December **2022** Volume **7**

BIOMED ENGINEERING TIMES

Strengthening Healthcare Delivery Services Through Appropriate Technology

Association of Medical Engineering of Kenya

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HATCH TECHNOLOGIES

Delivering Lifesaving Solutions for Newborns

A five-step qualification process for newborn care devices for low resource settings.

Step 1	Step 2	Step 3	Step 4	Step 5
Identification	Target Product Profiles	Technical Testing	Environmental Testing	Usability Testing

Some of the NEST-Qaulified devices distributed by Hatch Technologies

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Phoenix Medical Systems

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LongFian

JAY-10 Oxygen Concentrator

Hatch Technologies
11th Floor,
The Address,
Muthangari Drive,
off Waiyaki Way,
Nairobi.

CONTACTS
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Editor's **Note**

Welcome all to this year's Biomedical Engineering Times (2022) produced by the Association of Medical Engineering of Kenya (AMEK). I take this opportunity to thank AMEK council for ensuring that this Magazine is produced in time. Biomedical Engineering professionals together with other healthcare stakeholders have continued to play a critical role in providing quality and economical healthcare services to citizens throughout the world. It is therefore Prudent to appreciate the role the profession plays and it is worth to appreciate the fact that the Profession is the driving force in healthcare service delivery.

This Publication is timely and rich with new ideas, technologies and information that is critical in the profession especially now the country is recovering from the COVID-19 Pandemic. This publication aims to share these information's for the benefit of the industry, The editorial Team has kept a balance of the articles to ensure the information shared is relevant to the profession.

You will find adverts from various AMEK Partners who have displayed their services and Products in this Edition. These includes Hatch Technologies, NEST360 Kenya, All Trusted Medical Limited (ATM), Jos. Hansen with CyberKnife Technology Management, Velocity Project Management, BOC Kenya, RIMSA Brightening Ideas, Infinity Advanced Technology Solutions Limited, GE Healthcare and Crown Healthcare. Training Institutions have also not been left out and therefore you Kenya Medical Training College (KMTC) advert is also placed. The Editorial team thanks all Partners for trusting us by accepting to place the adverts in this Publication.

In addition, there are informative articles in areas of the profession and hope they will add value to you all; Therefore, enjoy by reading through the statements from the Chairman, and Secretary General. These statements have a lot of information for you while technical educative articles including report from the 2021 conference, Dental equipment Management, Neonatal therapeutic Technologies, Medical gases Management, Digital remote monitoring of Medical equipment, a key lesson from Kakamega County and Human resource management.

AMEK news Corner has also been included which include the reasons why one should join AMEK a perennial questions in all AMEK Platforms and Training Partnerships during the Pandemic Period.

Lastly the Editorial Team sampled a few photos for you to see the past AMEK events. We invite you to participate in our next edition and assure you all your concerns will be addressed. Please feel to write to us through amekenya@yahoo.com

May you stay in Biomed Engineering Times by being Heroes in our own way.

God bless you.

Hon. Annarose Gitau

Editor

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Council Member

Annerose Gitau
Council Member

Gerald Muia
Council Member

Wilfred Masanga Obare
Council Member

AMEK Chairman's **2022 Statement**

Dear fellow Members, Biomedical Engineers, Stakeholders/Partners, Associates and all readers of Biomedical Engineering Times Magazine. It gives please to communicate to you all through this AMEK magazine of 2022. First, we give glory to almighty God for being here at this time of the year after going through a very difficult period of the COVID-19 Pandemic that bought the whole world to a halt and the campaign period coupled with economic crises of high fuel prices and other essential commodities.

Despite these harsh conditions you have managed to participate in the Nation building by providing your expertise in healthcare technology management, through your wide range of expertise and wealth of Knowledge that seen healthcare service delivery achievable.

As your Chairman, I applaud you for your unconditional support to the service of healthcare in health facilities. ***Congratulations to you!!!!!!!!!!!!!!!***

I take this opportunity to invite you all to the AMEK' 13th Scientific Conference and exhibition, taking place at Travelers Beach Hotel in Mombasa. All the Participants, Guest and Exhibitors are most welcome to participate in this conference. We urge of you to utilize the three-day event an opportunity to learn. Network and Share Ideas on how on the best approach to improve healthcare service delivery in Kenya as guided by the theme: ***Embracing Innovations and Inventions in Healthcare Technology management post COVID-19 pandemic in low resource Countries.***

It is sad to report that we lost AMEK immediate past Chairman, Eng. Edward Matekwa six months after handing over the office to the new office. His death was attributed to sickness that he was battling with for a long time. At the time of passing on, he was already a retired Chairman but was serving in the council as an advisor. We pray for his Immediate family and may his soul to rest in eternal Peace. As a council and AMEK in general we shall forever miss him.

I take this opportunity to thank you for giving me an opportunity to serve you as your Chairman after it was declared by the Election board George Ndebu while at Golf hotel AGM of 2021. Together with my Team, we will serve you to the best of our ability and with the energy it deserves to deliver on the AMEK's mandate.

To demonstrate this commitment, immediately we were sworn into office, the Council embarked on rigorous search for partners to collaborate with for actualizing our programs which include Capacity building, Conferences, skill upgrading course, Symposiums among others. The many Partners we approached have promised to collaborate with us in realization of our objectives. I request you keep praying for us as we search for more and together be able to actualize some of our Objectives.

This Year we only managed to a few trainings and event with various Zoom Trainings as follows;

1. Capacity Building on Medical Laboratory Analyzers servicing and Maintenance sponsored by All trusted Medical (ATM) on 4th to 8th April 2022.
2. Newborn Medical Equipment Training, sponsored by NEST 360, at Kenyatta University, Mombasa and Kisumu, - coordinated by Dr. June Madete,

With Nelson Kariuki representing the Chairman in officiating the Training at KU
3. Ophthalmic equipment training in Kisumu, sponsored by FRED HOLLOWS FOUNDATION, where Elizabeth Kamusa represented the Chairman in officiating the Training
4. Cold Chain Training for parts of Western and Nyanza region in Kisumu, sponsored by Clinton Health Access Initiative (CHAI), with Sellah Aseso representing the Chairman in officiating the Training
5. Cold Chain Training for held at Machakos for Lower Eastern, Machakos, Makueni and Kitui sponsored by Clinton Health Access Initiative (CHAI) and Coordinated by Council member Gerald Muia.
6. Various stake holders' meetings and engagements.
7. Kenya Curriculum development Meetings to improve on the training curriculum with Kenya Institute of Curriculum Development (KICD)
8. Engagement with the ministry of Health and Kenya health Professional oversight Authority (KHPOA) on the regulation of the Profession.
9. Attended the first Africa Health professionals Conference officiated by the former president H.E. Uhuru Kenyatta in February 2022 together with the Health Cabinet Secretary of Health, Hon. Mutahi Kagwe.
10. Attended the first Kenya Health professionals Convention held at Safari Park Hotel, Nairobi, officiated by the Labour CS, Hon. Simon Chelugui and a discussion with him regarding the Diaspora jobs.
11. Oxygen Trainings on Zoom and others coordinated by the ministry and some Partners on their own.
12. Critical care Equipment training by Gradian Health systems that will continue to next year.
13. Curriculum development and reviews for North Coast Medical Training (NCMTC) and Kenya Medical Training College (KMTC)

In a nutshell, it is evident that the council has done quite well and anticipate doing more next year. The council appeals to all members to utilize the knowledge acquired well and also share with colleagues since sharing information is part of our mandate.

The struggle for the Association to have its own regulation body has been on since the office took over and much has been achieved. As you are aware that the Medical Engineering Bill which got stuck in parliament has really delayed most our activities, the reason being that the Bill was anticipated to be the regulatory body to offer a road map to the regulation of the profession practice and Training among others. In this regard the Council thought otherwise and consulted the Ministry of Health on the way forward, The Ministry advised the Association to request for a Biomedical Engineering Council the threshold requirements is met. The Council mandate will be regulating the profession practice and Training and Licensing.

The Medical Devices Management Policy has already been Launched. As a council we have written to the

Embracing Innovations and Inventions in Healthcare Technology management post COVID-19 pandemic in low resource Countries.

cabinet Secretary of Health for implementation, so we request for your patience inon this matter.

On Employment of Biomedical engineers, the Council has also written to the Ministry of health and the Council of Governors on the need for biomedical engineering in health facilities with well elaborated justification. AMEK anticipate both governments to heed to this request in order improve healthcare service delivery.

The Managed Equipment Service Management in Kenya has played a critical role in improving healthcare service delivery, this has been attested by many Patients through various Media houses and all the profession is a testimony to this fact. As AMEK we held a media briefing on the importance and the need for continuity of the program.

As we come to the end of 2022, I wish to that all member and our Partners to continue offering the same services to our citizens by ensuring that the Medical equipment life cycle are well managed effectively at all stages without any compromise.

As you read this edition of Biomedical Engineering Times for 2022 feel free to critic us, give us feedback that can help us improve in the next edition.

