

CH. PERVAIZ ELAHI INSTITUTE OF CARDIOLOGY, MULTAN
MINUTES OF THE MEETING

A meeting of TEC "Technical Evaluation Committee" for purchase of Anesthesia Machine with Built-in ventilator for Ch. Pervaiz Elahi Institute of Cardiology, Multan was held under the chairmanship of **Prof. Dr. Haider Zaman**, Professor of Cardiac Surgery & Chairman TEC, Dated: 29.01.2016 at 02:30 Pm in the office of the Director Technical of this institute.

The following members were present in the meeting:-

1. Prof. Dr. Haider Zaman, Prof. of Cardiac Surgery	Chairman
2. Prof. Dr. Rana Altaf, Prof. of Anesthesia/End User	Member
3. Dr. Tariq Abbas, Associate Prof. of Cardiology	Member
4. Dr. Sohail Ahmad, Assist.Prof of Anaesthesia	Member
5. Dr. Farhan Khan, Director Technical	Member
6. Dr. Fayyaz Hashmi, Sr. Medical Officer	Member
7. Dr. Muhammad Moeen, Sr. Registrar Cardiac Surgery	Member
8. Dr. Sohail Saleemi, Sr. Registrar Cardiology	Member
9. Engr. Muhammad Kaleem, Bio Medical Engineer	Member

AGENDA: TECHNICAL EVALUATION FOR PURCHASE ANESTHESIA MACHINE WITH BUILT-IN VENTILATOR

Proceedings:

Following 03Nos. firms participated in the tender:

1. M/S Shirazi Trading, Lahore
2. M/S Vertex Enterprises, Lahore
3. M/S Total Technologies, Lahore

All the tenders were evaluated with respect to floated specification and requirements.

1. M/S SHIRAZI TRADING, LAHORE

	Specification	M/S Shirazi Trading
1	Model	Avance CS2
2	Make	GE
3	Country of Origin: USA / Europe / Japan	USA/EU
4	Authorization	31.12.2016
5	Certification: (FDA / CE / JIS)	FDA/CE
6	Warranty: 5 Years Comprehensive with parts & spare including backup services	5 Years
7	PHYSICAL / TECHNICAL CHARACTERISTICS	

8	3 Gas Anesthesia Workstation, O2, N2O and Air Up to 1x O2 and 1x N2O Cylinder can be connected	3 Gas, 1 Cylinder of O2 & N2O can be connected
9	Gauges for Central Piping 1x O2 and 1x N2O and 1x Air	Gauges of Air/Oxygen available but N2O not available, accepted as a minor deviation
10	Gauges for Cylinders 1x O2, 1x N2O	Not Available, accepted as a minor deviation
11	Pressure Gauges for pipeline and cylinders are on Main Working Surface	Only pipelines not cylinders gauges available, accepted as a minor deviation
12	Must have 4 meter high quality pipe for O2, Air, N2O with NIST/DIN standard (I.O to specify)	4 Meter NIST
13	1x Monitoring Shelf	Monitoring shelf
14	Common Gas Outlet	Gas out let
15	Side Rails and Centrally Braked Castors with Large Brake Paddle	TE compliance
16	Drawer unit- 1 or more	2 Drawer
17	Table or Writing platform	Table platform
18	O2 Flush	>35 l/min
19	Fresh Gas Outlet	TE Compliance
20	Auxiliary flow meter (Digital)	Analog offered, accepted as minor deviation
21	Anesthesia Machine should be capable of working at Low Flow Anesthesia	Low flow
22	Scavenging System	TE Compliance
23	Venturi Suction	TE Compliance
24	Circle/CO2 Absorber, fully Autoclavable, including Bag/Vent switch, CO2 by pass	800gm absorber, Bag/Vent switch but Co2 bypass not available, accepted as minor deviation
26	Complete with mounting bracket, disposable patient circuit, absorber detachable including Y-piece circuit, bag	TE compliance
27	Vaporizers: Tested, Temperature compensated, interlock with refill keys	TE compliance
28	2 Station Selectatec Back bar to accommodate up to two vaporizers at a time	TE compliance
29	1x Vaporizer, Selectatec Type, Isoflurane	Selectatec, Tec 7
30	1x Vaporizer, Selectatec Type, Sevoflurane	Selectatec, Tec 7
31	1 Pin Index Cylinders for O2	Certified brand new
32	1 Pin Index Cylinders for N2O	Certified brand new
33	ELECTRONIC / DIGITAL FLOW METERS	
34	Three Gas Configurations (O2, N2O and Air)	3 Gases
35	O2 and Air: 0 to 12 LPM	TE Compliance
36	N2O: 0 to 12 LPM	TE Compliance
37	Thermal Mass Flow Sensor Type	Infrared sensor
38	Electronic Hypoxic Guard for minimum of 25% O2	Electronic
39	Agent Monitoring for Iso/Sevo/Des	ISO/SEVO/DES

