

Spec No:- CDS/ SMS Monitoring/01 R 01
Specification for Monitoring system of SMS.

This monitoring system is meant for capturing and recording the electrical parameters & end use process based parameters/ data and its reporting in the desired form.

A) Automatic Recording of Parameters

Following parameters are to be recorded automatically on real time basis from the measuring equipments available and as detailed below:

S.No	Detail of Parameters	Description
1	Monitoring of electrical parameters for 8 No, 11 KV, VCB panels each feeder is having energy meters (Conzerv EM 6436) with RS 485 port. All these meters are available in CDS- CFFP.	Phase and Line Voltage Phase and Line Current Power Factor phase and overall Apparent power Active power Import and Export Reactive power Import and Export Total harmonic distortion for voltage and current
2	Monitoring of furnace transformer switching. "ON", "OFF" and "Trip" through 11 KV VCB panels of SMS. All of these command signals will be available only on VCB panels.	for 04 No furnace transformers
3	Furnace transformers Tap position monitoring for 04 No transformers of 30T, 10T, VAD-1 & VAD2 furnaces of SMS-CFFP. Tap position indications are available in respective control rooms of furnaces.	No of tap for each transformers are 06.
4	Monitoring of oxygen consumption from 02 No flowmeters installed in oxygen supply pipelines of 30T and 10 T furnaces of SMS-CFFP. Flowmeters with data interface terminal will only be provided.	volume of oxygen

B) Manual Entry of Data

In addition to above parameters following parametes will be entered manually by CFFP.

S.No.	Detail of Parameters	Description
5	The details of any heat processed should be inserted from a master list consisting of heat grade, heat serial number, heat code and all other details. This master list will be provided by CFFP and the same has to incorporated in HMI or other interface of conversion (screen size >= 10 inch).	This has to be done for all the 4 furnaces separately and should have provision of consolidation if required.

6	Reason of switching like ON, OFF, Trip, breakdown, holding, addition alloy, Addition of electrode, charge addition, Lime addition etc. will also be entered	These reason of beakdown will further be sub classified and a master list (as per Annexure-1) of reason will be provided from which the selection of actual happening will be done.
7	Weight of heat processed in any of the 04 furnaces	liquid metal in MT will be entered in 2 digits.
8	Start and end of furnace or VAD cycle of any particular heat will be entered manually	The start and completion time and date.

C) Programming

Collecting and monitoring of all the above parameters is to be done at one location in CDS through a programming software. This software will use all the above parameters detailed from S. No- 1 to 8 as input in order to get the following outputs

- 1 Apparent, Active and Reactive Power consumption through any of the 04 furnace for a defined interval ranging from few minutes to few hours upto 12 Hrs.
- 2 For the same interval the details of heat like weight, grade, breakdowns, Transformer's tap position holdings switchings if any should also be clearly indicated in the report.
- 3 There are two stages in a one cycle of heat i.e melting and refining. Start of furnace is in melting stage and switching of furnace for first lime addition is the start of refining phase. The power consumption and oxygen consumption has to be reported by software for each stage seapratley alongwith indication of oxygen consumption, tap position etc in each stage.
- 4 The power consumption is to recorded for all 4 furnaces separately and also clubbing of two or more furnaces data as per requierment should be available with and without breakdown. Power consumption with respect to oxygen consumption and tap positions should also to be reported.
- 5 Daily, cumulative and monthly analysis of furnace wise and VAD wise power consumption power per ton for different grades of liquid metal produced. This report should also indicate breakdowns, holdings and switching if any.
- 6 All the above reports should be generated in Microsoft Office in tabular and graphical form.
- 7 Software should also indicate the real time data of all the automatic parameters.
- 8 Software should be compatible such that the real time data is accessed (read only mode) from any computer on local BHEL LAN by sharing IP address or remote desktop feature.
- 9 The software should recommend an analysis report for identifying the optimal process parameter for minimizing the power consumption. This report should indicate particular tap positions, amount of oxygen required and other parameters if any.

D) Scope of Work

- 1 Conversion of manually entered data mentioned at S.No- 5 to 8 into useful form through HMI (of not less than 10 inches) or any other interface (whichever but to be installed at least at two different locations), such that data can directly be read and sent to the programming software.

