CHAPTER 6

CONCLUSIONS

The profitability demanded from industry has lead to more efficient production systems to be developed. Simulation which can reproduce at high speed the temporal evolution of a system, makes it possible to acquire important information on a system's dynamic evolution avoiding costly mistakes. It also makes it possible to evaluate alternative operating configurations for the system, at a low cost.

Existing simulation generators for the evaluation of production systems are of three different types:

1. Dedicated tools which offer special primitives that are adapted to a given field. They can be set up rapidly and are accessible to technicians who are not computer scientists. However, they offer few possibilities for describing pilot strategies or for carrying out studies of sensitivity to disturbances such as breakdowns, etc. The Microsim simulator used in this study is a dedicated tool. The optimization routine in Microsim was used to find the value of the constants in the crusher and screen models, which were subsequently used in the Siman simulator.

2. General tools which offer the possibility of constructing models that include the level of detail sought such as effect of breakdowns, machine utilization etc., but which in turn require a high level of analysis, modelling and computer science on the part of the users. The Siman simulator used in this study is a general tool.

3. Tools based on an object approach are in the study and development stage and they were inspired by object oriented languages and they should in future prove to be more accessible to final users.[11]

This study indicated that a general-purpose simulator could be used to do a simulation of a metallurgical ore-dressing plant. The benefit is that mines which have invested in general-purpose simulators and the training of modellers to simulate other sections of the mining operation can also use them to simulate their metallurgical operations.

The increased use of simulation has been due to the increased availability of well-known simulation languages, and the fact the many of these languages include animation facilities, i. e. a simulation with graphics.

Siman was used for this project because the software can model discrete systems as well as continuous systems, both facilities having been used in this study, while allowing the user to define his own subroutines. Specific modules used in this project were written in Fortran. Siman combined with the Cinema module was also used to create an animation.

General tools can be used to evaluate a metallurgical plant, thus unlocking benefits that general simulation tools provide. With satisfactory control of modelling, of simulation and a rigorous and realistic analysis of the results supplied, simulation software can provide assistance in evaluating the performance of a metallurgical plant.