

# **SPECIFICATION FOR EMT Based AUTOMATIC MILK COLLECTION UNIT (AMCU) FOR VILLAGE MILK POOLING**

## **1. Functional Requirements:**

1.1 The Unit should be suitable for instant weighing of milk, measuring fat, capturing of derived/calculated snf content by the system, calculating the amount payable to the member based on the prevailing rate chart of concerned DCS/Milk union, printing the amount calculated thereof with member identification details. The Unit shall also be used for maintaining the main records of the collection centre together with the details of milk business transactions of the village co-operative society /MCC.

1.2 The Unit should be able to measure milk component contents viz. fat from 0 % to 13 % and able to weigh milk up to 200 kg per batch at a time. This should process approximately 120 samples of milk per hour.

## **2.0 Design & Other Requirements:**

The AMCU specs detailed below are minimum required specification. The vendor has to provide for all the components/ tools/ software required for meeting operational & functional requirement. Bidders can offer better & higher version specs if available with them which could be considered, but without any extra weightage.

### **2.1 Operating Environment:**

All the components of the AMCU should be rugged and must operate in dusty, hot and humid village environment where power outages and supply fluctuations are frequent. The operators may not be skilled persons and not conversant in using electronic equipment:

- Power supply : 160 to 260±10 % V (AC); 50 Hz ± 3% / 12 V (DC)
- Ambient Temperature : 5 - 50° C
- Relative Humidity : 50 % to 95 %

### **2.2 Operational provisions:**

2.2.1 Installation and Commissioning: All the components of the AMCU should be assembled, configured, commissioned and demonstrated for the purpose of smooth milk collection by the supplier to the satisfaction of the user. The bidder should install and provide all the inputs/materials for the proper earthing as per local Electricity Board Regulations.

2.2.2 Warranty: All the components included in the AMCU shall be warranted for 3 year comprehensive warranty except Burnt & broken items are not covered. Supplier to ensure the installation and commissioning of proper earthing before start of actual operation of AMCU.

2.2.3 Annual Maintenance Service: As per FA terms for 2 years is to be included and indicated separately. Placement of a technician at field level per 50 AMCU, for repair and maintenance so that the system is available by next milk collection shift. Burnt & broken items are not covered under AMC.

Milk Collection Centre should arrange to send EMT for servicing at the nearest BMCU Centre / Chilling Centre. In case large area, the Supplier should provide servicing at site.

During warranty period of 3 years and Annual Maintenance Service period of 2 years, the posting of the technician will be as under:

- AMCU installed (nos.) ≤ 25 to be attended within 24 hours
- AMCU installed (nos.) > 25 and up to 50 – posting of one technician

Thereafter one technician per addition of 50 AMCUs.

2.2.4 Training – Comprehensive training for 2 days in class room & Hands-on training for 4 shifts of milk collection on all operational aspects of the EMT and other AMCU components to DCS/MCC staff at Village level and other officers of the EIA Between 1<sup>st</sup> & 2<sup>nd</sup> month of installation refresher training in group shall be imparted at a nodal location.

2.2.5 Operational & Cleaning SOPs (including leaflet on troubleshooting) - Provide laminated wall chart indicating important steps involved in operation & cleaning of the EMT for displaying in DCS.

2.2.6 The optional specification item 12.0 Earthing is an optional and price for the same should be mentioned separately. The price shall be added for evaluation of the bid if the same is required by the EIAs. (Supplier needs to quote the price as optional item)

