

## KEY EXPERTISE

- Health Sector Engineer in projects appraisal and monitoring in Europe and worldwide for investments operations in health infrastructure and medical technologies, including coordination of technical assistance assignments for projects preparation (from tendering to monitoring), covering also the different sustainability aspects, comprising the development of project financial bonds
- Medical Engineering Planning and Design Specialist in health infrastructure projects (experience ranging from 50bed-7M\$ to 400bed-130M\$ facilities, with equipment budget between 3 to 40 M\$) involved along the entire hospital project life cycle, including tendering and procurement, from the design phase with architecture and MEP systems integration, through the works supervision, up to installation and training coordination, test and commissioning and the following post occupancy period with start up of operations and maintenance activities
- Clinical Engineer and Health Facility Management Expert coordinating of the equipment planning, procurement and maintenance in hospitals, including procurement (tender drafting of technical specifications, bids evaluation and awarding), covering the training for clinical users and technicians, defects liability period and warranty supervision, set up and coordination of the medical logistics for equipment, accessories, spare parts, consumables and drugs

## PROFESSIONAL EXPERIENCES

### Health Sector Engineer

- 2017 - current    EIB (European Investment Bank), Projects Directorate, Life Science and Health Div. - Luxembourg
- Technical appraisal of health infrastructure and medical technologies projects for lending operations in Europe (in particular large health facilities in Belgium, France, Italy, Poland) and out of Europe (Middle East, Africa, Caribbean, West Balkans), including Covid-19 and health emergency preparedness interventions
  - Coordination of studies and technical assistance activities by external consultants for projects preparation (e.g. feasibility studies for new hospitals, technical studies for radiotherapy sector, environmental and social sustainability analysis)
  - Monitoring of projects implementation for loans disbursements in different type of projects (health facilities equipment and construction, PPPs, regional / national investment health programs), including the follow up of public procurement activities

### Medical Engineering Consulting

- 2016 - 2017    4CE Engineering practice – Vicenza, Italy
- Remote follow up on hospital project bids evaluation (*UNOPS Haiti*)
  - Technical support for the development of a hospital planning and budgeting software tool (*Hospital Consulting – Florence, Italy*)
  - Technical inspections support (“Schede FAST”) in central Italy, after the earthquake of 2016 (volunteering program within the *CNI Comitato Nazionale Ingegneri and Protezione Civile*)
  - Technical support for medical devices certification (*Progetti ELPRO srl – Turin, Italy*)
  - Medical engineering component support in an international tender bidding for hospital design review and construction in Algeria (*Carlo Gavazzi Impianti, Gruppo Bonatti – Milan, Italy*)
  - Medical engineering component support in a public tender for a hospital renovation in Basilicata Region (*Studio Maroscia – Potenza, Italy*)
  - Medical engineering component support in a facility management technical proposal for a hospital in St Petersburg, Russia (*OpenPlan – Milan, Italy*)

## International Hospital Projects

- 2013 - 2016 UNOPS (United Nations Office for Project Services), HTOC Haiti Office
- Delmas2, Port Au Prince, Emergency Dept. Facility (with FAES-IDB) - *Project Manager* medical engineering sector: design review, equipment planning and procurement, tendering, MEP requirements analysis, medical gases design verification, site preparation works supervision
  - HCR Hospitals, Port Au Prince (with Brazil Min. of Health-UNDP) - *Medical Equipment Specialist*: coordination of the biomedical sector for the facility management (operation & maintenance) activities of three community hospitals of 50 bed (retrofitting, procedures and protocols drafting, maintenance workshops set up, training) and support to the MEP sector; technical specifications, bids evaluation and installation supervision of the central medical gases stations
  - Hospital La Providence des Gonaives (with Canada Govt. Cooperation) - *Medical Equipment Coordinator*: management of the equipment project cycle for the new 200 bed Hospital, from procurement (tender specifications, bids evaluation, logistics, contract management), planning (distribution, layout, MEP integration), site activities (site preparation and installation works supervision, test and commissioning, training); *Project Manager* for the defects liability and warranty follow up period
- 2011 - 2013 General Hospital, Suleimaniya, Iraq, Kurdistan Region (ETS - FR Engineering consortium)
- *Medical equipment expert* in the resident consultancy team for the design review and works supervision support to the Min. of Health and Min. of Reconstruction of a 400-bed General Hospital in the city of Suleimaniya (40 M\$ medical equipment out of 130M\$ total)  
Implemented activities covered: review of BoQ, equipment planning distribution and specifications, bid evaluation, MEP (mechanical and electrical) pre-installation requirements analysis, logistics and deliveries inspection, installation works supervision, test and commissioning, technical training of local engineers, clinical engineering unit set up support
- 2007 - 2011 Shisong Cardiac Surgery Centre, Cameroon (Children with Heart Disease NGO)
- *Project coordinator* for the medical equipment planning and engineering of a highly specialized healthcare facility (50 bed): needs identification, functional layout drafting and workflows analysis, evaluation of electrical and mechanical pre-installations, procurement and logistics support, on-site installation and commissioning, set up of maintenance unit
  - Start up and coordination of the *supply chain management* system for consumables and drugs