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40	Low flow oxygen at 200ml flow meter	TE Compliance
41	ANESTHESIA VENTILATOR BUILT-IN (Paeds to Adult)	
42	Microprocessor Controlled Anesthesia Ventilator	Microprocessor based, pneumatic driven, electronically controlled
43	Full Colour Minimum 8" or more LCD / TFT Touch Screen Display Automatic Leak and Compliance Test	15" TFT, Automatic leak & compliance test
44	Ventilation Modes: Volume Control, Pressure Control. SIMV+PSV, Pressure Support, CPAP, Spontaneous manual	All modes available
45	Ventilator Monitoring:	TE Compliance
46	Oxygen (F102), Inspired & Expired Volumes, Paw, Pressure, Real Time Waveforms for Flow, Volume, & Pressure	TE Compliance
47	Tidal Volume: 05 — 1400 ml	5 to 1500ml
48	IE Ratio: 1:2	2:1 to 1:8
49	Frequency: 4 — 60 bpm	4 to 100bpm
50	Minute Volume: 0.3 — 25 LPM	0.1 to 99.9 L/M
51	Pressure Limit: 10 - 70 cmH2O (Adult)	12 - 100cmH2O
52	10-50 cmH2O (Paeds)	5 - 60cmH2O
53	PEEP: 3 — 20 cmH2O	4 - 30cmH2O
54	Patient Trigger: 1 — 10 LPM	1 to 10L/M
55	Battery Back Up of 30 minutes Minimum.	30min
56	User Alarms: High/Low Pressure; High/Low Minute Volume; High/Low Breath Per Minute (BPM); High/Low Oxygen Static Alarms: Apnea, Low Supply Gas,	TE Compliance
57	No Charge, Fresh Gas Too High, Ventilator Inoperative, Under Pressure, Power Fail, Battery Low, Apnea Alarm in Bag Mode	TE Compliance
58	Electronic Gas Mixing	Electronic Mixing
59	Spirometry Loops	Spirometry loops
60	Heart Lung Mode	Cardiac Bypass Mode
61	User service manuals with error code book.	TE Compliance
62	User Manual	TE Compliance
63	In case of electricity and battery failure, manual ventilation, gas delivery and agent delivery should be possible.	TE Compliance
64	REMARKS	Technically Accepted

2. M/S VERTEX ENTERPRISES, LAHORE

	Specification	M/S Vertex Enterprises
1	Model	Primus
2	Make	Dragerwerk
3	Country of Origin: USA / Europe / Japan	Germany
4	Authorization	31.12.2016
5	Certification: (FDA / CE / JIS)	FDA/CE

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6	Warranty: 5 Years Comprehensive with parts & spare including backup services	5 Years
7	PHYSICAL / TECHNICAL CHARACTERISTICS	
8	3 Gas Anesthesia Workstation, O2, N2O and Air Up to 1x O2 and 1x N2O Cylinder can be connected	3 Gas, 1 Cylinder of O2 & N2O can be connected
9	Gauges for Central Piping 1x O2 and 1x N2O and 1x Air	Electronic display of central piping on main screen, accepted as minor deviation
10	Gauges for Cylinders 1x O2, 1x N2O	Electronic display of cylinder pressure on screen, accepted as minor deviation
11	Pressure Gauges for pipeline and cylinders are on Main Working Surface	No pressure gauges on main working surface, accepted as minor deviation
12	Must have 4 meter high quality pipe for O2, Air, N2O with NIST/DIN standard (I.O to specify)	5 meter NIST
13	1x Monitoring Shelf	Monitoring shelf
14	Common Gas Outlet	TE Compliance
15	Side Rails and Centrally Braked Castors with Large Brake Paddle	TE Compliance
16	Drawer unit- 1 or more	1 Drawer
17	Table or Writing platform	TE Compliance
18	O2 Flush	>35 l/min
19	Fresh Gas Outlet	TE Compliance
20	Auxiliary flow meter (Digital)	Yes Offered
21	Anesthesia Machine should be capable of working at Low Flow Anesthesia	Volume Mode: 5ml Pressure Mode: 10ml
22	Scavenging System	TE Compliance
23	Venturi Suction	TE Compliance
24	Circle/CO2 Absorber, fully Autoclavable, including Bag/Vent switch, CO2 by pass	1.5 L absorber Bag/Vent switch & CO2 bypass not available but can be changed through CLIC option, accepted as minor deviation
26	Complete with mounting bracket, disposable patient circuit, absorber detachable including Y-piece circuit, bag	TE Compliance
27	Vaporizers: Tested, Temperature compensated, interlock with refill keys	TE Compliance
28	2 Station Selectatec Back bar to accommodate up to two vaporizers at a time	TE Compliance
29	1x Vaporizer, Selectatec Type, Isoflurane	Selectatec, Model: 2000
30	1x Vaporizer, Selectatec Type, Sevoflurane	Selectatec, Model: 2000
31	1 Pin Index Cylinders for O2	Certified brand new locally supplied
32	1 Pin Index Cylinders for N2O	Certified brand new locally supplied
33	ELECTRONIC / DIGITAL FLOW METERS	

