓ Cardiac catheterization lab

Reliable

Reliable technology and intuitive handling

- Easy therapy-driven interface
- Integrated Pressure Sensors (IPS)
- Dual power: AC power and battery pack
- Full alarm history on screen

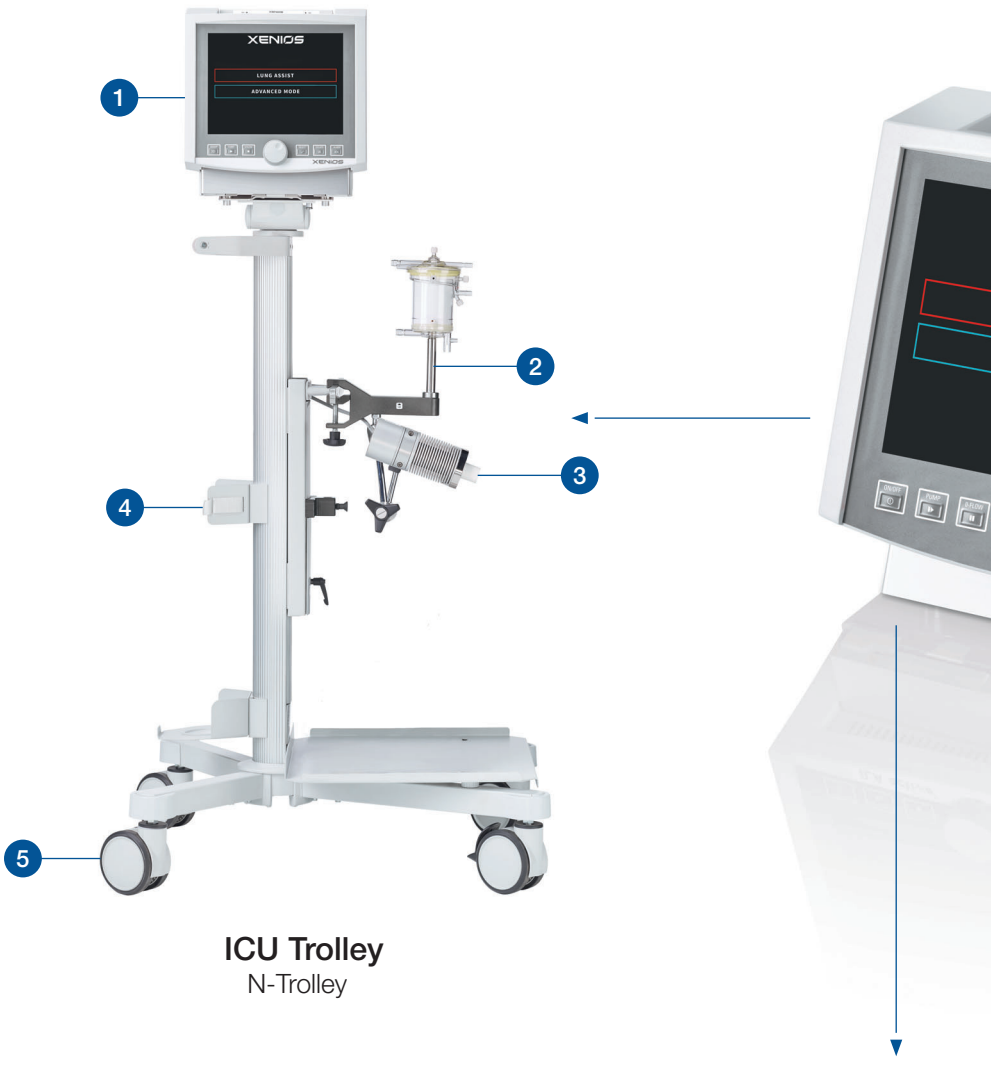
Effective

Highly sophisticated pump technology

- Diagonal pump with broad flow range allows for individual settings
- Fine adjustments of flow rate even below 0.5 l/min
- Optional pulsatile flow
- More safety by p1-limiter monitoring, Zero-Flow mode and autopilot

The Technological Basis: Universal for All Needs

Xenios offers therapies for those suffering from cardiac and pulmonary insufficiency. It employs a standardized technology platform for extra-corporeal organ support. Physicians and caregivers therefore benefit from a pioneering technology concept. Versatile in application – from effective CO_2 removal, all the way to complete oxygenation. Easy to use and with comprehensive monitoring. Furthermore, the multifunctional usability of one platform provides economical benefits and reduced training expenses.



ICU Trolley
N-Trolley

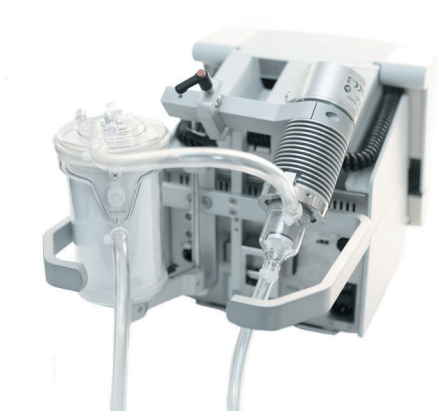
1 **Xenios Console**
Intuitive handling

2 **Holder for Membrane Lung**
Flexible therapy options

3 **Pump Drive Unit**
High hydraulic performance[4)]