I wish you all a merry Christmas and a happy prosperous year 2022 and May God bless you all.

Hon. Symon Mbakah

Chairman
Association of Medical Engineering of Kenya.

2021 Conference **Report**

The Association held the 12th AMEK scientific conference & Exhibition at Golf Hotel, Kakamega from 8th to 10th December 2021. Conference Theme: Healthcare Technology Management amid COVID-19 pandemic in low resource countries. The Event involved the following activities:

- World Biomedical Engineering Day Celebration – the First in Kenya
- 3 days Conference and Exhibition
- AMEK AGM and Elections

CONFERENCE ATTENDANCE:

a) Invited Guests

1. Chief Guest: **Dr. Mercy Mwangangi:** Chief Administrative Secretary, MOH
2. **Dr. Collins Matemba :** CECM, Kakamega County
3. **Dr. Moraa Mose :** Chief officer, Health, Kakamega County
4. **Dr. Aisha Juma** : Medical Superintendent Nakuru level 5 hospital
5. **Dr. Mercy Mawia** : Medical Superintendent Mukumu Hospital
6. **Dr. Boniface Nyumbile :** Medical Superintendent Kakamega C.R. Hosp.
7. **Eng. Martin Owino** : Head of Medical Engineering Technologies Unit, MoH
8. **Jane Wanyama :** The CEO Aga Khan, Hospital, Kisumu
9. **Reuben Waswa :** Director Northcoast Medical Training College
10. **Prof. Lt Col (Rtd) John Okoth :** Masinde Muliro University
11. **Prof. Thomas Gath :** Masinde Muliro University

b) Members attendance

Total number of attendees : 150 Members

PRESENTATIONS

- Conference Papers : 12
- Partners Presentations : 10
- Training institutions : 4

  A total of 26 presentations

EXPECTED OUTCOMES

1. Improved Healthcare Technology Management
2. Improved Healthcare service delivery that is safe, economical and reliable
3. Prolonged Medical Equipment life cycle with reduced cost of Maintenance
4. Skilled and Motivated Personnel
5. Reduced Mortality cases related to Medical Equipment Performance and Operation
6. Improved Networking and information Sharing

CHALLENGES

1. Professional Regulation

The Profession is not regulated by a regulatory Authority Body. However there is Kenya Medical Engineering Bill (KMEB) that has been in the floor of Parliament for the last 6 years.

If this could be enacted most of the professions associated problems would however be addressed.

If this is not realized, then the Council should explore other avenues to have the profession regulated.

2. **Medical devices Management Policy**
   The policy was signed in 2018 by the then Cabinet Secretary of Health, Hon. Sicily Kariuki. AMEK appeal is that this policy be Launched and implemented and will see most of the issues addressed

3. **Employment of Biomedical Engineers**
   There is an acute shortage for Biomedical Engineers in the healthcare sector despite many Trained and qualified Biomedical engineers tarmacking. We appeal to the Ministry to consider Employing more Biomedical Engineers to be inline with WHO staffing Norms of 2014.

4. **Internship of Biomedical engineers in Public places**
   The Association e request that the Ministry to consider Biomedical Engineers for internship as they play a key role in Healthcare Technology Management.

5. **Working Environment in Public Hospitals**
   Most Public hospitals do not have favourable working environment only a few hospitals that were supported by Donors that have workshops that have ideal workshops, these include Kakamega, Kisumu, Mombasa, Mbagathi and Embu. AMEK appeal is that the Ministry to assist all Level 4 and 5 Hospitals to have ideal workshops and also equipped with the relevant tools. The last time Biomeds received tools was in the year 2007 by the Ministry of Health.

6. **Training of Biomedical Engineers and Continuous Medical Education**
   Currently Most Training institutions are training Biomedical Engineers just like any other profession. The training has been commercialized. We request the Ministry to come to our aid in controlling the trainings so that we have graduates who are well skilled. AMEK requests that continuous Medical Education be enhance at all levels by the Ministry.

7. **Managed Equipment Service Program (MES)**
   This program has employed a good number of Biomeds and the program has expected to end this year. Our Request is that the same program be extended to enable improve service delivery

8. **Cancer Management Equipment**
   The Radiotherapy and Chemotherapy equipment in Kenyatta requires backups and Locally Trained Biomedical Engineers to take care of these Machines. AMEK requests that Cancer equipment be equipped in high volume hospitals in order to reduce the workload of the KNH.
   Our request is that also these machines can also be included in the MES program and Capacity Building be enhanced to Biomedical Engineers.

9. **Calibration of Medical Equipment**
   It came out clearly that most equipment are not adequately calibrated and therefore are likely to affect quality of healthcare service delivery.
   AMEK proposes that an inspection of compliance unit be creates at the Ministry to oversee and reinforce compliance of Medical Equipment Calibration

10. **Planned Preventive Maintenance**
    It came out clearly that the PPM is not being adhered to and thus only corrective Maintenance that is being undertaken. This has resulted to hospitals having a lot of Junk yards in most hospitals. AMEK proposes to compel hospitals to adhere to this norm and will see improve the quality of Healthcare service.

11. **Presidential Award Nominees**
    The President would want to Award some of the Most hard working Biomedical Engineers for their

exemplarily work in serving the nation. Therefore AMEK and METU should work together to actualize this request

AMEK ELECTIONS

AMEK conducted Elections for the office Bearers and the following are the new office Bearers

1.	Chairman	: Symon Mbakah	: Machakos County
2.	Vice Chairman	: Marvin Nandwa	: Kakamega County
3.	Secretary General	: Eng. Millicent Alooh, HSC	: MP Shah Hospital
4.	Assistant Secretary G	: Felix Karbolo	: MTRH
5.	Treasurer	: Amos Mamati	: Busia County
6.	Organising Secretary	: Khalif Dekow	: Garissa County
7.	Women Rep	: Mrs. Joyce Mugo (Ag)	: Kiambu County

Council Members:

8.	Edward Matekwa	: Kisii County and Immediate past Chairman
9.	Nelson Kariuki	: METU, Afya House
10.	Annarose Gitau	: National Spinal Injury Hospital (Ag)
11.	Gerald Muia	: Makueni County (Ag)

CONCLUSION

As AMEK we thank the Ministry of Health for supporting our Programs and request the same to continue throughout the year.

We request the Ministry of Health to assist the Association in addressing these challenges as they will see improvement of Healthcare Service Delivery in Kenya trainings.

We will ensure that our Members continue offering the Service to our Hospitals to improve Healthcare service delivery in Kenya.

Eng. Millicent Alooh, HSC

Hon. Secretary General
Association of Medical Engineering of Kenya (AMEK)

AMEK Partnership with **all Trusted Medical Ltd (ATM)**

The Association of Medical engineering of Kenya (AMEK) has partnered with All Trusted Medical ltd (ATM) for capacity Building and service of Medical laboratory Equipment Analyzers which entailed Electrolyte Analyzers, Hematology Analyzers, Immunology Analyzers, Biochemistry Analyzer which forms the basis for diagnostics tests in our healthcare facilities.

This is Partnership comes in hardy when the World is recovering from COVID-19 Pandemic and is anticipated to bring a paradigm shift of the way the Medical Laboratory Equipment service management is carried out. With the Partnership AMEK and ATM will roll out various programs to support this initiative.

ATM, director Hazel Ip is committed to ensure that the problem facing biomedical engineers in this field will be put to rest. Among the activities she has agreed with AMEK to put in place is to have a pool of Biomedical Engineers Trained to the best and be able to attend to this equipment with apparent ease. The training will be equivalent to factory Training this will indeed add skills to the Biomedical engineers and make them more competent to handle this equipment.

This has been bought about the feedback that AMEK gave regarding the Challenges by the profession. The Main Challenges being faced by the Profession basically:

1. Inadequate capacity building
2. Inadequate working tools
3. Lack of spares part for the machines
4. Lack of proper working environment

WHAT ATM WILL ADDRESS

ATM with AMEK partnership will address the first three that is firstly capacity building, working tools and availability of spare parts. There is no good reason that the profession cannot grow with all this in place. As AMEK we salute Hazel for coming with this noble idea. At the onset the Partnership will emphasize on medical laboratory Analyzers this will be followed by ICU ventilators and calibration and Certification of Medical equipment. This is geared to improve on service delivery.

CAPACITY BUILDING OF 60 BIOMEDICALS ENGINEERS

The Partnership kicked off by Training 60 biomedical engineers selected from Nairobi environment and some selected Counties. The 60 Trained BMEs can attest that the Training was very rich and Hazel Ip brought experts from Macura in Hong Kong and Locally CHEMLABS was the Local Trainer. The experience was indeed awesome and meet the expectation of many. All trainings will take the format in order to achieve the objective of ATM and AMEK.

In future there will be Biomeds to be trained in this area. All those trained will be pooled together in a Mobile app name AFRICARE that will be used to locate trained Biomeds within a radius of 50KM.

During the Training all the 60 Biomedical engineers each received a tool kit and a jacket market Africare that will be used as uniform and identification when working.