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34	Three Gas Configurations (O ₂ , N ₂ O and Air)	3 Gases
35	O ₂ and Air: 0 to 12 LPM	TE Compliance
36	N ₂ O: 0 to 12 LPM	TE Compliance
37	Thermal Mass Flow Sensor Type	Thermal flow sensor
38	Electronic Hypoxic Guard for minimum of 25% O ₂	Electronic
39	Agent Monitoring for Iso/Sevo/Des	TE Compliance
40	Low flow oxygen at 200ml flow meter	TE Compliance
41	ANESTHESIA VENTILATOR BUILT-IN (Paeds to Adult)	
42	Microprocessor Controlled Anesthesia Ventilator	Microprocessor based, electrically driven electronically controlled
43	Full Colour Minimum 8" or more LCD / TFT Touch Screen Display Automatic Leak and Compliance Test	12" TFT, Automatic leak & compliance test
44	Ventilation Modes: Volume Control, Pressure Control. SIMV+PSV, Pressure Support, CPAP, Spontaneous manual	All modes available
45	Ventilator Monitoring:	TE Compliance
46	Oxygen (F _{IO2}), Inspired & Expired Volumes, Paw, Pressure, Real Time Waveforms for Flow, Volume, & Pressure	TE Compliance
47	Tidal Volume: 0.5 — 1400 ml	5---1400ml
48	IE Ratio: 1:2	1:99 to 5:1
49	Frequency: 4 — 60 bpm	3---80bpm
50	Minute Volume: 0.3 — 25 LPM	0 - 99.9 L/M
51	Pressure Limit: 10 - 70 cmH ₂ O (Adult)	10 - 70cmH ₂ O
52	10-50 cmH ₂ O (Paeds)	5 - 70cmH ₂ O
53	PEEP: 3 — 20 cmH ₂ O	0 - 20cmH ₂ O
54	Patient Trigger: 1 — 10 LPM	0.3 - 15 l/min
55	Battery Back Up of 30 minutes Minimum.	30Mins
56	User Alarms: High/Low Pressure; High/Low Minute Volume; High/Low Breath Per Minute (BPM); High/Low Oxygen Static Alarms: Apnea, Low Supply Gas,	TE Compliance
57	No Charge, Fresh Gas Too High, Ventilator Inoperative, Under Pressure, Power Fail, Battery Low, Apnea Alarm in Bag Mode	TE Compliance
58	Electronic Gas Mixing	Electronic mixing
59	Spirometry Loops	Loops
60	Heart Lung Mode	HLM
61	User service manuals with error code book.	Not Offered
62	User Manual	TE Compliance
63	In case of electricity and battery failure, manual ventilation, gas delivery and agent delivery should be possible.	TE Compliance
64	REMARKS	Technically Accepted