## Short International Consultancies

- 2013 Riyadh, Saudi Arabia- Manens-Tifs Engineering Group, Padua, Italy
- Preliminary assessment for the biomed sector activities for a large-scale health citadel project
- 2009 - 2010 Pristina Hospital, Kosovo - San Donato Hospital international office and NGO Bambini Cardiopatici
- Preliminary needs evaluation for the new cardiac surgery unit project
- 2007 - 2008 Libya and Algeria - Hospital Consulting SpA (Florence, Italy)
- Technical-commercial support activities for projects and business development opportunities

## Clinical Engineering

- 2005 - 2007 Service area manager - Nextech-Novaura Srl (Milan, Italy)
- Organization and implementation of electrical safety tests, functional tests, preventive maintenance activities and quality controls on biomedical technologies; users safety training
- 2004 - 2005 Clinical engineering unit assistant manager - ICP Hospitals group (Milan, Italy)
- Support to the Clinical Engineering manager for the biomedical equipment management activities: assessment, procurement, commissioning, testing, maintenance and decommission
  - Conduction of a feasibility study on the introduction of a digital medical imaging RIS-PACS system in a multi-facilities health organization
- 2001 - 2003 Clinical engineering unit junior site manager - Poliedra Sanità (Turin, Italy)
- Management of a clinical engineering unit (ASL 13 Novara Hospital): technical requirements drafting for tenders, bids evaluations, maintenance activities coordination
- 1999 - 2000 Project Engineer - Veslatec Ltd Laser Processing (Finland)
- Research on a hip replacement plate: materials analysis, manufacturing process, in vitro testing

## EDUCATION

2010	<b>Diploma of Advanced Studies (DAS) in Humanitarian Logistics and Management</b> <i>University of Lugano, Switzerland, Faculty of Economics</i>
2005	<b>MSc in Biomedical Engineering</b> <i>Milan School of Engineering, Italy</i>
2004	<b>Postgraduate course on healthcare facilities and services management</b> <i>Milan School of Engineering, Italy</i>
2003	<b>Postgraduate course on health services in Countries with limited resources</b> <i>Padua University, Italy</i>
2000	<b>MSc in Materials Science Engineering</b> <i>Tampere University of Technology, Finland</i>