AFRICARE MOBILE APP IN KENYA

AMEK and All Trusted Medical has developed an Africare mobile APP sponsored by **Home Affairs Department of the government of HONG KONG**

SAR to enhance communication between all the stakeholders in healthcare equipment maintenance and after sales service providers. The APP aims at improving the quality of Healthcare service delivery in Kenya by promoting efficiency in Medical equipment management in Kenya. In addition this App will create fair and lucrative job opportunities to the Biomedical Engineers in Kenya.

The 60 trainees will be put in a pool of this App, which functions like the taxi Apps. This will see the management of the Medical equipment improved greatly since nagging issues in this area will be addressed such as response time, availability of trained Biomedical engineers and reducing the delays of treatment in healthcare facilities. Important to note is that this will be the First Mobile App program in Kenya.

As you are aware, Health Technology has greatly contributed to the improvement of quality healthcare which is key in diagnosis, treatment and rehabilitation of various medical conditions. However this Technology must be selected appropriately to ensure that it is effective and affordable to majority of Kenyans. Due to the sophistication of medical equipment, maintenance should be done only by qualified Biomedical Engineering Professionals in all healthcare institutions and that is why AMEK has Partnered with ATM.

The App was launched at Crowne Plaza hotel on Friday 8th April, 2022 after culmination of a 4 days vigorous Training held from 4th to 7th April 2022 at Heron hotel. The Launch was officiated by The

From Left: AMEK Chairman Symon Mbakah, Hazel Ip, the Director of All Trusted Medical, Africa, AMEK secretary general Millicent Alooh and Dr Amit N. Thakker, the Executive Chairman at Africa Health Business, during the launch of Africare App in Nairobi on April 8, 2022, during the launch of Africare mobile App at Crowne Plaza hotel, Nairobi

President Africa Healthcare Federation, Dr. Amit N. Thakker in the Presence of The General Manager Kenya Investment Authority-Mr. Pius Rotich, The CEO Kenya National Chamber of Commerce and Industry, Mr. Samuel Matonda, representatives from Chinese Embassy among other dignitaries. Dr. Thakker thanked AMEK AND ATM for the Innovation and to have more partnership for the growth of the health sector.

Compiled by:

Hon. Symon Mbakah

Chairman
Association of Medical Engineering of Kenya (AMEK)

Hazel Ip
Director
All Trusted Medical (ATM)

SPECIFICATIONS OF DENTAL EQUIPMENT

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BY DIR. HOSPHCARE SOLUTIONS LTD
ENG. J. O. WANANDA

INTRODUCTION

Medical devices are a very important part of health care and their use is increasing by the day. Technical specifications play an important role in identification, selection and procurement of appropriate and cost effective medical devices. Consistency and standardization in technical specifications promotes positive competition and reduces effective costs. It also promotes uniformity in user training and smooth maintenance of equipment. In order to address the variation in technologies many of which could be addons, separate exercises were undertaken for specific categories of medical devices procured under MOH. The experts consulted for specifications formulation exercises included clinicians, medical technologists, maintenance experts and also representatives from manufactures' industry associations/government organizations.

Consultation with experts has formulated technical specifications for commonly used medical devices. Specifications are suggestive in nature and any specific requirement needs to be incorporated at the time of procurement. While effort has been made to make the specifications as generic as possible and consensus and technical appropriateness has been the corner stone of this technical exercise.

In the consultative meeting experts has mentioned the following activities needs to be considered wisely while procuring medical devices.

(1) The public health facility that intend to house medical devices (especially electrical/electronic based) must ensure before installation,
   (a) Proper grounding at electrical sockets,
   (b) Wherever generator or UPS or solar power is used as back up energy source, should ensure the stabilizer/surge protector to prevent malfunction of medical devices. The same may be undertaken at facilities having voltage/ energy fluctuations.

How to Register **with AMEK**

a) Why Join AMEK?

The need to join as a profession goes without much hesitation as one has to be where other fellow colleagues are. For this reason AMEK was formed to bridge the gap for Biomedical engineering profession. As a legal entity it is therefore prudent for Biomedical Engineering professionals to be part of AMEK and change the narrative of what AMEK will do for me to a vision of with question of what can I do as an member do to AMEK?

b) Benefits of Joining AMEK

There benefits are enormous and therefore not limited to Information Sharing, Networking, having synergy together, Capacity Building through (seminars, conferences, CME's, Trainings, etc), Job market easy penetration for Partners, as a Reference Point in the Profession, Recognition globally by International Bodies and Organizations, Professional protection and growth, Being home by being where others are, Integrity, Passion, Social Protection, Welfare support, Employment opportunities, Business and Partnership opportunities among others.

c) Requirements to join AMEK

- Qualification in Biomedical Engineering Training
- Download the application form from AMEK website: amek.or.ke
- Scan and send to amekenya@yahoo.com
- Attach the Following Documents:
- Highest attained Certified Certificate in Medical/ Biomedical Engineering Training
- Identification card
- Two (2) Coloured passports.
- Pay registration fee of Kshs.600.00
- Pay subscription fees of Kshs. 6,000.00 (annually) or Kshs. 500.00 per Month
- NB. For students Ksh. 3000 (annually)
- For Corporate membership is Kshs. 10,000.00 annually and Must provide their profile, Business Permit and physical Location and contacts

d) What to Receive After Registering Membership Certificate, Membership card, Be issued with AMEK code of conduct, Be issued with AMEK constitution, Join WhatsApp groups, Details entered in AMEK data Base, Start Participating in AMEK activities, Attend all AMEK events as a member, Can join AMEK Council among others.

PAYMENT DETAILS

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BRANCH CODE:	02019		
SWIFT CODE:	SCBLKENX		
ACCOUNT NO:	01520-793867-00		
CURRENCY:	Kshs.		

Email: amekenya@yahoo.com, info@amek.or.ke, Website: amek.or.ke
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Tel: 020 7867375

Hon. Amos Mamati
Treasurer
ASSOCIATION OF MEDICAL ENGINEERING OF KENYA (AMEK)

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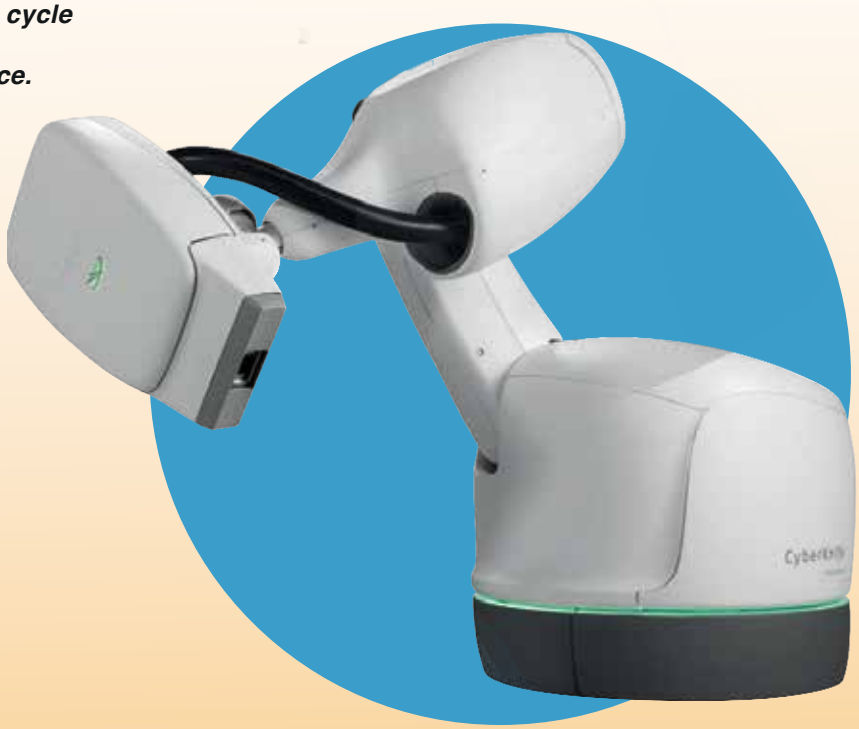

CyberKnife S7 System

The **CyberKnife S7 System** is a non invasive, non surgical, pain free treatment option for cancer with proven results. It is the first and only radiotherapy device that brings true robotic precision and the ability to track, detect, correct for tumor motion in real-time to the treatment of cancer. The Cyberknife S7 System is manufactured by **Accuray Inc.**

What makes the CyberKnife S7 System unique?

1. Robotic System
2. Precise and accurate radiation to the cancer tumor
3. Realtime Motion synchronization
4. Tracking and Correction: Automatic AI real-time
5. Eliminates the risk associated with the insertion of a needle-like probe into the tumor through the skin

Linear Accelerator-Radixact (Tomotheraphy)

The **Radixact System** with **TomoTherapy Technology** is one of the most integrated, advanced systems for comprehensive cancer treatment.