3. M/S TOTAL TECHNOLOGIES, LAHORE

	Specification	M/S Total Technologies
1	Model	Leon Plus
2	Make	Heinen+Lowenstein
3	Country of Origin: USA / Europe / Japan	Germany
4	Authorization	01.08.2017
5	Certification: (FDA / CE / JIS)	Not Provided
6	Warranty: 5 Years Comprehensive with parts & spare including backup services	5 Years
7	PHYSICAL / TECHNICAL CHARACTERISTICS	
8	3 Gas Anesthesia Workstation, O2, N2O and Air Up to 1x O2 and 1x N2O Cylinder can be connected	3 Gas, 1 Cylinder of O2 & N2O can be connected
9	Gauges for Central Piping 1x O2 and 1x N2O and 1x Air	Gauges of Air/Oxygen available but N2O not available, accepted as minor deviation
10	Gauges for Cylinders 1x O2, 1x N2O	Electronic display of cylinder pressure on screen, accepted as minor deviation
11	Pressure Gauges for pipeline and cylinders are on Main Working Surface	Only pipelines not cylinders gauges available, accepted as minor deviation
12	Must have 4 meter high quality pipe for O2, Air, N2O with NIST/DIN standard (I.O to specify)	4 meter NIST
13	1x Monitoring Shelf	Monitoring shelf
14	Common Gas Outlet	Gas out let
15	Side Rails and Centrally Braked Castors with Large Brake Paddle	TE compliance
16	Drawer unit- 1 or more	3 Drawer
17	Table or Writing platform	Table platform
18	O2 Flush	35 l/min
19	Fresh Gas Outlet	TE Compliance
20	Auxiliary flow meter (Digital)	Not Offered
21	Anesthesia Machine should be capable of working at Low Flow Anesthesia	Low flow capability not offered
22	Scavenging System	Not Offered
23	Venturi Suction	Integrated
24	Circle/CO2 Absorber, fully Autoclavable, including Bag/Vent switch, CO2 by pass	2 L absorber Bag/Vent switch & CO2 bypass not available but can, changed through CLIC Option
26	Complete with mounting bracket, disposable patient circuit, absorber detachable including Y-piece circuit, bag	TE compliance
27	Vaporizers: Tested, Temperature compensated, interlock with refill keys	TE compliance

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28	2 Station Selectatec Back bar to accommodate up to two vaporizers at a time	TE compliance
29	1x Vaporizer, Selectatec Type, Isoflurane	Selectatec, or Drager equivalent
30	1x Vaporizer, Selectatec Type, Sevoflurane	Selectatec, or Drager equivalent
31	1 Pin Index Cylinders for O2	Certified not Offered
32	1 Pin Index Cylinders for N2O	Certified not Offered
33	ELECTRONIC / DIGITAL FLOW METERS	
34	Three Gas Configurations (O2, N2O and Air)	3 Gases
35	O2 and Air: 0 to 12 LPM	TE Compliance
36	N2O: 0 to 12 LPM	TE Compliance
37	Thermal Mass Flow Sensor Type	infrared sensor
38	Electronic Hypoxic Guard for minimum of 25% O2	Electronic not available
39	Agent Monitoring for Iso/Sevo/Des	TE Compliance
40	Low flow oxygen at 200ml flow meter	TE Compliance
41	ANESTHESIA VENTILATOR BUILT-IN (Paeds to Adult)	
42	Microprocessor Controlled Anesthesia Ventilator	Microprocessor based, pneumatic driven, electronically controlled
43	Full Colour Minimum 8" or more LCD / TFT Touch Screen Display Automatic Leak and Compliance Test	15" TFT, Automatic leak & compliance test
44	Ventilation Modes: Volume Control, Pressure Control. SIMV+PSV, Pressure Support, CPAP, Spontaneous manual	All modes available except CPAP
45	Ventilator Monitoring:	TE Compliance
46	Oxygen (FIO2), Inspired & Expired Volumes, Paw, Pressure, Real Time Waveforms for Flow, Volume, & Pressure	TE Compliance
47	Tidal Volume: 0.5 — 1400 ml	5 to 1600ml
48	IE Ratio: 1:2	4:1 to 1:4
49	Frequency: 4 — 60 bpm	4 to 100bpm
50	Minute Volume: 0.3 — 25 LPM	0 to 50L/M
51	Pressure Limit: 10 - 70 cmH2O (Adult)	5 - 100cmH2O
52	10-50 cmH2O (Paeds)	5 - 80cmH2O
53	PEEP: 3 — 20 cmH2O	1 - 20cmH2O
54	Patient Trigger: 1 — 10 LPM	1 to 10L/M
55	Battery Back Up of 30 minutes Minimum.	>100Mins
56	User Alarms: High/Low Pressure; High/Low Minute Volume; High/Low Breath Per Minute (BPM); High/Low Oxygen Static Alarms: Apnea, Low Supply Gas,	TE Compliance
57	No Charge, Fresh Gas Too High, Ventilator Inoperative, Under Pressure, Power Fail, Battery Low, Apnea Alarm in Bag Mode	TE Compliance
58	Electronic Gas Mixing	Electronic Mixing
59	Spirometry Loops	Spirometry loops
60	Heart Lung Mode	HL Mode
61	User service manuals with error code book.	TE Compliance

