Extra Corporeal Membrane Oxygenator

KIHT Technical Compendium

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Version 1.0

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LIST OF ABBREVIATIONS

Acronym	Definition
ABG	Arterial blood gas
ACT	Activated clotting time
APTT	Activated partial thromboplastin time
AV	Atrioventricular
BP	Blood pressure
CAGR	Compound annual growth rate
CAVHD	Continuous arteriovenous hemodialysis
CI	Cardiac index
CNS	Central nervous system
CO	Carbon monoxide
CO_2	Carbon dioxide
COPD	Chronic obstructive pulmonary disease
CPAP	Continuous positive airway pressure
CPR	Cardiopulmonary resuscitation
CT	Computed tomography
CVP	Central venous pressure
CXR	Chest X-ray
DEHP	Di-ethylhexylphthalate
DIC	Disseminated intravascular coagulation
ECG	Electrocardiogram
ECLS	Extracorporeal life support
ECMO	Extracorporeal membrane oxygenation
ECPR	Extracorporeal cardiopulmonary resuscitation
EEG	Electroencephalogram
EF	Ejection fraction
ELSO	Extracorporeal life support organization
FBC	Full blood count

Acronym	Definition
FiO_2	Fraction of inspired oxygen
GI	Gastrointestinal
h/hr	Hour
HIT	Heparin-induced thrombocytopenia
HR	Heart rate
ICB	Intracranial bleeding
ICU	Intensive care unit
IE	Inotropic equivalent
ITBVI	Intrathoracic blood volume index
IV	Intravenous
IVC	Inferior vena cava
LA	Left artery
LV	Left ventricle
LVAD	Left ventricular assist device
MAP	Mean arterial pressure
MODS	Multiple organ dysfunction syndrome
MRI	Magnetic resonance imaging
MV	Minute ventilation
NGT	Nasogastric tube
NO	Nitric oxide
O_2	Oxygen
OD	Orifice diameter
PA	Pulmonary artery
$PaCO_2$	Partial Pressure of carbon dioxide
PaO_2	Partial Pressure of Oxygen
PAOD	Peripheral artery occlusive disease
PC	Polycarbonate
PCV	Pressure controlled ventilation

Acronym	Definition
PDA	Persistent ductus arteriosus
PEEP	Positive end-expiratory pressure
PIP	Peak inspiratory pressure
PMEA	Poly 2-methoxy-ethylacrylate
PMP	Polymethyl pentene
PRBC	Packed red blood cells
PU	Polyurethane
PVC	Polyvinyl chloride
RA	Right atrium
RBC	Red blood cells
RPM	Revolutions per minute
RR	Respiratory rate
RV	Right ventricular
SaO_2	Arterial oxygen saturation
SpO_2	Oxygen saturation via pulse oximetry
SvO_2	Venous oxygen saturation
SVR	Systemic vascular resistance
SVRI	Systemic vascular resistance index
TEE	Transesophageal echocardiography
TT	Thrombin time
US	Ultrasound
VA	Veno-arterial
VAD	Ventricular assist device
VV	Veno-venous
WBC	White blood cells

EXECUTIVE SUMMARY

The extracorporeal membrane oxygenation (ECMO) also called as extracorporeal life support (ECLS), is a procedure of supplying extended cardiac and respiratory support outside the living body to the person whose heart and lungs are working in an inadequate manner and providing an insufficient amount of gas exchange and/or perfusion to live a healthy life. The ECMO device is used to rest the heart and/or the lungs to help the patient recover. In case of irreversible damage to the organs, the ECMO device helps the body tissues to be well oxygenated; this keeps the patient in a better condition for the organ transplant.

According to the international registry report of 2018 from the Extracorporeal Life Support Organization, 100,905 patients received ECMO, among these, 68% were weaned and 56% were discharged or transferred. Use of ECMO for respiratory support represents a large area of consistent growth. Over 56,091 patients have been treated with ECMO with survival to discharge rates of 73%, 58%, and 59% for neonates, pediatric, and adults, respectively. Use of ECMO for cardiac support also represents a large area of consistent growth. Approximately 34,198 patients have been treated with ECMO with survival to discharge rates of 42%, 52%, and 42% for neonates, pediatric, and adults, respectively

The ECMO market is poised to reach USD 305.3 million by 2021 from USD 247.2 million in 2016, at a CAGR of 4.3%.[1] The increasing prevalence of cardiovascular and respiratory diseases and the technological advancements in the ECMO machine resulting in increasing survival rates with ECMO are blooming the demand for these devices. The adoption of ECMO in transplantation procedures and the number of centers offering ECMO is growing exponentially. The increasing investment in the healthcare infrastructure, numerous government initiatives, greater adoption of technology, and rising disposable incomes of people are expected to bring unobstructed growth in the market and presents substantial opportunities for expansion.

The main objective of this product dossier is to cover the entire spectrum pertaining to ECMO. This dossier explains the clinical need, requirements, working principle, detailed technical aspects to enlighten the criticality of the product at the component level and provide a glimpse on relevant standards and regulations to ensure the safety, integrity, and function. The report highlights the market figures and EXIM analysis information which will provide insight into the commercial aspects and demand of the product in the Indian scenario.

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[1]Extracorporeal Membrane Oxygenation (ECMO) Machine Market - Scope, Size, Share, Analysis by 2025. (n.d.)

ABOUT:

Andhra Pradesh MedTech Zone (AMTZ) is an enterprise under the Government of Andhra Pradesh, a 270 Acre zone dedicated for medical device manufacturing with 200-250 manufacturing units. AMTZ provides the one-stop solution for all the manufacturers by providing, common scientific testing facilitates (EMI/EMC, Electrical Safety, Radiation, Biomaterials Testing, 3D printing facilities), commercial facilities such as expo halls and warehouse.

Kalam Institute of Health Technology (KIHT) in the premises of AMTZ facilitates focused research on critical components pertaining to medical devices, technology transfer of innovative technologies through e-auction, market innovation, and access. These end to end solutions help to reduce the cost of manufacturing up to 40% and make health care products more affordable and accessible.

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