The **Linear Accelerator System** with TomoTherapy technology is one of the most integrated, advanced systems for imprehensive cancer treatment. The The Radixact System is manufactured by **Accuray Inc.**

Key operational Benefits

- New Linac capable of 1,000 cGy/minute operation for efficient treament
- New 10 RPM gantry rotation for faster image acquisition
- Continuous 360 degree delivery and can treat upto 135cm field length
- Remote view of daily imaging

SagiNova Afterloader

The **SagiNova® HDR** afterloader was designed to address today´s needs for HDR brachytherapy applications regarding safety, seamless workflows and cost efficiency.

Key operational Benefits

- Ability to choose between widely used Ir-192 or long-lasting Co-60 source
- Exclusive,integrated In-Vivo Dosimetry for real-time dose monitoring
- QAssist supports quality assurance responsibilities
- Unique features to help ensure patient safety
- User-friendly GUI and intuitive design for streamlined workflow
- Advanced German engineering

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Website:www.joshansen.com

Neonatal Therapeutic **Technologies**

The future looks bright for the neonatal mortalities as this is increasingly being reduced to its lowest point possible especially in developing countries.

The use of an enhanced healthcare technology management aided by a dynamic new technology on machines; this has really impacted on the reduction in infant mortality.

Implementation an introduction of essential technologies in new born units of third world countries is gradually becoming a norm.

Ten years down the line, there was hardly a single Neonatal intensive care unit (NICU) in the country but this has since changed rapidly with the establishment of well equipped NICUs in level 5, 6, 7 and private hospitals.

The least use technology in both private and public hospitals is Hypo-hyperthymia cooling especially for neonates.

Our whole-body hypothermia system provides an effective alternative to traditional patient cooling techniques, this revolutionary system combines our Head Wrap, Patient Vest, and Lower Body Blanket for a non-invasive whole body hypothermia system. This method of cooling the patient allows for early therapy that is fast, reliable and cost-effective. A healthy body maintains its temperature, and a rise and fall in body temperature indicates a change in bodily function. For instance, high temperature could be an indication of an infection. Abnormally low temperature or hypothermia can lead to numerous complications. Temperature management products aid in the regulation and maintenance of normal body temperature in operating rooms, recovery rooms, intensive care units and newborn unit.

WHAT IS HYPO-HYPERTHYMIA THERAPEUTIC COOLING?

Hyper-hypothermia therapeutic system can be used with adult and paediatric/neonatal patients to produce normothermia by lowering a patient's elevated temperature or raising a patient's sub-normal temperature. It can also be utilized to maintain normal body temperature (normothermia) during surgical procedures.

It is basically a system used to lower or to raise a patient's temperature and/or maintain a desired patient temperature through conductive heat transfer. The unit is composed of a heater, compressor, circulating pump, and blankets or pads. The system provides a fast response to core body temperature regulation.

- Gradient Temperature Technology that allows for rapid or gradual heating and cooling.
- 3 Hose connectors.
- Internal by-pass (pre-warming and pre cooling of water in the unit.
- Data export software allows for the patient's data during treatment to be exported as a .csv file.
- Pressure sensitive touch switches, liquid crystal display, and two LED displays.

This is achieved by used of a unit comprising of a cooling machine and an EEG monitor.

Fig 1 Plastic pad blanket

Fig 2 Cooling machine in use for neonates

The machine uses water as a cooling media running along the cooling blanket where then baby is laid upon.

The unit monitors the patient's temperature and maintains the temperature of the water in the cooling unit at the maximum of 10˚C (18˚F) from patient's temperature reading

A gradient of 10 degrees Celsius in between is the ideal one for neonates.

Gradient is the maximum allowable temperature difference between the patient and the water. So, if the patient's temperature is 35˚C and the set point is 33˚C and the unit is in the Gradient 10C mode, the water will not cool further than 25˚C or warm further than 42˚C (automatic stop point for safety).

Its innovative Gradient Technology minimizes fluctuations in water temperature and maintains a stable patient temperature. It can be utilized in both the cooling and heating mode, allowing for rapid or gradual patient temperature management control.

The Plastic Pad is a reusable water blanket that is durable and convenient. These blankets have a non-porous surface that is easy to clean off blood, soil, and/or debris. The Plastic Pad blanket utilizes a random flow pattern for uniform distribution of water, yielding fast and efficient circulation throughout the entire blanket to provide effective patient therapy. Offered with and without an attached hose for convenience.

The cooling technology can effectively be used in hand with an Electroencephalograph (EEG) to monitor the brain of the neonate. Rise and fall of body temperature has adverse effects on certain organs as it can cause convulsions and seizures.

When the temperature is kept stable or normal the body response well to other treatments and hence quick recovery.

This technology should be adopted in third world/developing countries to help reduce infant mortality.

Felix Karbolo

Senior Principal Biomedical Engineering Technologist
Moi Teaching and Referral Hospital

Photos **Gallery**

Photos **Gallery**

NEST360 Kenya
Innovation Delivered

We are an international alliance united to end preventable newborn deaths in African hospitals in Kenya, Malawi, Nigeria and Tanzania

What we do

Through partnerships with hospitals, governments, and other development partners, we catalyze country-led change to:

- **Deliver & Sustain Innovation**
  We test, qualify and distribute a package of newborn health technologies for low resource settings.
- **Develop an Education Ecosystem**
  We foster education ecosystems and deliver clinical and Biomedical Technical training to support newborn care.
- **Implement Evidence-based Care & Data for Action**
  We develop data systems to help countries reach newborn survival targets and sustain quality care.

NEST360-Kenya will develop, guide, and support the adoption of national pre-service and in-service clinical and biomedical technician trainings for comprehensive newborn care that are aligned with the Sustainable Development Goals, and the Every Newborn Targets

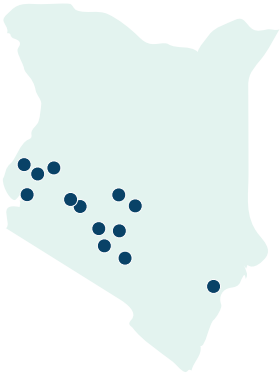
SDG 3.2

ENAP CoverageTarget 4

Where we work in Kenya

The NEST360 program is currently being implemented in 13 hospitals and 8 skills labs.

Skills labs are established facilities in the eight installed institutions within NEST, that form part of medical education offering the possibility of hands-on training post-theory classes for the medical engineering students; hence nurturing and preparing them for real life application in the industry.



13 Health Facilities

1. Kenyatta National Hospital
2. Mama Lucy Kibaki Hospital
3. Pumwani Maternity Hospital
4. Kiambu level 5 Hospital
5. Thika Level 5 Hospital
6. Machakos County Referral Hospital
7. Nakuru County Teaching and Referral Hospital
8. Kakamega County Teaching and Referral Hospital
9. Jaramogi Oginga Odinga Teaching and Referral Hospital
10. Bungoma County Referral Hospital
11. Embu County Referral Hospital
12. Kerugoya County Referral Hospital
13. Nyeri County Referral Hospital

8 Skills Labs

1. KMTC Nairobi
2. KMTC Eldoret
3. KMTC Kisumu
4. KMTC Oloitokiok
5. KMTC Kilifi
6. KMTC Meru
7. Technical University of Mombasa
8. Kenyatta University

NEST360.ORG

NEST-Qualified Technologies installed in Kenya NBUs

In every NEST360-Kenya facility, our team has installed a bundle of technologies that includes equipment for:

- Hydration, Nutrition & Drug Delivery
  - Syringe pump
- Jaundice Management
  - Bilirubinometer
  - Phototherapy machine (LED type)
- Respiratory Support
  - Oxygen concentrator
  - Oxygen splitter
  - Bubble CPAP machine
  - Pulse oximeter
  - Suction machine
- Thermal Management
  - Infant radiant warmer

Pre-service and in-service training focus areas

We provide pre-service and in-service training packages that help educate clinicians and biomedical technicians to use, maintain, and repair the NEST360 bundle of technologies.

Training for both cadres are spread out in one week and covers both theory and hands-on/ practical sessions followed by assessment and certification. Participants are typically drawn from NEST implementing facilities, and medical training colleges, as well as teaching institutions, i.e. biomedical engineering department staff.

Staff	No. trained
Biomedical Engineers	409+
Clinicians	2000

ACCESS NEST360 CLINICAL & TECHNICAL TRAINING RESOURCES

Our publicly available clinical and technical education materials are designed to be adapted and embedded in locally-developed, in-service and pre-service training courses.

Resources include:

Clinical and Technical modules

Clinical and Technical scenarios

Clinical and Technical job aids

NEST-Qualified technologies training videos

nest360.org/resources

"NEST has come to revolutionize how we deliver newborn care... Now everyone is talking about newborn care, because we have created an environment where there is continuous conversation about improvement, change and collaboration."

Edith Gicheha, NEST360 Kenya
Clinical Training and Evaluation Manager

Our partners

We work closely with the Ministry of Health, KEMRI-Wellcome Trust Research Program, County Departments of Health, Aga Khan University, Kenyatta University, Hatch Technologies.

Contact us

Phone: +254 721 336 923
Email: kenya@nest360.org

11th Floor, The Address
Muthangari Drive
Nairobi, Kenya

Scan to visit our website for more information!