## ADDITIONAL INFORMATION

<b>Affiliations / Certifications</b>	<ul style="list-style-type: none"> <li>- <i>Italian National Engineers Register</i>: professional engineer n. 3287 (Vicenza Order, Italy)</li> <li>- <i>AIIC Italian Clinical Engineers Association</i> (Federated IFMBE): member</li> <li>- <i>SIAIS Italian Society of Architects and Engineers in Healthcare</i> (Federated IFHE): member</li> <li>- <i>AIIGM Italian Association for Medical Gases Installation Systems</i>: former member</li> <li>- <i>AICARR Italian Association for HVAC installations and systems</i>: former member of the work group on the Commissioning Process (CxP) in health care facilities</li> <li>- <i>Prince2 Project Management</i>: PM foundation certified (n. 03888614-01-IQNP)</li> <li>- <i>Medical Gases Technical Expert</i>: previously certified (n. IMQ-GM-1507005)</li> </ul>		
<b>IT Skills</b>	<ul style="list-style-type: none"> <li>- HFBS (Health Facilities Briefing System) platform, space programming and equipment module</li> <li>- BIM (Autodesk Revit – fundamental competences, course Autodesk certified, 2017 at Pentaformazione, Vicenza - Italy)</li> <li>- Autodesk-AutoCAD (2D-3D design – fundamental competences, course Autodesk certified, 2017 at Pentaformazione, Vicenza, Italy)</li> <li>- Attainia (medical capital equipment supply chain management software)</li> <li>- CodeBook (healthcare facilities planning and design software – initial competences)</li> <li>- CMMS (general competences in software for medical equipment maintenance management)</li> <li>- Google/Android environment applications</li> <li>- Evernote (productivity/collaboration tool)</li> <li>- MS Office package (Access, Word, Excel, PowerPoint, Microsoft Project, OneNote, BingAI-copilot)</li> </ul>		
<b>Languages</b>	<ul style="list-style-type: none"> <li>- <i>English</i>: Fluent</li> <li>- <i>French</i>: Fluent / Very Good</li> <li>- <i>Luxembourgish</i>: Beginner</li> </ul>	<ul style="list-style-type: none"> <li>- <i>Italian</i>: Native</li> <li>- <i>Spanish</i>: Very Good</li> </ul>	

## ANNEX 1

(Roberto Musi CV)

## Specialist Training

- 2023
  - *Imperial College London*: Health Systems Development Specialization (ongoing, Coursera distance learning, self-paced)
  - *Institute for Medical Technology Assessment of the Erasmus University Rotterdam*: Health Economics and Outcomes Research for HTA (ongoing, distance learning, self-paced)
- 2022
  - *SDA Bocconi Business School*: PPP planning and set up, four days training (live stream)
  - *Erasmus University Rotterdam, Institute for Medical technology Assessment*: Health Economics and Outcomes Research, foundation training – ongoing (online, self-paced)
- 2021
  - *House of Training (Chambre de Commerce), Luxembourg*: BIM for maître d'oeuvre – one day course on management of BIM aspects from the contractor side
  - *House of Training (Chambre de Commerce), Luxembourg*: BIM base 1-day course on project set up (execution plan, project BIM briefing, matrix of responsibilities, details requirements)
  - *Ordine Ingegneri di Vicenza*: Legal BIM, 1-day live stream training on BIM legal framework
  - *Ordine Ingegneri Vicenza*: Europrogettazione, 1-day live stream training on principles of projects proposals for EU funding
- 2020
  - *TAHPI, Dubai, UAE*: distance live stream certified training in health facilities planning and design (10-days)
- 2018 - 2019
  - *Lund University, Sweden*: Hadron and proton therapy technologies (Coursera distance learning)
  - *Bocconi University, Milan, Italy*: Project Finance (Coursera distance learning)
  - *Columbia University, New York*: Construction project management module 1 (Coursera online)
- 2017 - 2020
  - *EIB internal training*: courses in procurement, environmental sustainability and climate action, social principles, projects appraisal process management, economic analysis
- 2017
  - *AICARR, Milan, Italy*: LEED protocol GA and AP pre-certification courses
  - *SDA Bocconi, Milan, Italy*: PPP and new trends in Managed Equipment Services workshop
  - *IM Service, Milan, Italy*: hospital work sites safety and systems integration course
  - *AIIC, Genova, Italy*: hospital emergency units planning and services course
- 2016
  - *Order of Engineers, Vicenza, Italy*: introduction seminars on BIM design process management
  - *STS, Padua, Italy*: courses on works supervision and public infrastructure design process
  - *AICARR, Milan, Italy*: course on MEP installations and systems in the operating theatre
  - *AICARR, Milan, Italy*: course on the Commissioning Process (ASHRAE Standard 202 CxP)
  - *AIIC, Bari, Italy*: the new public tendering process code for goods and services
  - *AIIC, Bari, Italy*: the logistics of medical devices
- 2015
  - *UNOPS, Copenhagen, Denmark*: project management foundation course
  - *AIIGM, Milan, Italy*: course on medical gases installation systems operational management
  - *AIIC, Cagliari, Italy*: course on hospital laboratories planning and equipment
- 2012
  - *UNI, Milan, Italy*: course on medical gases piping systems, design and commissioning
- 2008
  - *CEI, Milan, Italy*: course on health facilities electrical systems installations
  - *AICARR, Milan*: course on HVAC systems in health facilities
- 2007
  - *Nextech-Novaura, Milan, Italy*: internal courses on electrical safety of medical technologies
- 2005
  - *SDA Bocconi, Milan, Italy*: course on governance of the biomedical technical assets
- 2003
  - *IRI, Milan, Italy*: seminar on management of hospital biomedical devices

