

ABSTRACT**BILL OF MATERIALS PROCESSOR
BY LINEAR PROGRAMMING**

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To cope with demand diversification and shortening of demand lead time, parts oriented production systems in which common parts are assembled to meet final products demand have come to be emphasized. To realize parts oriented production systems, the mechanism to calculate parts requirement from the production plan of final products must be established. For this purpose, BMP (Bill of Materials Processor) is used. Conventional BMP is the tree form representation of the connections between final products and its parts or materials. By specifying the volume of final products, parts or materials required are exploded. But under conventional BMP, analysis of the uncertainty of parts requirement under uncertain final products volume cannot be realized. Further the inverse problem of final product production planning under supply limit on parts cannot be realized. To reduce these difficulties of the conventional BMP, a new method is proposed in this paper. In this method, relations between final product and its parts are described by a set of linear equations, and by using linear programming, parts requirement are analyzed. By introducing the variational RHS (Right Hand Side) to represent the final products uncertainty and using parametric approach, parts explosion under uncertainty can be realized. Conversely, the inverse problem of final product production planning can also be realized by solving a linear programming problem which optimizes the final products production plan under supply limit on parts or materials.