

Table of contents

1.	Preface	7
2.	Introduction	13
3.	Overview of the quality assurance methods applied at the product development stage	14
4.	Methods for identifying customer requirements	17
4.1.	Questionnaire technique, questioning methods	17
4.1.1.	Preparatory stage of the research and survey	17
4.1.2.	Implementation stage of the research project	21
4.1.3.	Processing data, conducting the analysis	21
4.2.	'Thinking Aloud' Method ('Lautes Denken' in VW's terminology) .	24
4.3.	Clinical study and focus groups	28
4.3.1.	Clinical study.	28
4.3.2.	Focus (discussion) group meetings.	31
4.4.	J. D. Power	33
5.	QFD	36
5.1.	Description of the QFD method	36
5.2.	QFD method as an interface between customers' requirements and determination of technical parameters	38
5.3.	QFD matrix structure	39
5.4.	Example and application of the QFD method to assess the spatial design of the interior of a vehicle	40
5.4.1.	Generating input data for the application of the QFD method ...	41
5.4.2.	Procedures for data reduction in the input data generation process	42
5.4.3.	Interpreting certain results of using the QFD method	46
5.4.4.	Outcome of the application of QFD method	48
5.5.	The summary of results achieved by the application of QFD method.	49
6.	DFMAS	50
6.1.	Description of DFMAS (Design for Manufacture, Assembly and Services)	50
6.2.	Time scheduling of the application of the method in the product development process	51
6.3.	DFA (Design for Assembly) method	52
6.3.1.	Example of using DFA	52
6.3.2.	Procedures for using the DFA method	53
6.3.3.	The principle of the parts assembly process.	54
6.3.4.	Supporting procedures and steps when using the DFA method ...	57
6.3.5.	Connection parts or elements	58
6.3.6.	Example of the application of the DFMA method: Duocentric Oil Pump	60

6.3.7. Example of optimising an ID card holder clip	61
6.3.8. Summary	62
6.3.9. Advantages of using DFMAS.	62
7. Using FMEA methods.	63
7.1. FMEA method.	63
7.1.1. Description of the FMEA method	63
7.1.2. History of FMEA.	63
7.1.3. Types of FMEA and their correlation with relevant standards and regulations	64
7.2. Incorporating FMEA methods into product development activities.	65
7.2.1. Synchronising FMEA activities with the product development planning process.	65
7.2.2. Stages of the FMEA process applied to a specific topic	69
7.3. Inputs for the FMEA meeting	71
7.4. Evaluation of risk of potential failure for specific items by FMEA .	75
7.5. The use of VDS	77
7.6. Modified FMEA process	80
7.6.1. The currently used FMEA process	80
7.6.2. The modified FMEA process.	82
7.7. Creating an expert system	84
7.8. Summary of results achieved by consistent application of FMEA process.	85
8. Conclusion	92
9. Abbreviations used	94
10. References	96