Sr. No	Particulars	Specification
3.0	Basic operations at society	<p>All operations are manual or semi-automated at society level. No regular power supply is available and fluctuation in power supply is very high. Clean and dust free environment cannot be guaranteed. The operators may not be IT savvy.</p> <p><b>Major Activities at Society</b></p> <ul style="list-style-type: none"> <li>• Purchase of Milk</li> <li>• Payments to producers for milk poured, government subsidies, incentives for quality etc</li> <li>• Purchase of Cattle Feed</li> <li>• Purchase of Ghee</li> <li>• Other Purchases</li> <li>• Expenditure for Services</li> <li>• Other Expenditures</li> <li>• Local Sale of Milk</li> <li>• Supply/Sale of Milk to the Union</li> <li>• Sale of Cattle Feed</li> <li>• Sale of Ghee</li> <li>• Support for AH, AI etc</li> <li>• Income from Services</li> <li>• Other Income</li> </ul>
4.0	AMCU- Functional Requirements	<ul style="list-style-type: none"> <li>• The Unit should be suitable for instant weighing of milk, measuring fat content, calculating the amount payable to the member based on fat &amp; weight, printing the amount calculated thereof with member identification details.</li> <li>• This unit should also be used for maintaining the complete record of the collection centre as above together with the details of all transactions of the producers/MCC.</li> <li>• Recommended to incorporate capability for online data transfer to Milk Union and designated local Banks for transfer of payments to milk producers in their bank accounts directly.</li> </ul>
5.0	<b>Computer Hardware and Software</b>	<b>Models of PC offered should be of Enterprise/Business Class Desktop PC (OEM). Home/SMB Class Desktop PC shall not be accepted.</b>
5.1	Processor	<ul style="list-style-type: none"> <li>• 4<sup>th</sup> Generation Intel Core i5-4460 , 6 MB Cache, 64 bit, 4 Core Processor with Turbo Boost technology</li> </ul>
.2	Form Factor	<ul style="list-style-type: none"> <li>• Tower Model</li> </ul>
.3	Chipset	<ul style="list-style-type: none"> <li>• Intel Chipset supporting the above processor</li> </ul>
.4	Memory	<ul style="list-style-type: none"> <li>• 4 GB DDR3 1333 MHz SDRAM expandable to 8 GB</li> </ul>
.5	Internal Storage	<ul style="list-style-type: none"> <li>• 500 GB SATA II Hard Disk Drive</li> </ul>
.6	Removable Media	<ul style="list-style-type: none"> <li>• DVD+/-RW Writer.</li> </ul>
.7	Graphics	<ul style="list-style-type: none"> <li>• Integrated Intel HD Graphics supporting 1600x 1200 resolutions</li> </ul>
.8	Audio	<ul style="list-style-type: none"> <li>• Integrated high definition audio</li> </ul>
.9	Network	<ul style="list-style-type: none"> <li>• 10/100/1000 Mbps Gigabit Ethernet</li> </ul>
.10	Display Monitor	<ul style="list-style-type: none"> <li>• 18.5" wide screen LCD/LED Backlit TFT Color HD Monitor with 1366x 768 native resolutions.</li> </ul>
.11	Input Devices	<ul style="list-style-type: none"> <li>• USB standard Keyboard and USB Optical 2 button Scroll Mouse with Pad</li> </ul>
.12	Ports & Connectors	<ul style="list-style-type: none"> <li>• 2 Serial Port, 1 Parallel Port, 1 VGA Port, 1 Microphone / Headphone jack, 1 RJ45 Ports.</li> </ul>
.13	USB Ports	<ul style="list-style-type: none"> <li>• 6 USB 2.0 Ports (Min. two on front and two on rear side).</li> </ul>
.14	PCI Slots	<ul style="list-style-type: none"> <li>• Minimum 2 free PCI Slots.</li> </ul>
.15	Compatibility	<ul style="list-style-type: none"> <li>• Windows 8/Windows 7 / Vista /2008/2012, Linux Compliant.</li> </ul>

