A product configurator is a software-based expert system that supports the user in the creation of product specifications by restricting how different components and properties may be combined. The use of product configurators has for several years provided many engineering-oriented companies such benefits as: shorter lead times, improved quality of product specifications, preservation of knowledge, use of fewer resources for specifying products, optimized products, less routine work, improved certainty of delivery, and less time needed for training new employees. Unfortunately, not all configuration projects are successful, but in fact many fail or experience great problems during the course of the project. An important factor for the success of a configuration project is the quality of the methods, techniques and tools applied when extracting, representing and documenting relevant domain knowledge. Despite this fact, research in the knowledge acquisition process of configuration projects is an area that has been much neglected till now. Therefore, this thesis deals with some of the most important aspects of the knowledge acquisition process in configuration projects by answering seven research questions in nine papers, produced during the course of the PhD project. The questions are grouped under three topics: domain expert knowledge; knowledge representation techniques; and documentation of configuration knowledge. The thesis takes its point of departure in analysing existing literature, after which research questions are defined, a frame of reference established and the scientific approach outlined. Next, the main contribution of the PhD project is described, namely the papers that are part of the thesis, starting with analysis of the process in which domain experts provide relevant information to knowledge engineers. The process is investigated by analysing the role of tacit knowledge in configuration projects and by proposing a classification of the kinds of information involved in this process. The thesis then investigates how the information retrieved from domain experts can be represented in analysis and design models. To solve inadequacies of an existing graphic knowledge representation technique, the thesis proposes a representation technique that combines the existing technique with tables and other modelling constructs. Next, the two most commonly applied graphic knowledge representation techniques in configuration projects are investigated by analysing their mutual strengths and weaknesses. Having clarified the nature of these strengths and weaknesses, a new layout principle is proposed that combines the advantages of both notation techniques. To deal with cases where graphic models with overlapping content are to be maintained, the thesis proposes and tests a modelling principle that allows maintenance of models with overlapping content in a common model. Finally, the thesis investigates how knowledge in configuration projects can be documented, from a software perspective. This is done by proposing definitions of the modelling techniques that a software-based documentation system should support. To test the definitions, a software prototype is developed. In conclusion, this thesis provides new insights into the knowledge acquisition process of configuration projects and for the companies that engage in configuration projects.