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62	User Manual	TE Compliance
63	In case of electricity and battery failure, manual ventilation, gas delivery and agent delivery should be possible.	No Detail provided
64	REMARKS:	Technically Rejected

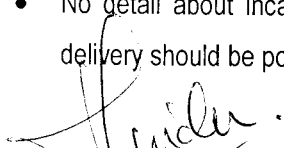
CONCLUSION:

The committee scrutinized and discussed the technical offer of all above firms in detail and made the following decision unanimously.

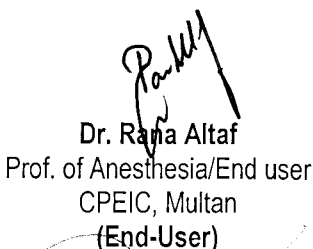
1. The offer both firms M/S Shirazi Trading, Lahore & M/S Vertex Enterprises, Lahore is technically accepted while the offer of M/S Total technologies, Lahore is technically rejected due to following reasons

M/S Total Technologies

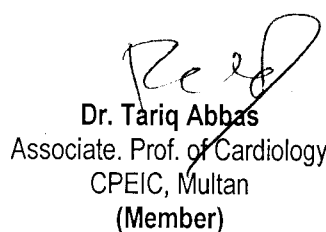
- The offer of M/S Total technologies is **technically rejected** due to non-provision of Certification (FDA/CE/JIS)
- Auxiliary flow meter digital
- Low flow capability
- Scavenging system
- Not offered certified brand new cylinders,
- Electronic hypoxic guard
- CPAP ventilation
- No detail about incase of electricity and battery failure, manual ventilation, gas delivery and agent delivery should be possible.



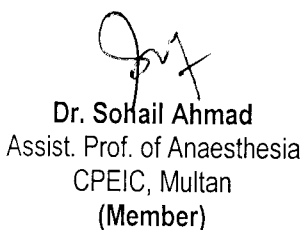
Dr. Haider Zaman
Prof. of Cardiac Surgery
CPEIC, Multan
(Chairman TEC)



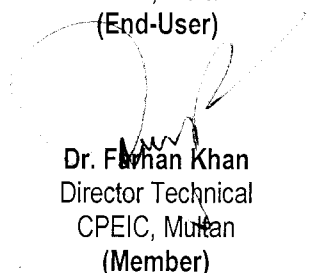
Dr. Rana Altaf
Prof. of Anesthesia/End user
CPEIC, Multan
(End-User)



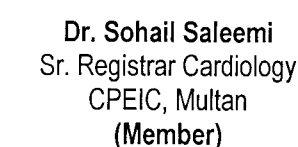
Dr. Tariq Abbas
Associate. Prof. of Cardiology
CPEIC, Multan
(Member)



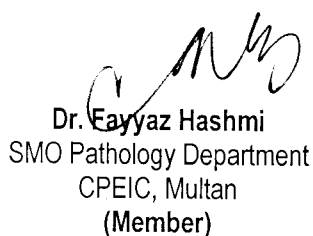
Dr. Sohail Ahmad
Assist. Prof. of Anaesthesia
CPEIC, Multan
(Member)



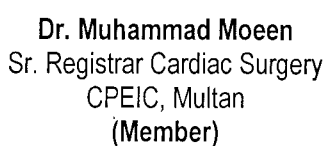
Dr. Farhan Khan
Director Technical
CPEIC, Multan
(Member)



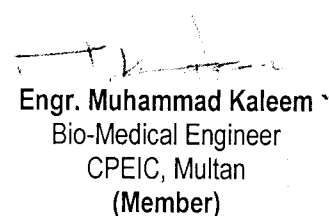
Dr. Sohail Saleemi
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Dr. Fayyaz Hashmi
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CPEIC, Multan
(Member)



Dr. Muhammad Moeen
Sr. Registrar Cardiac Surgery
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(Member)



Engr. Muhammad Kaleem
Bio-Medical Engineer
CPEIC, Multan
(Member)