INTRODUCTION

The Kenya Medical Training College is a middle-level health training institution under the Ministry of Health in the Republic of Kenya mandated to provide training and research, and consultancy services.

Having started in the year 1927, KMTC has grown tremendously to be the largest medical training institution in East and Central Africa and beyond. The College currently has 72 Campuses spread in 44 out of the 47 Counties.

With about 54,000 students attending 93 medical courses, KMTC makes the biggest contribution to the health sector in Kenya, churning out over 12,000 graduates every year, accounting for 85 percent of hospitals workforce, which makes it undoubtedly one of the key pillars in the achievement of Universal Health Coverage.

VISION

A model institution in the training and development of competent health professionals,

MISSION

To produce competent health professionals through training and research, and provide consultancy services.

CORE VALUES

- Accountability
- Integrity
- Responsiveness
- Equity
- Team work Professionalism
- Creativity and innovation

PROGRAMMES

KMTC offers 18 programmes in addition to select short courses. The programmes are;

1. Clinical Medicine and Surgery (Diploma and Higher Diploma)
2. Community Oral Health (Diploma)
3. Dental Technology (Diploma)
4. Health Promotion and Community Health (Certificate, Diploma and Higher Diploma)
5. Health Records and Information Technology (Certificate and Diploma)
6. Medical Education (Higher Diploma)
7. Medical Engineering (Certificate, Diploma and Higher Diploma)
8. Medical Laboratory Sciences (Diploma and Higher Diploma)
9. Nursing (Certificate, Diploma and Higher Diploma)
10. Nutrition and Dietetics (Certificate and Diploma)
11. Occupational Therapy (Diploma and Higher Diploma)
12. Optometry (Diploma and Higher Diploma)
13. Orthopaedic Technology (Diploma and Higher Diploma)
14. Pharmacy (Diploma and Higher Diploma)
15. Public Health (Certificate, Diploma and Higher Diploma)
16. Radiography and Imaging (Diploma and Higher Diploma)
17. Orthopaedic and Trauma Medicine (Certificate and Diploma)
18. Physiotherapy

DEPARTMENT OF MEDICAL ENGINEERING

Currently, the Medical Engineering department is in 11 out of the 72 Campuses. They are:

1. Bomet - Certificate
2. Eldoret - Certificate, Diploma (Pre-service) and Upgrading
3. Embu - Certificate
4. Kilifi - Certificate and Upgrading Diploma
5. Kisii - Certificate
6. Kisumu - Certificate
7. Lake Victoria - Certificate
8. Loitoktok - Certificate and Upgrading Diploma
9. Makindu - Certificate
10. Meru - Certificate and Upgrading Diploma
11. Nairobi - Certificate, Diploma (Pre-service), Upgrading and Higher Diplomas

HIGHER DIPLOMAS

The department currently offers the following higher diploma courses:

1. Diagnostic Equipment
2. Therapeutic Equipment and
3. Dialysis

All our higher diploma programs are offered on a part-time basis from Thursday to Saturday weekly. Plans are under way to have the Thursday lessons taught via our E-learning platform, meaning that once this is achieved, the students will be required to be physically in campus only on Fridays and Saturdays.

Entry Requirements for Medical Engineering courses

PROGRAM	DURATION	ENTRY REQUIREMENTS
Higher Diploma: • Diagnostic Equipment • Therapeutic Equipment • Dialysis	18 months	Diploma in Medical Engineering, OR equivalent from a recognized institution.
Diploma (Pre-service)	3 years	Mean Grade C, C in English or Kiswahili and Mathematics and Physics/ Physical Sciences C- in any one of the following: - Biology/Biological Sciences, Chemistry, Electricity, Metal Work, Technical Drawing.
Upgrading	2 years	Certificate in Medical Engineering from KMTC or from a recognized institution.
Certificate	2 years	Mean Grade C-, C- in English or Kiswahili, D in Mathematics and D- in Physics/ Physical Sciences, D in any one of the following: Chemistry, Biology/Biological Sciences, Electricity, Metal Work, Technical Drawing.

ENTRY REQUIREMENTS REVIEW

The department, with assistance from AMEK, recently reviewed the entry requirements for certificate in medical engineering and re-introduced physics as a requirement.

Further, during the 2021/2022 academic year, the department reviewed its higher diploma curricula and changed the duration from one year to one and half years or eighteen Months in line with the requirement by the Kenya National Qualification Authority (KNQA). The reviewed curricula was approved in August 2022 and has already been implemented, effective September 2022.

FUTURE PLANS

In the near future, the department intends to start new higher diploma programs in consultation with AMEK. Some of the programs for consideration are; Ophthalmology, ICU and Theatre Equipment. In line with this, the department intends to conduct a training needs assessment to establish the existing gaps.

ACHIEVEMENTS

KMTC was in October 2022 presented with a certificate of accreditation following a successful evaluation that saw the College registered on the Kenya National Qualifications Authority Framework as a Qualifications Awarding Institution, enhancing recognition of KMTC certificates globally.

As a result, all KMTC higher diploma qualifications are now equated to University Bachelor's Degrees.

For more enquiries please contact:

Kenya Medical Training College Off Ngong Road P.O. Box 30195 - 00100, Nairobi, Kenya Enquiries: info@kmtc.ac.ke Admissions: admissions@kmtc.ac.ke	Head of Department (HOD) Medical Engineering Department Kenya Medical Training College Muyanga Kilonzo - 0720830318

HATCH TECHNOLOGIES

HATCH TECHNOLOGIES

Delivering Lifesaving Solutions for Newborns

Hatch Technologies is a nonprofit organization that originated from NEST360; an international alliance of 16 organizations working with governments to end preventable newborn deaths in African hospitals in support of SDG 3.2.

Our mission is to transform the way newborn care devices are distributed, supported and used in order to reduce neonatal mortality in Africa.

The Challenge

While most women in Africa now deliver their babies in health facilities, these hospitals lack the life-saving technologies, equipment, and trained staff that are necessary to manage preterm babies and newborns in distress.

40% of medical equipment ends up in medical equipment graveyards because technologies are either not built for low-resource settings, or there is minimal investment in equipment procurement and repair, and there is no training on technology use and maintenance.

What We Do

Hatch Technologies provides comprehensive distribution and support services for high-quality medical devices designed for newborn care units throughout sub-Saharan Africa.

As a global distributor of newborn technologies, Hatch works towards making lifesaving solutions affordable and accessible for Low and Middle-Income countries (LMICs). Currently, Hatch Technologies operates in Kenya, Malawi, Nigeria, and Tanzania.

Technical Support

We don't just deliver medical devices, we ensure our products are robust, of high quality and suitable for the African market. Hatch Technologies products undergo a 5-Step qualification process before they are selected for distribution. This process entails identification, target product profile comparison, technical testing, environmental testing and usability testing.

Devices are monitored from the point of shipment to installation, usage and until retirement. This enables us to collect device feedback which is critical to product improvement by manufacturers.

Newborn Technologies

Our devices are categorised as follows:

1. Hydration, Nutrituion, and Drug Delivery

- BeneFusion SP3 Syringe Pump

2. Jaundice Management

- BiliDx Bilirubinometer
- Colibri Phototherapy
- Firefly Phototherapy
- Brilliance Pro Phototherapy
- MTTS Lightmeter (4 Meter)

3. Point of Care

- DiaSpect Haemoglobinometer
- Glucometer
- HemoCue® Hb 201+ Haemoglobinometer

4. Respiratory Support

- 5-Way Oxygen Flow Splitter
- Aspeed Suction Pump
- BT-710 Pulse Oximeter
- JAY-10 LongFian Oxygen Concentrator
- Pumani CPAP
- Respiratory Rate/Apnea Monitor
- V Series Oxygen Concentrator

5. Thermal Management

- Celsi Continuous Temperature Monitor
- Phoenix Radiant Warmer
- Wallaby Radiant Warmer

Hatch Technologies
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Muthangari Drive,
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Kenya.

CONTACTS

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email: sales@hatch-tech.org
phone: +254 795 209 606

Medical Gases **Management**

KUTRRH is a 650-bed capacity facility Located at Northern Bypass near Kahawa West. The facility has at least an oxygen outlet at every bed space. This requires keen oxygen management practices that will help in 24-hour supply to the hospital.

KUTRRH medical gases unit, has three constant supply sources of oxygen to the whole hospital. These include oxygen plants-PSA (4 identical & independent), liquid Oxygen tank of 20,000 liters and compressed oxygen cylinders - 850 cylinders.

OXYGEN PLANTS – PSA

At our facility we have four oxygen plants that are identical, each plant produces 613 liters of gaseous oxygen per minute therefore this will be a total of 2,452 liters of gaseous oxygen produced from our plants per a single minute.

Surprisingly during covid era this was not enough, we had to boost our PSA Plant with compressed Oxygen gas cylinders via manifold due to high population of patients at that time. Currently there is minimal consumption of Oxygen by the patient in the hospital. Therefore, we are supporting many other facilities - hospitals & public with approximately 20 (8.5M3) oxygen cylinders per day.