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.16	Operating System	<ul style="list-style-type: none"> <li>Licensed Windows 8.1 Professional 64 bit Preloaded with OS Recovery Media Driver CD.</li> </ul>
.17	Anti Virus	<ul style="list-style-type: none"> <li>Norton/ Symantec, eTrust, MacAfee, Trend Micro, Quick Heal latest version with three (3) years license</li> </ul>
.18	Warrantee obligation	<ul style="list-style-type: none"> <li>call should be attended by next business day</li> <li>problem resolved within 24 hours of attending the call.</li> <li>within 48 hours in case any part is to be replaced</li> </ul>
.19	Scope of work	<ul style="list-style-type: none"> <li>Installation and configuration</li> </ul>
<b>.20</b>	Application Software	<ul style="list-style-type: none"> <li>Supplier to develop and provide Integrated AMCU Software for all functions &amp; requirements of Milk collection centre. Supplier to finalise requirements from EIA for all Milk Collection centres, develop/modify a software and install in each AMCU with a testing period of software for 6 months from the date of installation of software and subsequent one time modifications in the software based on feedback/request from EIA/Milk Collection centres to be done without extra charges</li> <li>Software should be Bi-Lingual (English and preferably Regional Language).</li> <li>Data generated from the new system should be compatible with the format in which the data is accepted by the existing system.</li> <li>The software should be user friendly, menu driven, and provide help facility in local language.</li> <li>The data input forms, reports, menus etc. should be in English and in local language.</li> <li>The application software, if felt essential by the user, may be modified/upgraded to meet the need of the milk collection centre having Single or Cluster Bulk Milk Cooler installations.</li> <li>The software should have provision of connectivity of such milk collection centre with milk collection agency's head office in the future.</li> <li>The supplier should also make necessary changes on case-to-case basis, wherever required. The application package should contain legal copy of the database used.</li> </ul>
<b>6.0</b>	<b>DOT MATRIX PRINTER</b>	
6.1	Print Method	Impact dot Matrix external printer
.2	Pins in head	24 pins
.3	Print Direction	Bi-direction parallel interface USB 2.0 (Full speed)
.4	Print speed	300 cps high speed draft, LQ and other features
.5	Printable column	80 (10 cpi)
.6	Paper Handling	Pull tractor unit
.7	Paper Path	Manual insertion- front or rear in – top out; Push Tractor-front or rear in – top out, Pull Tractor – front or rear or bottom in and top out.
.8	MTBF (hrs at 25% dutycycle)	10000 POH (25% Duty)
.9	Copy Capability	Original + 3 copies
.10	Cartridge	Ribbon cartridge Black, with 2.5 million characters
.11	Compatible OS withdrivers	MS Windows 8/7/Vista/XP(32 bit/64 bit), Windows Server 2003/2008/2012 (32 bit/64 bit), Mac OS X v 10.3.9,10.4, 10.5,10.6, UNIX, LINUX
.12	Accessories	Roll stand
<b>7.0</b>	<b>Electronic Weigh Scale</b>	
7.1	Functional Requirement	To Electronically weigh & digital display of milk quantity in litre in a container
.2	Capacity	200 kg
.3	Least Count	20 gm
.4	Weight Accuracy	20 gm as per Standards of W & M Rules 1987 medium accuracy Class III