2. Transfer of automatic and manual data available in SMS to CDS will be in scope of supplier. The physical distance from SMS to CDS is around 350 meters. However CFFP can provide ethernet LAN ports at both the locations for shifting of data through LAN.
3. All the hardwares including cables required for collecting the data from all field devices Like energy meters, oxygen flow meters, tap position indicators, VCB panles etc. will be in the scope of supplier.
4. The entry of manual data may not be done on the same working day. The system should have provision for entry of manual data for past day upto past 5 days.
5. Software should push the data for storage. Hard disc of 1 TB and computer of 4 GB RAM with windows installed only will be provided by CFFP.
6. All the interface modules, interface cards for DI/ DO/ AI, TB for DI/DO/AI, Modbus or profibus connectors etc as required will be in the scope of supplier.
7. Any other item not mentioned in the scope of CFFP, but required for successful commissioning of this measurement system will be in the scope of supplier
8. The HMI (02 Nos) or any other interface for conversion of manual data should be at least in 2 sets both separate locations and will also be away from main computer system.
9. The software should also have provision for future addition of input output devices like DI/DO/ AI/AO.
10. Supplier will provide all the original softwares alongwith License. All such licences should be one time.
11. Bidder may offer onsite without cloud or cloud based solution.
12. The overall cost of cloud based system for 5 years will be compared with non cloud based one time equipment / softwares providers. In case of cloud based system one time cost and all type of recurring costs (monthly / yearly subscription charges of softwares/ windows/ data collector units etc.) to be borne by BHEL for 5 years will be taken into account for evaluation of Lowest rate party. The format explaining the cost comparison method for cloud based and non cloud based offers is detailed in Annexure- P.

E) Installation & Commissioning

1. Installation of all the above mentioned hardware and software will be in the scope of supplier.
2. Commissioning of software and successful trial of measurement system with all the required outputs for atleast three month data will be in the scope of supplier.

F) Guarantee / Warrantee

All the hardwares and software should have guarantee/ warrantee of not less than 12 months from the date of successful commissioning or 18 months from the date of supply.

G) Tools & Tackles

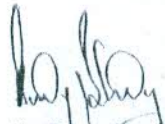
All the tools and tackles for installing the system including any special tools shall be arranged by the supplier. All the special tools and tackles will be retained by BHEL for the maintenance purposes. BHEL will provide if the need be and subject to availability, only EOT crane facilities, power and water for use during installation of the system

H) Training

Vendor shall provide adequate training to two BHEL persons on the software used and HMI or other interface in its training center.

D) General Comments

- 1 The supplier shall provide a list of spares required for trouble free operation of the machine after completion of the work.
- 2 All the drawings including structural and tentative circuit diagrams, shall be approved by BHEL, prior to commencement of manufacturing of the Panel/Desks/Stations etc. Drawings will be approved within 15 days of their submission to BHEL. However, increase in total time for drawing approval on account of incorrect drawings will not form a basis for increase in delivery time. Please also refer special terms and conditions.
- 3 The offer must include detailed BOM including makes, types and ratings of all the components. Offers without detailed BOM will be liable to be rejected.
- 4 Soft copy in a pendrive and Three sets of hard Copy of final circuit diagram & software Program will be submitted after commissioning.



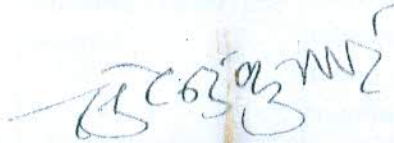
(Sudip Bhardwaj)

Sr. Engineer/ SMS-Maint.



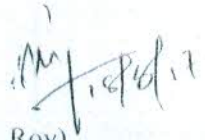
(A R Idrisi)

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AGM (M&S)



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AGM (SMS)

Annexure-P

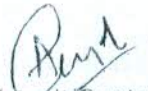
Price Comparison for Monitoring System of SMS.

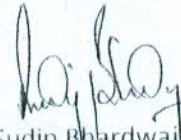
S.No.	Description	Nature of Expenditure	Cloud based Offer	Non cloud based Offer
1	Hardware Cost	One time only		
2	Subscription Charges			
a	Software charges	Monthly / quarterly subscription charges for cloud based system or one time charges for non cloud based systems are to be mentioned here	Subscription charges for 1st year to be mentioned here.	one time charges should be mentioned here
b	Windows / cloud base charges	Monthly / quarterly subscription charges for cloud based system or one time charges for non cloud based systems are to be mentioned here	Subscription charges for 1st year to be mentioned here	one time charges should be mentioned here.
3	Installation and commissioning charges	One time only	Installation and commissioning charges to be mentioned .	Installation and commissioning charges to be mentioned .
4	Total cost for 1 st year		sum of all one time and recurring charges forfirst year should be mentioned here.	Sum of all one time charges to be mentioned
5	Monthly subscription charges from 2nd year to 5th year		All type of subscription/ recurring monthly / quarterly charges applicable for software should be mentioned here.	Not applicable .
			All type of subscription/ recurring monthly / quarterly charges applicable for cloud base system should be mentioned here.	
6	Total cost for of system from 2nd year to 5th year		Sum of all type of above subscription / recurring charges for 4 years (from 2nd year to 5 th year) should be mentioned here.	Not applicable

7	Total Cost (S. No- 4 and 6)	Overall cost in Rs.	Overall cost in Rs.
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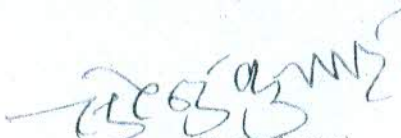
Note : 1. GST should be mentioned extra as applicable

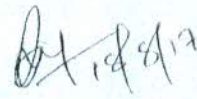
2. Price will be compared with total cost for 5 years for cloud and non cloud based system.


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