Table 1: Generating units and cost coefficient for 3 unit system

Unit Number	Power Minimum	Power Maximum	a_i	b_i	c_i
1	35	210	0.03546	38.30553	1243.53110
2	130	325	0.02111	36.32782	1658.56960
3	125	315	0.01799	38.27041	1356.65920

Table: 1 shows the input data for three generating units. Power minimum is lower bound of generator whereas power maximum means upper bound of generator and cost coefficients of each units are shown by a_i , b_i and c_i.

The loss coefficient matrix is given by:

The loss coefficient matrix is given by:

$$B = \begin{bmatrix} 0.000070 & 0.000025 & 0.000030 \\ 0.000030 & 0.000069 & 0.000032 \\ 0.000025 & 0.000032 & 0.000080 \end{bmatrix}$$

Table 2: Comparison of test results for Three Generating units

Power Demand (MW)	Performance	Traditional Method	Artificial Bee Colony
400	Power Loss(PL)	7.62391	7.5496
	Total Fuel Cost Rs/hr	20903.7	20828.5767
500	Power Loss(PL)	12.1619	11.8573
	Total Fuel Cost Rs/hr	25733.7	25495.9523
700	Power Loss(PL)	23.9839	22.487
	Total Fuel Cost Rs/hr	35614.4	35438.019

Table: 2 shows the summarized result of ELD problem for load demand of 400MW, 500MW and 700MW by the ABC algorithm and lambda iteration method. Form Table: 1 it is clear that ABC algorithm gives optimum result in terms of minimum fuel cost and the losses are also reduced to some extent. For load demand 400MW, 500 MW and 700MW, total fuel cost obtained by ABC are 20828.5767 Rs/hr, 25495 Rs/hr and 35438.019 Rs/hr respectively where as by lambda iteration method they are 20903.7 Rs/hr , 25733.7 Rs/hr and 35614.4 Rs/hr respectively. So from the above results we can conclude that ABC gives better results than LIM.

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