<b>Sr. No</b>	<b>Particulars</b>	<b>Specification</b>
.5	Certification & Stamping	Duly certified and stamped by W&M Dept. and confirming to IS :9281(pt 1&2)1979, IS:9281 :1981 and IS:9281(Pt.4) 1983 as amended up-to-date
.6	Display Resolution	1/10,000, ( accuracy class III )
.7	Load Cell	Single, IP 67, grade SS of certified and approved make
.8	Over load & shock loadprotection	300% to take impact of loading, with audio (beep) visual indication
.9	Platform Size	600 mm x 600 mm
.10	Platform MoC	AISI SS 304,1.6 mm thick,150 grit top plate
.11	Platform under framematerial / Design	<ul style="list-style-type: none"> <li>• Cold rolled mild steel box of adequate size. Hot dip galvanised after fabrication</li> <li>• All screw/bolts/nuts to be of SS</li> </ul>
.12	Indication in display EWSunit	Quantity-7 Segment RED LED ,6 digits, minimum 13 mm height , display for mode of operation- zero, tare , kg/litre, by default KG
.13	Display Unit mounting	<ul style="list-style-type: none"> <li>• Pole mounted type with sturdy base and SS 304, 38 mm dia. Pipe-1.2 m high</li> <li>• SS 304 Body IP 55, Tactile switch keys with feedback response, auto calibration &amp; auto span with drift correction,</li> <li>• RS 232 serial port with protocol to meet requirement of IBM compatible.</li> </ul>
.14	Calibration protection &Sealing Arrangement	<ul style="list-style-type: none"> <li>• Special arrangement to house PCB &amp; sealing arrangement.</li> <li>• Pass word protection at user end.</li> </ul>
.15	Load cell Cable	Load cell cable from platform to display unit with reinforced heavy duty PVC conduit
.16	Battery for working onpower failure	In built, 6 V capacity minimum for 12 hrs.
.17	Power Supply	As given above with minimum 1 m power cable with plug top AC/DC
.18	Model Approval Certificate	Manufacturer to have model approval certificate of regulatory authority/ Govt of India (Weight & Measure Unit)
.19	Stamping at site	Supplier to arrange stamping of each scale at site from local Weights & Measure Inspector before installation. Supplier should include the cost of stamping in the unit rate of AMCU for the 1 <sup>st</sup> year only. Stamping of each weighing scale from 2 <sup>nd</sup> year onwards will be in the scope of EIA.
<b>8.0</b>	<b>EMT</b>	<b>Manual/Auto EMT</b>
8.1	Functional Requirement	To test & display measured fat%  Automatic EMT: The automatic EMT shall be the advance version of EMT which shall have synchronised motors for auto intake of milk for ease of operations (hands free operation).
8.2	Working Principle	It shall work on the principle of photometric measurement of light scattered by the fat globules present in the milk sample.
8.3	Measurement Range	0 – 13 % Fat
8.4	Test Capacity(Samples/hour)	Manual EMT :Minimum 120 Auto EMT : Minimum 150
8.5	Accuracy	0.10 % for 0 – 5% Fat 0.15 % for 5 - 8 % Fat 0.20 % for 8 – 13 % Fat

<b>Sr. No</b>	<b>Particulars</b>	<b>Specification</b>
8.6	Repeatability	0.04 % for 0 – 5% Fat 0.06 % for 5 - 8 % Fat 0.08 % for 8 – 13 % Fat
8.7	Display	Easy to read digital LED display (Fat)
8.8	Sample Volume	0.5 ml/test
8.9	Diluent Volume	6.5 ml/test
8.9.1	Power Supply	AC: 220 / 240V (Max + 10%, Min - 15%) DC : 12V, 6A; (Max 16 V, Min 10.5V) A fully-charged 120 AH battery shall last for at least 10 hours of operation.
8.9.2	Ambient Temperature	5-450 C
8.9.3	Net Weight	Max 20 Kg
8.9.4	Power Consumption	Max 400 Watts
8.9.5	Dimension (H*W*D)	Suitable Dimension
8.9.6	Loose Accessories	<ul style="list-style-type: none"> <li>· Holding bottom tray for spillage- 1 No.</li> <li>· RS 232 Serial Cable- 1 No.</li> <li>· A C Power cable with plug top- 1 No.</li> <li>· Daily cleaning solution for minimum 6 months requirement</li> </ul>
8.9.7	Manual	Operating Manual each in English & preferably Local language per EMT supply
8.9.8	Additional Features	<ol style="list-style-type: none"> <li>1. Easy to operate and clean</li> <li>2. Auto zero facility</li> <li>3. Built in battery charger</li> <li>4. Automatic switch over to battery in case of power failure</li> <li>5. RS 232 communication facility</li> <li>6. Temper proof auto calibration (Password protection for calibration)</li> <li>7. Compatible with computer/Data Processor and other required devices</li> </ol>
<b>10.0</b>	<b>REMOTE DISPLAY UNIT (RDU)</b>	
10.1	Functional Requirement	To display pourer members milk collected & milk testing and other selected parameters in English/ Local Language
.2	Type	Wall mounted type
.3	Display Parameters	i)Member's code-3 to 16 digits; ii)Cattle Type- 1 character, iii)Milk Weight-5 digits; iv) Fat %-4 digits; v) SNF %-4 digits; vi) Rate in Rs-5 digits; vii) Amount in Rs.-6 digits generally to meet the need of the users.
.4	Interface	RS - 232 / USB Host
.5	Display Type	7 Bright segments, Red LED, 25 mm, 33 No., 11 in each row with 3 rows( or suitable to meet the requirement)

