Monitoring of industrial production plants is a complex task, which requires a high level of knowledge about the interrelations in the production process in many cases. This knowledge on the one hand, is available as handbooks, process models or process data. On the other hand, the plant's staff has implicit knowledge in the form of mental models. Experienced process engineers and operators have improved these mental models over years of working with the process. In this paper, a procedure is described, of how implicit knowledge can be made explicit by the acquisition of plant's staff mental models. The aim is to build a cause-effect model for different quality parameters, which can be integrated into a decision support system (DSS), which helps the operator in decision-making.