- 2002 - 2004 - *Institute of International Politics (ISPI), Milan, Italy*: courses on humanitarian emergencies; microeconomics; project cycle management
- General - Regular participation to *international congresses and fairs* (IFHE, AIIC, Medica Dusseldorf)

## ANNEX 2

(Roberto Musi CV)

### Events and Research

- Publications /  
Proceedings
- *IFHE (International Federation of Health Engineering)*, international congress digital edition 2021: co-speaker about the European Investment Banks projects in health infrastructure and climate action
  - *Technica Ospedaliera Journal*: Green public procurement case study for a blood transfusion department in a university hospital (2018)
  - *EU-IFHE (European Congress in Hospital Engineering)*, Bologna, Italy, 2017: co-speaker about a combined LEED and Green Procurement approach on medical equipment in a blood unit
  - *Tech4Dev (Int. Conference on Technologies for Development)*, Lausanne, Switzerland, 2016: author and speaker on the setting up of health facilities O&M services in complex settings
  - *ECHE (European Congress in Hospital Engineering)*, Turku, Finland, June 2015: co-author of a presentation on Ashrae commissioning process applied to medical equipment as a system
  - *Italian Association of Clinical Engineers Congress*, Cagliari, Italy, May 2015: co-author of a presentation on the transition from health facility construction to maintenance start up
  - *J. of Blood Disorders and Transfusion*: Point of Care testing and transfusion safety (2015, 6:2)
  - *IET London, Appropriate Healthcare Technologies Conference*, September 2014: co-author of two poster presentations on clinical laboratories standard modelling in Africa and blood unit technologies modelling, Cameroun case
  - *Global Forum on Medical Devices, WHO*, Geneva - Switzerland, November 2013: co-author of a poster presentation on balance of utilization of new and used equipment
  - *Equip Aid, Chamonix – France*, November 2013: co-author of presentation on case study regarding management of high tech equipment in remote settings
  - *Italian Association of Health Engineers and Architects*, October 2012 Congress, Rieti: the integration of equipment data through the design phase, works supervision and maintenance
  - *Italian Association of Clinical Engineers*, April 2012 Congress, Venice: medical equipment management issues in a high tech facility in remote areas
  - *Exposanità 2010 exhibition* – seminar on refurbishment of technologies : the combination of new and refurbished equipment in a high-tech hospital project in a developing country
  - *Salute e Sviluppo* – Health and Development journal, october 2009: survey and analysis on appropriate health technologies in 10 district hospitals in Africa
  - *Innovazione e Qualità in Sanità*, health technical journal, 2002: the innovation of ultrasound scanning with contrast medium; the evolution of digital mammography
- Academic  
Collaboration
- Co-supervisor for a MSc Clinical Engineering thesis on the green public procurement of medical equipment in a blood transfusion unit (*Clinical Engineering Dept, University of Trieste, 2017*)
  - Tutoring support for a Clinical Engineering Master thesis on the clinical laboratories standards modelling in Africa (*Clinical Engineering Dept, University of Trieste, and NGO Doctors with Africa CUAMM, 2013*)
  - Co-supervisor for a MSc Biomedical Engineering thesis on the blood unit standards modelling in Cameroun (*Biomedical Engineering Dept., Milan School of Engineering, 2013*)
  - Co-supervisor for MSc Thesis about the setting up of a clinical engineering unit in Cameroon (*Biomedical Engineering Dept., Milan School of Engineering, 2011*)
  - Tutor for MSc Thesis about the advantages of a RIS-PACS system in a multi-facility hospital (*Industrial and Management Engineering Dept., Milan School of Engineering, 2005*)
  - Tutor for MSc Thesis about the medical equipment management at ICP Hospital, Milan (*Biomedical Engineering Dept., Milan School of Engineering, 2004*)