Sr. No	Particulars	Specification
.6	Labels for display	Screen printed
.7	Environment	Dusty, Humid, preferably housing to be with IP 55 or equivalent protection, rust proof powder coated metallic.
.8	Connecting Cables	Minimum 5 m Power cable with plug top with connector at both ends
<b>11.0</b>	<b>UPS</b>	
11.1	Functional Requirement	To give regulated AC power to AMCU from mains or attached battery
.2	Type	Line-Interactive type
.3	Capacity	1500 VA minimum
.4	Back up time (Full Load)	3-hrs minimum (in one shift)
.5	Output Wave Form	Sine Wave/Quasi Sine wave
.6	Voltage at input	160-280 V (+10%)
.7	D C Voltage Bus	24 V
.8	Voltage at output (With Mains as well as with Battery)with in-built AVR	220V +/- 10%
.9	Full protection	Inbuilt protection - Under / Over voltage, Short-circuit, Overload Cut off, Low Battery Cut-off , Spikes cut-off
.10	Warning (LED+ Sound)	Low Battery & Overloads
.11	Input/ Output Frequency	50Hz +/- 3Hz, No Correction
	Battery switch over	Battery switch over in 3-10 milli seconds
.12	Battery Charging	<ul style="list-style-type: none"> <li>• Preferably to take place even at 130 &amp; 300 V with SMPS charger</li> <li>• Boost charging at minimum 7A</li> <li>• Battery overcharge protection</li> </ul>
	Battery No and Type	2 No 90 AH Tubular, Acid filled, low maintenance battery with level indicator (Maintenance free Battery desirable)
	Charging Indicator	Battery charging indicator plus low battery/ fault indicator to be provided
	Battery Steel Rack	Required
	Leads between UPS & Battery	Flexible, Cu conductor PVC, Minimum 1 m with lugs at both ends.
	Warranty of Battery	3 years against manufacturing defect.
.13	Steel rack for UPS	Required to place UPS above floor
.14	No load loss at 24 Volt when UPS is ON	Minimum
<b>12.1</b>	<b>Earthing - Earth Electrode (Gel type) (Optional)</b>	
12.1	Technology	Earth Electrode (Gel type) maintenance free earthing. Mineral Filling Compound (MFC), surrounded to earth electrode creates low resistance zone so that output is constant for longer life.
12.2	Pipe Material	Galvanized Pipe as per IS : 1239
12.3	Class of Pipe	Class-B
12.4	Diameter (Outer Dia.)	48 mm
12.5	Length	2 Meter
12.6	Wall Thickness	2.5 mm
12.7	Primary Electrode	Mild Steel Strip
12.8	Mild Steel Strip	2.12 m long, 32 mm wide and 6 mm thick
12.9	MS Strip hot dip Galvanized thickness	110 micron
12.10	Gel Filled	Highly non-corrosive compound
12.11	Earth wire to connect Electrode with Power supply.	Copper 8 m long & 8 mm dia suitable for interconnection
12.12	Filling compound	Adequate
12.13	Civil works	chamber to secure the earthing

<b>Sr. No</b>	<b>Particulars</b>	<b>Specification</b>
		Earthing: Bidder should install and provide all inputs/material for proper earthing as per IS code/Local Electricity Board Regulation. The scope of work includes excavation for earth pit, construction of chamber, filling with necessary materials and complete with cover. Supplier will test and demonstrate the resistance as per local EB requirement and furnish record as required.