4 **Holder for Gas Bottle**

5 **Trolley**
Excellent solutions for OR and ICU



Console with compact holder

Console

OR Trolley
M-Trolley

Console with iLA membrane lung and compact holder

Accessoires / Equipment

- Xenios compact holder – attached to the back of console enables a quick and easy in-house transport.
- Gas blender – the Xenios system is ideally complemented by a gas blender (low-flow for neonates/pediatric and high-flow models for adults available).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XENIOS
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Awake, Mobile, Self-determined

Two Therapy Modes Cover a Broad Range of Applications

Two therapy modes take into account various usage scenarios and user requirements. Working to the maxim of “safe and simple”, both modes are intuitive and can be used for neonates, children and adults. Lung Assist Mode is used for lung support, while Advanced Mode is intended for more extensive heart and lung support.

Both therapy modes offer a high degree of safety and transparency. The therapy data can be sent directly to an external monitoring system*. Parameters such as blood flow, the speed of the pump head, pressure, and temperature as well as alarms on the console are transferred directly to the patient monitor.

* for compatible systems please refer to your local sales representative

Lung Assist

Lung failure therapies tailored to the individual clinical needs

$ECCO_2R$ and Respiratory ECMO

- Intensive care
- Thoracic surgery

Advanced Mode

Full cardiopulmonary organ support

Cardiopulmonary ECMO

- Cardiac surgery
- Cardiac catheterization lab
- ICU

Patient Kits

- **The Xenios platform works with a wide range of patient kits – for a therapy that best meets the individual patient needs.**
- **For short- and long-term (29 days) application periods**

The Pump Drive DP3 – Accuracy from Low to High Flow

Highly sophisticated pump technology

- Flow-optimized diagonal pump, with up to 8 l/min of flow
- Accurate performance at all blood flows
- Broad flow range, fine adjustments of flow rate down to 0.1 l/min
- Long-term use via high-tech ceramic mount and magnetic coupling
- The design of blood pump unit DP3 reduces turbulent flow and dead spaces
- Optional pulsatile flow

DP3 Pump Drive

DP3 Pump Heads

DP3 – available in two sizes:

- DP3 1/4"with up to 2.4 l/min blood flow
- DP3 3/8" with up to 8 l/min blood flow

The Backup System: Mastering Therapy Challenges

In challenging therapy situations the treatment can be continued via the battery-driven backup system:

Second pump drive

- No stress priming a second set
- Backup pump drive

Backup battery pack

- Hot-swappable batteries for operation without external power supply
- Easy to change

Safety features for your therapies

- Zero-Flow function – flow stops when air bubbles are detected – whilst slow running pump counter-balances possible backflow
- Flow control guarantees constant blood flow, e.g. for constant gas exchange level
- Automatic backflow compensation (especially for VA application mode)
- P1-limiter guarantees constant pressure at p1, e.g. for hemolysis prevention

Integrated Pressure Sensors – IPS*

IPS facilitating and securing therapy management

- Avoids leakage and air aspiration due to sealed/ closed system
- Simple connection and no calibration during therapy necessary
- No hemodilution – especially for your neonate and pediatric patients
- Smooth inner surface for lower risk of clotting compared to conventional pressure measurement

* not available in all patient kits
or more information please refer to your local sales representative

Data Management

External Monitoring
Interface for therapy data to ICU monitors

Nurse Call System
Interface for alarm activation of internal intensive care unit nurse call system

USB
Anonymous logfiles can be transferred directly to an USB device

PMS Data Interface
Retrievable data protocol for a patient-related electronic documentation system

By Your Side

Clinical Support

We accompany excellent use of our technology and implementation of our therapies with far-reaching individual support and application-oriented services. This includes an international support hotline.

Our console is always accompanied by comprehensive support from our Clinical Support Team. Each of our application specialists has many years of real-world experience from specialists working in clinics. These highly qualified experts provide with on-site support – comprising instructions/training and help in implementing our technology in the day-to-day business of your clinic.

Technical Service

Our Technical Service Team is available to answer any and all technical questions you may have in and around the Xenios platform. In addition to this, the Academy offers you professional events for both basic and advanced training. The Xenios campus- our e-learning platform - offers divers study modules and videos tailored to your specific areas of interest.

References

1 Langer et al., (2016) "Awake" extracorporeal membraneoxygenation (ECMO) : pathophyiology, technical considerations, and clinical pioneering. Critical Care 20:150. doi: 10.1186/s13054-016-1329-y

2 BrauneS. et al. (2015) The use of extracorporeal carbon dioxide removal to avoid intubation in patients failing non-invasive ventilation--a cost analysis. BMC Anesthesiol 15:160. doi: 10.1186/s12871-015-0139-0

3 Teno JM et al., Decision - Making and outcomes of Prolonged ICU Stays in Seriously Ill Patients. 2000, J Geriatr Soc.; 48(5 Suppl):S70-4.

4 Fleck et al. , (2013) First serial in vivo results of mechanical circulatory support in children with a new diagonal pump. European Journal of Cardio-Thoracic Surgery 44 (2013) 828--835. doi:10.1093/ejcts/ezt427

FRESENIUS MEDICAL CARE

End of 2016, Xenios with its brands Novalung and Medos has become part of the FME family, the worldwide market leader in renal support.

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