

CENTRAL MINE PLANNING & DESIGN INSTITUTE LTD.
Gondwana Place, Kanke Road, Ranchi – 834 031 (Jharkhand), India

*Global Expression of Interest (EoI) for Integrated Geological Modelling,
Open pit and Underground Mine Planning and Design Software.*

Last date of Submission of EoI: 22nd June 2009

Reference Number: CMPDI:GEOMIN:EoI/2009

Central Mine Planning & Design Institute Ltd. (CMPDI) invites Expression of Interest (EoI) from Internationally Reputed and Proven Software Developers for an International quality Integrated Geological Modelling, Open Pit and Underground Mine Planning and Design Software for Coal and Metalliferous Deposits to operate on a wide area network (WAN) with floating license.

I. Scope of Work

Sl.No	Functionality	Compliance (Yes/No)
A.	Geological Modelling	
1.	Handling of Multi-seam, multi variables with various gridding techniques.	
2.	Should be able to build, store and answer customized queries.	
3.	Should be capable of producing basic plans required in GRs like floor contour with fault & heave zone, Iso-chores, Grade, Iso-OB plans etc.	
4.	Open end connectivity for transfer of data.	
5.	Facility to convert coordinates of different origin to a uniform system.	
6.	Computation of reserves should take into account user specified effective thickness on different seams.	
7.	Should have provision for multi seam splitting and merging of seams etc.	
8.	Should have provision for projecting in-crop of different seams on plan.	
9.	Should have provision for 2D & 3D interactive graphic facilities	
10.	Should have provision for defining stratigraphic sequence and honoring of same.	
11.	Should be MS Window based and should have open database structure and should have user friendly operation.	
12.	Digitization, editing facilities of strings etc., both 2D & 3D within the s/w.	
13.	Should have facilities for inclusion/exclusion of features.	
14.	Should be capable of having different types of sections along any line defined by user etc.	

Sl.No		Functionality	Compliance (Yes/No)
	15.	Should be able to handle inclined fault projection, heave zone with fault modeling techniques etc.	
	16.	Provision for computing Reserves with multiple sorting keys with user defined templates.	
	17.	Should have plug-in facilities for user developed programs through macros/modules through VBA, VC, JS etc.	
	18.	Facility to take care of stitching/merging different models.	
	19.	Capable of importing & exporting data like shape files etc., from external GIS compatible software.	
B.		Open Pit Mine Planning and Design	
	1.	Mine Planning and Design module	
	1.	To cater to needs of Mine Planning and Design for Non Coal Projects also.	
	2.	Interactive 3D Modelling capability.	
	3.	Block Modelling with sub blocking capability.	
	4.	Link to External Databases through ODBC.	
	5.	Powerful Statistical Tools and tools for Geostatistical Analysis.	
	6.	Interface with Arc GIS.	
	7.	Capability of Short, Medium and Long Range Scheduling and Target Scheduling.	
	8.	Multiple parameter Analysis.	
	9.	Capability of Free designing pits and dumps with Multiple Batter Angles and ramp design.	
	10.	Built in Optimisation Tools (LG, Floating Cone etc.)	
	2.	Slope Stability module to model and solve simple/complex Stability problems involving	
	1.	Natural earth and rock in Internal Dump Stability on Flat and Inclined Pit Floors with Phreatic surfaces and Weak/Strong Floors/Foundation for a heterogeneous mix of material in the dumps in single/complex multiple bench formations.	
	2.	For External dumps on Flat/Sloping, Weak foundations/Bedrock.	
	3.	For Highwall/Footwall slopes of mines with multiple stratigraphic units in multiple bench formations.	
		Should also have capabilities to model	
	4.	Berms at the toe of a slope	
	5.	Surcharges at the top of a slope	
	6.	Earth reinforcement, including soil nails and geofabrics/geotextiles.	
	7.	Seismic and earthquake loading (effects of blasting)	
	8.	Tension cracks	
	9.	Partial and total submergence (effect of surface and ground water)	
	10.	Line load at any point	
	11.	Earth embankments	
	12.	Anchored retaining structures	
	13.	Multiple Analysis methods	

Sl.No		Functionality	Compliance (Yes/No)
	14.	Incorporating orientations and characteristics of rock mass discontinuities (joints, bedding, foliations, faults, etc) affecting stability.	
	15.	Enhanced graphic tools for problem formulation, viewing results to display critical slip surfaces, minimum slip surface, factor of safety, free body diagram and force polygon showing forces, total sliding mass, FoS contours and produce output/plots of computed parameters.	
C.		Underground Mine Planning and Design	
	1.	UG Mine Planning module The software should be user-friendly and able to	
		(For virgin areas)	
	1.	Import geological model/data from the geological modeling software/module and also from AutoCAD.	
	2.	Create mine entries of selectable size and geometry from surface to desired coal/ore body (vertical and incline both) as well as drifts underground between two levels.	
	3.	Create mains/trunk roadways and panels of desired configuration for longwall mining as well as bord and pillar mining taking into account the prevailing seam inclination, extraction height.	
	4.	Create mine openings/headings of various geometrical shapes and dimensions.	
	5.	Provide mine models as output in three dimension including the situations of inclined seams, multi-seams, etc. also two dimensional drawings.	
	6.	Provide reserve grade-wise, depth-wise, panel-wise, pillar-wise along with reserve extracted as per the proposed/created mine plan.	
	7.	Create production schedule (grade/quality-wise)	
		(For existing mines)	
	8.	Create existing mine models from the available plan and sections as well as other supplementary information/data and allow further planning for future.	
	9.	All other features as mentioned for the virgin areas.	
	2.	Mine Design module	
	1.	Tools to design pillars (both regular and chain pillars) and assess the factor of safety under various conditions of depth, height of pillars, gallery width, etc.	
	2.	Tools to assess parting stability, deformation, etc. in multi-seam working.	
	3.	Tools for support design (for Longwall & Bord and Pillar workings) under different geo-mining conditions.	
	4.	Tools to assess cavability and subsidence (including expected strain and vertical subsidence) of overlying strata.	
	5.	Tools to assess non-effective width of working between two different levels.	

Sl.No			Functionality	Compliance (Yes/No)
	3.		Mine Ventilation module	
		1.	Ventilation system design and analysis software	
D			System Requirements	
	1.		Windows OS	
	2.		Industry standard Open database connectivity	
	3.		Operate on a wide area network (WAN) with floating license.	
	4.		Hardware requirements to be specified • Server • Client • Graphics • Network Bandwidth • Any other specific requirement	

II. EOI Submission

- 1) Interested parties are requested to submit their responses (EoI) in the office of

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latest by **22nd June 2009** in accordance with the detailed scope of work.

- 2) Presentation of broad functionality as per scope of work with detailed hardcopy report of the software in 4 separate volumes (ie; A,B,C & D of the Scope of Work).
- 3) List of installations for coal and metalliferous deposits worldwide and in India along with address and contact number.
- 4) Evaluation CD with 60 days license.
- 5) Training CD with demo data (geological and mine model) for one or more projects.

III. Evaluation Criteria

The participants who are able to demonstrate the broad functionality as per the scope of work will be considered for further participation.