LIQUID TANK

A 20,000-liter liquid oxygen tank was donated by world bank and delivered & commissioned to our facility on 28/09/2021. It has been in used since then as a secondary supply system to the whole hospital.

Liquid oxygen (LOX) has a purity of 99.5% unlike PSA plant that has a purity of >90%. One liter of liquid oxygen produces 861 liters of gaseous oxygen. This will translate to 20,000 *861 = 17,220,000 liters of gaseous oxygen stored in our liquid tank at full capacity.

This has given us firm confidence and solved all the challenges we faced during COVID-19 period. However, plans are underway to install Cryogenic Oxygen plant at KUTRRH.

(a) Liquid Oxygen tank (20,000 Litres)- Installation

(b) Commissioned 28. Sept 2021, fully functional Liquid Oxygen Tank (20,000 Litres) courtesy of World Bank - MOH.

OXYGEN CYLINDERS

An oxygen cylinder is a device that is used to store gaseous oxygen at high pressure. This will assist to store more volume of gas to a small container. KUTRRH own 850 oxygen cylinders with a capacity of 8.5M3 to 150 bars of pressure. This translates to 8,500 liters of gaseous oxygen per cylinder.

Therefore 8,500*850 = 7,225,000 liters of gaseous oxygen stored in oxygen cylinders. NB; Only for KUTRRH emergency backup.

VACUUM PLANT

The unit comprises of; Three (3) pumps, two (2) reservoir tanks Each tank has a capacity of 374kg.

OXYGEN REFILING STATION

The unit is used to refill oxygen cylinders. Capacity to refill at least 40 (8.5m3) oxygen cylinders in 24Hrs.

MANIFOLD SYSTEMS

The manifold systems have i) three (3). Oxygen manifold system, It's a 3*10 system. ii) Co2 manifold system - It's a 2*4 system. iii) N20 manifold system - It's a 2*12 system.

EXPANSION

The section is in process of expanding its scope of operations by constructing a standalone oxygen filling station with two (2) refilling pumps. The pumps have a capacity to refill each at least 55 (8.5m3) Oxygen cylinders totaling 110 (8.5m3) Cylinders in 24Hrs. This will enable the KUTRRH to support oxygen cylinders to other hospitals and individuals across the country.

MANAGEMENT PRACTICES.

KUTRRH Medical gases Unit has three shifts which enables (biomedical engineers) to man medical gases section on a 24-hour basis.

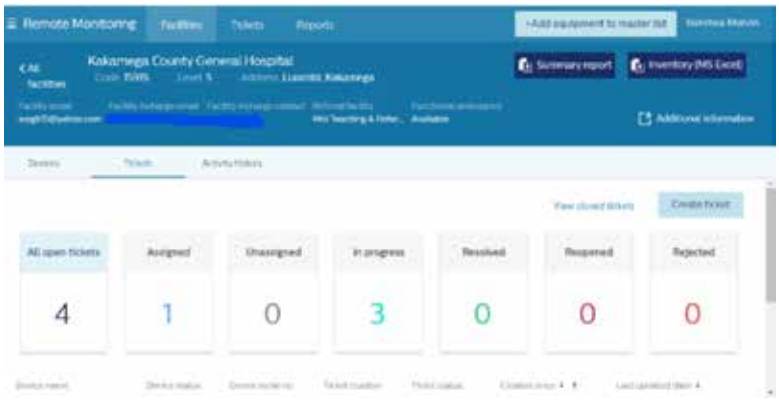
Incase there is power outage, liquid oxygen is used to supply the hospital and incase liquid oxygen is not available we use oxygen cylinder manifold (for 30 Oxygen Cylinders) to supply the hospital.

All these measures ensure continuous supply of oxygen to the hospital with minimal or no challenges.

Eng. Anthony Chuani

KUTRRH

Digital Remote Monitoring and Management of Medical Equipment: **Key Lessons from Kakamega County, Kenya**



Management of Medical equipment is an essential aspect in the overall quality of healthcare in all hospital set ups. Good management greatly helps in effective and proper equipment maintenance programs. Today many hospitals in Kenya are still using paper-based system for inventory management of medical equipment yet there are greater opportunities in using computer-based systems especially for larger inventories. The inventory may be integrated into a Computerized Maintenance Management System (CMMS), which generally combines inventory, repair and maintenance history, and work-order control into one system.

To improve equipment management, UNICEF with funds from Philips Foundation, partnered with Philips Research, Kenya Ministry of Health and County governments in Kakamega and Kisumu to roll out a digital solution (CMMS) called Remote Monitoring Lite™. The system was initially rolled out in Kakamega in 2018 then Kisumu in 2019 but become fully operational in both counties in 2020 after some improvements to make it more user friendly. RM Lite™ is quite user friendly as it can be used both online and offline. The system also comes as a mobile application, known as RM Lite™ (remote monitoring app, lite version) that can be installed on an android phone and used both with or without internet and a website Uniform Resource Locator (URL) that is accessed via the internet.

The system provides an avenue where users can add medical devices from the hospital, set planned preventive maintenance schedules, report devices not working, update functionality status, and request and approve decommissioning of equipment done at different levels. Biomedical engineers and technicians are also enabled by the system to work on job tickets, update repair status and functionality of medical devices in the entire health facility, which information is relayed back to equipment users (owners) for confirmation and resolution.

Since hospitals in Kakamega county started using the RM lite™ system, there has been considerable improvements in the overall management of medical devices across the county. Many hospitals are tracking maintenance schedules of their equipment, and this has greatly reduced equipment downtime hence increased availability of medical equipment and effective healthcare service delivery.

The digital system has also helped in monitoring the life cycle of equipment and informs replacement plans in time for efficient budget allocations besides ensuring up-to-date equipment inventories. All activities undertaken in the system are auto recorded and can be downloaded at any given time as inventory report aggregated at health facility, subcounty and even county level. CMMS offers a viable alternative in the current digital era for management of medical equipment in our facilities. As biomed professionals we subscribe to the saying *"If it is not documented, then it never happened"* CMMS is a solution worth embracing both at National and County levels.

Marvin Nandwa

Vice Chairman - AMEK
Biomedical Engineer, Kakamega County Referral Hospital

Human Resource Management; The Medical **Engineering Perspective Post COVID- 19 Pandemic**

This article has been reproduced from a paper presented at an AMEK conference held in Nakuru city in November 2013. The article is dedicated to all members of AMEK for playing a critical role in the management of medical equipment/ devices during the COVID-19 pandemic. The AMEK engineers and technologists worked round the clock to ensure that oxygen plants plus other devices required in the care/ treatment of COVID-19 patients were in good working condition. This resulted in saving many lives and keeping the death toll as low as possible.

The article is based on personal experiences/observations and will cover the following key areas: **Recruitment, Training, Promotion and Staff Welfare.**

RECRUITMENT

In the old days, college grades played a big role in personnel recruitment especially within the public sector. The situation has now changed whereby although college grades may enable one to be called for an interview, they do not guarantee one getting a job. So what are employers looking for? Or what should employers be looking for? Listed below are some of the qualities that are considered during recruitment:-

i) **Academic qualifications;** are they relevant to the job applied for?

ii) **Job experience;** does the applicant have any relevant experience? This applies especially when it is not a trainee vacancy being recruited for. From which company or institution has the applicant gained this experience? The size and name of the company/institution where the applicant has previously worked counts a lot. In the case of Medical Engineering, the applicant may be required to have experience on some specific equipments.

iii) **Personal attributes;** what kind of personality is the applicant? Here, various characteristics are considered, examples are:- degree of confidence, how the applicant presents himself/herself (type of dressing and makeup may count in some cases), how the applicant answers questions; does he/she give direct and clear answers or beats around the bush? Sometimes the way one answers questions may be used to determine his/her trustworthiness.

iv) **Communication skills;** this is important especially if it is a management position or public relation/front office management job. The applicant must be able to clearly communicate with others. People who stammer or have a very strong mother tongue accent are disadvantaged in this case (when the official language is not the mother tongue). It should be noted that communication skills here refers to both oral and written, therefore skills in use of computers will also be required.

v) **Leadership skills;** although this goes with experience in management positions, not many people posses it. It is a quality which is essential for senior positions like CEO, MD, GM, Head of Department etc. Again in this case, an applicant must have a good reference in terms of where he/she has held a similar position.

vi) **How much the applicant knows about the company;** an applicant who displays in-depth knowledge of the prospective employer will stand a better chance of being offered the job. Having researched about the company shows seriousness in the applicant.

It should be noted that some employers prefer to recruit people who have been recommended to them by trusted friends as a way of avoiding disappointments. This is where networking plays a big role.

TRAINING

Training should always be a continuous process to ensure that employees are in phase with the business trends or technological advancement which change at a very fast rate. But the key factor to consider is the benefit of the training to the company or institution; **does it increase the chances ofachieving the vision and mission of the organization?** When it comes to staff interests, the following are some of the factors to be considered:-

i) **Key areas of job description;** what are the main skills that the staff must have to effectively perform the job functions? These skills should be given priority.

ii) **Staff weaknesses in the identified skills;** training should be targeted to reducing these weaknesses. There is no point for staff to attend training as a formality, it is a waste of time and money.

iii) **Company/Institution policy;** some companies or institutions have a policy whereby staff promotion is based on new skills learned or training attended. In such a situation, the organization avails the training opportunities in terms of finances and it is left upon the staff to identify and apply for training. Of course for the application to be approved, it must meet the criteria as spelt in (i) and (ii) above.

PROMOTION

The criteria for staff promotion should be clearly spelt out in the company/ institution policy and the staff should be made aware of such a policy. This ensures that incase a member of staff takes too long to be promoted, the reasons for lack of promotion are known to both employer and the employee. This will then avoid situations where a member of staff feels discriminated. It is generally a good practice for employers to have a regular staff-grade review (probably every two years); this is where staff appraisal comes in. Measures should be taken to ensure that every member of staff gets what he/her deserves. This means that staff appraisal should be professionally done without bias and the employee made aware of his/her weaknesses or reasons why promotion is denied. **But at the end of the day, the question that the employee should ask is "Do I add any value to the operations of the company or organization?"** Quite often we have employees who do very little and then expect to be rewarded handsomely.

STAFF WELFARE

Staff welfare is a very important aspect that should never be ignored in the workplace. It plays a major part in staff motivation. In this presentation, I will restrict myself to dealing with staff welfare at departmental level. The following are some of the issues/ activities that should be dealt with in regard to staff welfare at department level:-

i) **Induction of new staff;** a new member of staff should be welcomed and introduced to all members of staff in the department. This is best done in a meeting of all department staff where possible and later on within specific sections in the department. It is important that a new member of staff feels welcome from day one at the workplace. This will enable the member to feel at home and settle down very quickly.

ii) **Forums which enables the staff members to come together as often as possible should be created.** Examples of such forums are:- shared tea breaks (tea breaks at a common point), get-together parties/luncheons, regular motivational talks, team building excursions etc.

iii) **Assisting each other when need arises;** pooling together to assist a staff member in need especially when a member has been bereaved is very important. **There may be a need to a have structured welfare body within the department to take care of this.** A department should operate like a close knit family unit where every member feels at home and understands that he/she has a stake. A visit to see a sick member should be part of the social activities.

iv) The Head of Department/ Department In-charge should ensure that all staff welfare issues that require the attention of the company/institution management are dealt with in the shortest time possible. An example is seeking authorization for use of company facilities when required for staff welfare functions.

SOME COMMON CHALLENGES IN HR MANAGEMENT

i) **Lack of motivation due low salaries;** in most cases, the salaries especially in the public sector is too low compared to the cost of livingresulting in de-motivated staff whose performance is very poor.

ii) In the Medical Engineering field, t**he skills required are very broad** resulting in need for a large number of staff (especially in referral hospitals or levels 5 and 6 hospitals). The end result is need for a huge budget for staff salaries and training. Most developing countries cannot afford this.

iii) **Inability to retain highly trained staff;** well trained staff are always looking for greener pastures and it becomes difficult to replace them once they leave.

It is my hope that the deliberations in this year's conference will provide some solutions to some of the challenges faced in HR Management in the profession.

Christopher M. Konosi

Formerly of Egerton University

VELOCITY PROJECT MANAGEMENT LIMITED

HEALTHCARE RESOURCE PLANNING

Planning

In Planning we start from the conception/idea of opening a HEALTH FACILITY of our client by advising to do the right sizing of facility, placement of facility, business guidance is provided in the following areas

Market Survey
Business Plan
Strategic Plan
Marketing Plan
Services Plan
Equipment Plan
Human Resources Planning
Prefeasibility Study
Project Feasibility Study,
SWOT Analysis
Services Planning
HR Planning
Financial, Cash Flows
Preparation Of IM For Investors
Identifying Key Investors
Legal Services
Formation of Company
Guidance on Share structure
Secretarial Service

Medical Equipment & Non-Medical

Medical, Non-Medical Equipment & Maintenance are equally important to run a hospital, which needs planning from the Beginning of Conception. A proper contract management with all suppliers for spares and training of all HR involved

Lab Equipment
Radiology Equipment
ICU Equipment
Critical Care
Kitchen
Laundry
Mortuary
OR Equipment
Clinical Equipment
Furniture
Fittings
C.S.S.D Equipment
ICT

Velocity Project Management is a HEALTH RESOURCE PLANNING Institute, we guide our clients from CONCEPTION–OPERATIONS by Handholding. We support our clients through various well defined processes. Our Services are categorized mainly on four pillars

1. BUSINESS PLANNING
2. INFRASTRUCTURE DEVELOPMENT
3. EQUIPMENT DESIGN & SUPPLY
4. OPERATIONS, MANAGEMENT, TRAINING

Infrastructure

Engineering Services, Procurement Management, Tender management, Project Management, and Guidance on Negotiation etc are Handled in this section

Design of Concept & Development of
Site Survey
Architectural
Structural
Mechanical
Electrical
Plumbing
Interior
Equipment planning
Infection control measures
Space planning
Medical Gases Planning
Procurement Services
Pre-tender activities
Post-tender activities
Project Management Services
Quality , Quantity and Testing Services
E.P.C. & F
Turnkey Services

Operations, Management Trainings

Running of Hospital, Hand holding are taken Care by providing Right HR

H.I.M.S,
S.O.P.S
Electronic Medical Records
Management Trainings
Biomedical Training
Quality Of Services
Standard Operating Procedures
Facility Management Trainings
Emerging Technologies
ICT Trainings
Artificial Intelligence
Cad & Cam
3d Printing
Data Mining
Data security

VELOCITY PROJECT MANAGEMENT LIMITED

HealthCare Resource Planning
www.velocityprojectmanagement.com
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Tel:+254720604003

KEMSA

BOC Kenya PLC is the leading supplier of Medical, Industrial, Process gases, Specialty Gases and Engineering Services company in East Africa.

Since the onset of COVID-19 pandemic in March 2020, BOC together with other partners, Ministry of Health (MoH) and County Governments has been working towards increasing the medical oxygen access across Kenya. During this post Covid period we continue with this important expansion of medical oxygen access for use in treatment of respiratory illnesses like COVID-19 and pneumonia. Oxygen is also essential for surgery and trauma. Vulnerable groups like the elderly, pregnant women and newborns need oxygen therapy on regular basis.

BOC was contracted by Kenya medical Supplies Authority with the funding provided by the World Bank to supply and install medical Liquid oxygen systems for 16 counties.

Through BOC, KEMSA & the World Bank Partnership the following hospitals have benefited with installation of Liquid oxygen storage tanks and associated equipment's. This will ensure and guarantee reliable, high purity oxygen supply to the hospitals. The hospitals benefiting from the fund are Ngong Subcounty Hospital, Naivasha Subcounty Hospital, Macalder Subcounty Hospital, Narok County referral hospital, Mukurweini Subcounty Hospital, Kangundo

The Tank at Alupe Subcounty Hospital.

The tanks at BOC KENYA PLC Nairobi site.

Subcounty Hospital, Alupe Subcounty Hospital, Mama Lucy Hospital, Mt Kenya Hospital. Kisumu County Hospital, Portlietz Hospital Mombasa and Molo Sub county Hospital.

The National Government aim is to ensure better assess to oxygen needs, usage, and supply to all the hospitals under its umbrella in order to fight the COVID-19 Pandemic and also improve the quality of life by ensuring that all ailments that need oxygen are easily managed to reduce mortality rate caused by lack of Oxygen supply. Oxygen therapy can save millions of lives—from treating heart failure, pneumonia, asthma and now COVID-19.

A key pillar in the Big Four Agenda for Kenya is Healthcare and ensuring Universal Healthcare for Kenyan citizens. At the heart of this is ensuring that healthcare facilities are well equipped to handle the various needs of the citizens including emergency response, treatment alternatives and preventive care.

On a global scale, the up scaling is in support of Goal 3 of the Sustainable Development Goals (SDGs) that BOC Kenya PLC supports. These universal goals offer institutions an opportunity to address global challenges of inequality, climate change and poverty. Goal 3 looks at Good health and wellbeing and it challenges institutions to tackle global maternal mortality, end preventable deaths of newborns and children under 5 years and additionally to end the epidemic of tuberculosis. The supply of oxygen to

hospitals ensures access to essential health care services that are otherwise unavailable or limited in supply.

ABOUT BOC

BOC Kenya PLC follows Good Manufacturing Practices (GMP) which require that we among other things ensure quality control and high levels of plant hygiene set up mechanisms to handle customer complaints, product recalls and inspections. We also ensure that we offer competitive pricing to all our customers especially at this critical time.

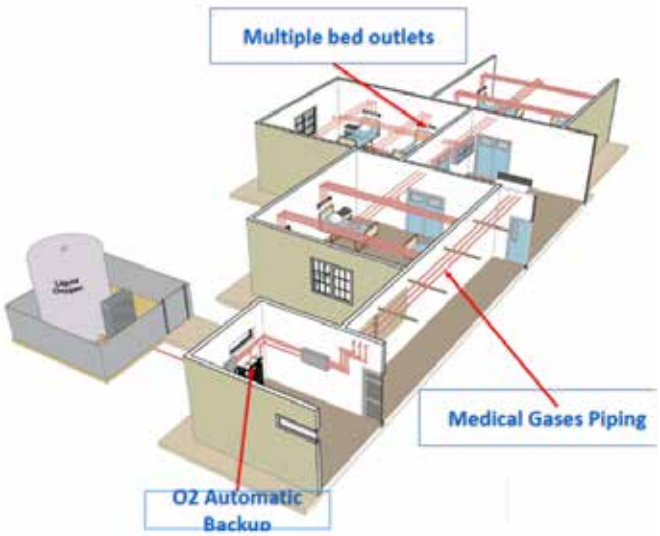
BOC Kenya PLC is the leading supplier of medical, industrial, process, speciality gases and gas engineering services company in East Africa. The company, listed on the Nairobi Securities Exchange (NSE) since 1969, is affiliated to with the world largest Gases and Engineering Company, The Linde Group. Its Head Office, situated on Kitui Road, Industrial Area Nairobi, produces and distributes the atmospheric gases Oxygen, Nitrogen, Argon. All these gases are manufactured in their own Air Separation Unit (ASU), the only one operational in East and Central Africa. BOC's product portfolio also ranges from Hydrogen, Acetylene, LPG, gas mixtures, to shielding gases for welding applications, inert gases, and high purity speciality gases. The company also supplies medical equipment and accessories as well as welding hard goods and equipment.

BOC Medical Oxygen Delivery Truck.

Since being established in 1940, the company has provided gases used in virtually every branch of Industry, Commerce, Science and Research. Its Medical Oxygen products and other medical have reliably enabled Healthcare professionals to provide optimal therapy in both private and public hospitals in Kenya.

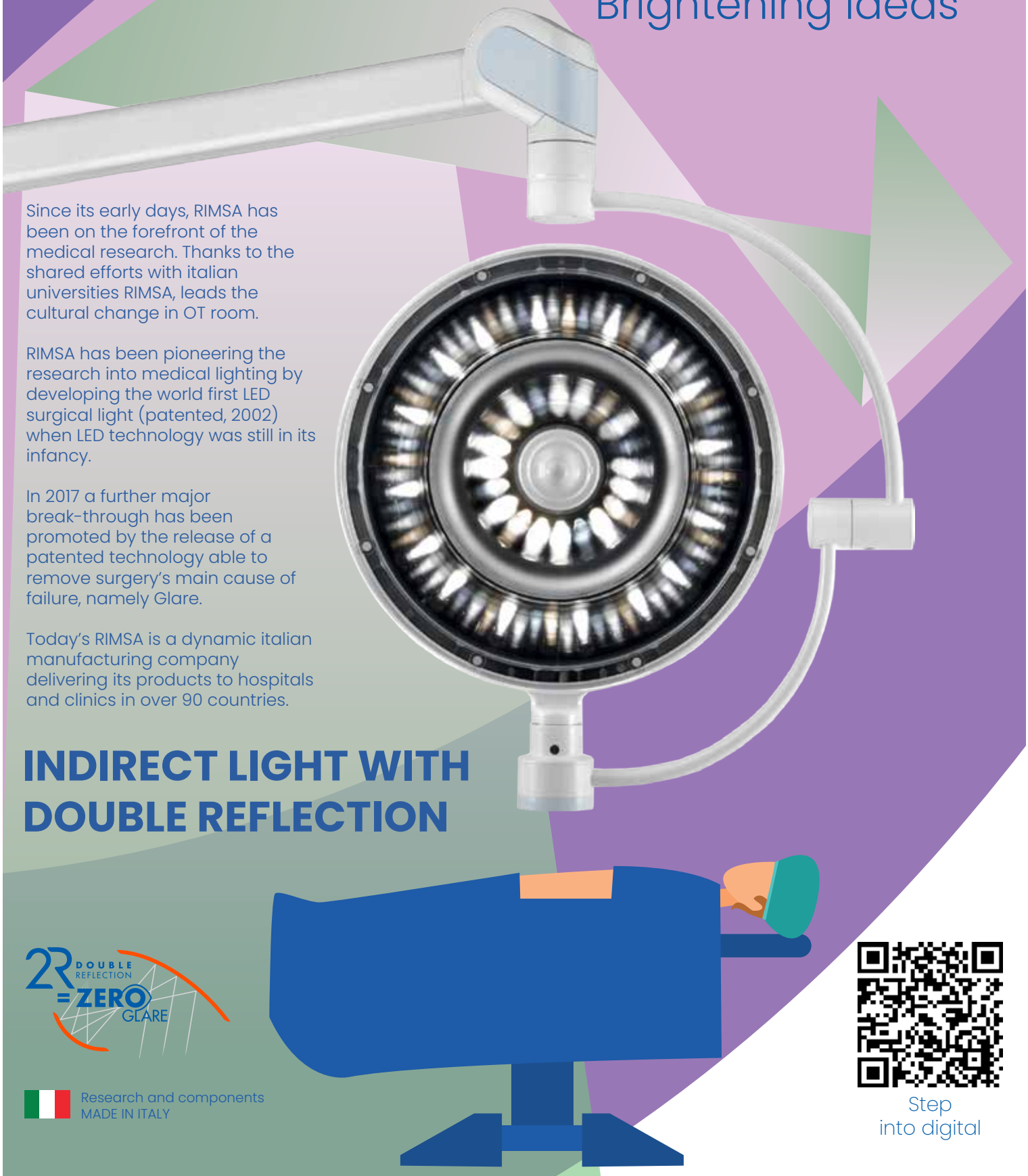
BOC has invested heavily in the Air Separation Unit (ASU) which guarantees the purification of production of gases to the highest standards and purification (more than 99.5%) for medical oxygen, other specialised equipment, and development of its workforce. The company has equally invested in SHEQ (Safety, Health, Environment and Quality) to ensure consistence, business continuity, no harm to people, the environment, or the communities in which we operate.

Model Drawing of Medical gases copper pipe installations for a Hospital Design



RIMSA

Brightening ideas



Since its early days, RIMSA has been on the forefront of the medical research. Thanks to the shared efforts with italian universities RIMSA, leads the cultural change in OT room.

RIMSA has been pioneering the research into medical lighting by developing the world first LED surgical light (patented, 2002) when LED technology was still in its infancy.

In 2017 a further major break-through has been promoted by the release of a patented technology able to remove surgery's main cause of failure, namely Glare.

Today's RIMSA is a dynamic italian manufacturing company delivering its products to hospitals and clinics in over 90 countries.

INDIRECT LIGHT WITH DOUBLE REFLECTION

2R DOUBLE REFLECTION = ZERO GLARE

Research and components
MADE IN ITALY

Step
into digital

AMEK **NEWS**

INTERNATIONAL FEDERATION OF MEDICAL AND BIOLOGICAL ENGINEERING (IFMBE)

To hold the First African Conference in October 2023 to be hosted by AMEK in Nairobi, Kenya.

INTERNATIONAL FEDERATION OF HEALTHCARE ENGINEERING (IFHE) UPCOMING EVENTS"

2023: Ciudad de México – México - 4 / 6 – November 2023
2024: Cape Town, South Africa - 17 / 19 October 2024 - Cape Town Convention Centre – South Africa
https://sbs.co.za/ifhe-2024-sponsorship/
2025: Antwerp, Belgium - .....May, 2025
2026: New Orleans, USA - 16 / 20 October 2026

FEDERATION OF EAST AFRICA HEALTHCARE ENGINERING ASSOCIATIONS (FEAHEA)

Will communicate the next action in 2023

KENYA

The Kenya Health Workers Annual Convention 2023--- Dates to be communicated

For More Information contact our Secretariat or check AMEK'S website; amek.or.ke

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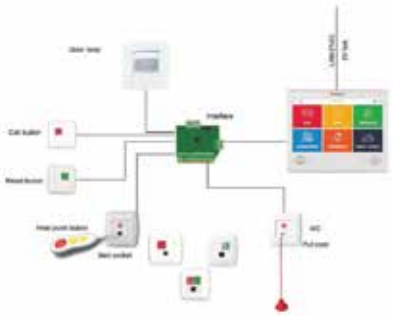
Oxygen Generators

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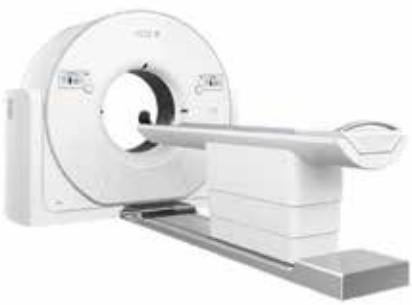


Mindray N19 patient monitor

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