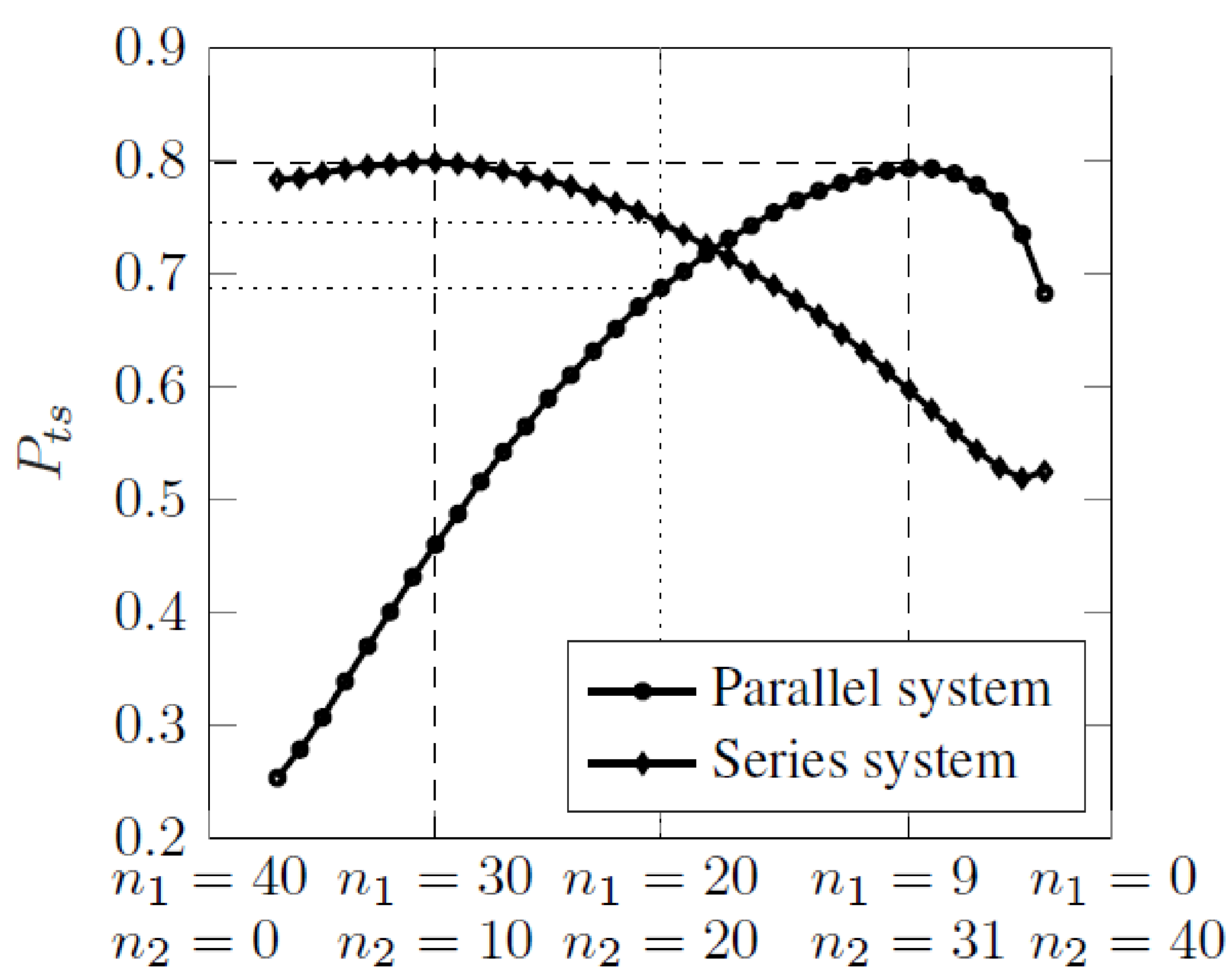


Challenges of System Validation

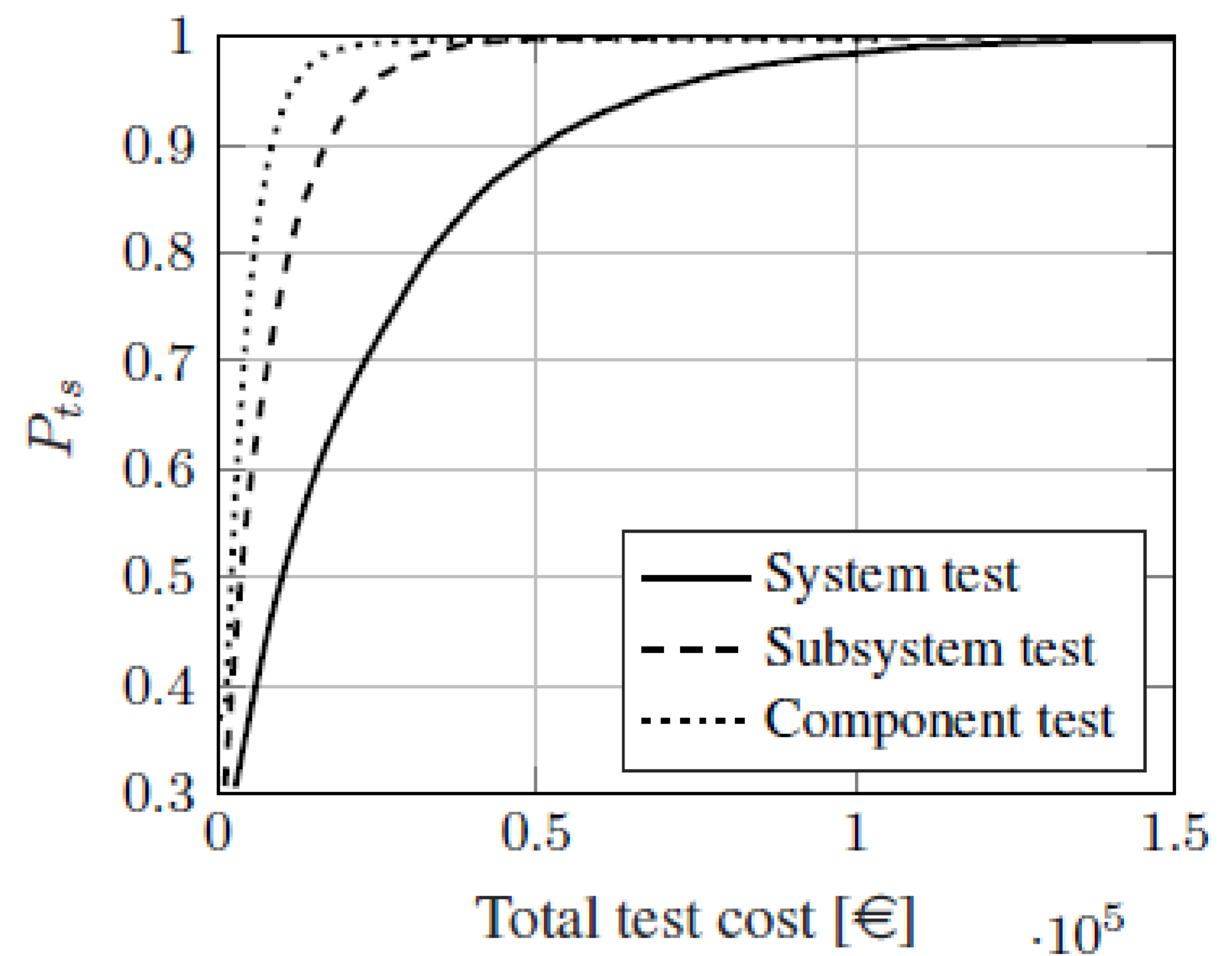
Today's products are characterized by a multitude of functions and components. This is particularly evident in connected products. As a result, the products can fail due to an equally large number of causes. Validating such systems and ensuring their functionality over the desired lifetime requires intelligent planning of the tests. The type of test (e.g., censored or complete) is particularly relevant here, as is the question of component or system tests.

Efficient System Reliability Demonstration

By combining the Probability of Test Success with Bayes' theorem, the most efficient tests for demonstrating the system reliability can be determined.



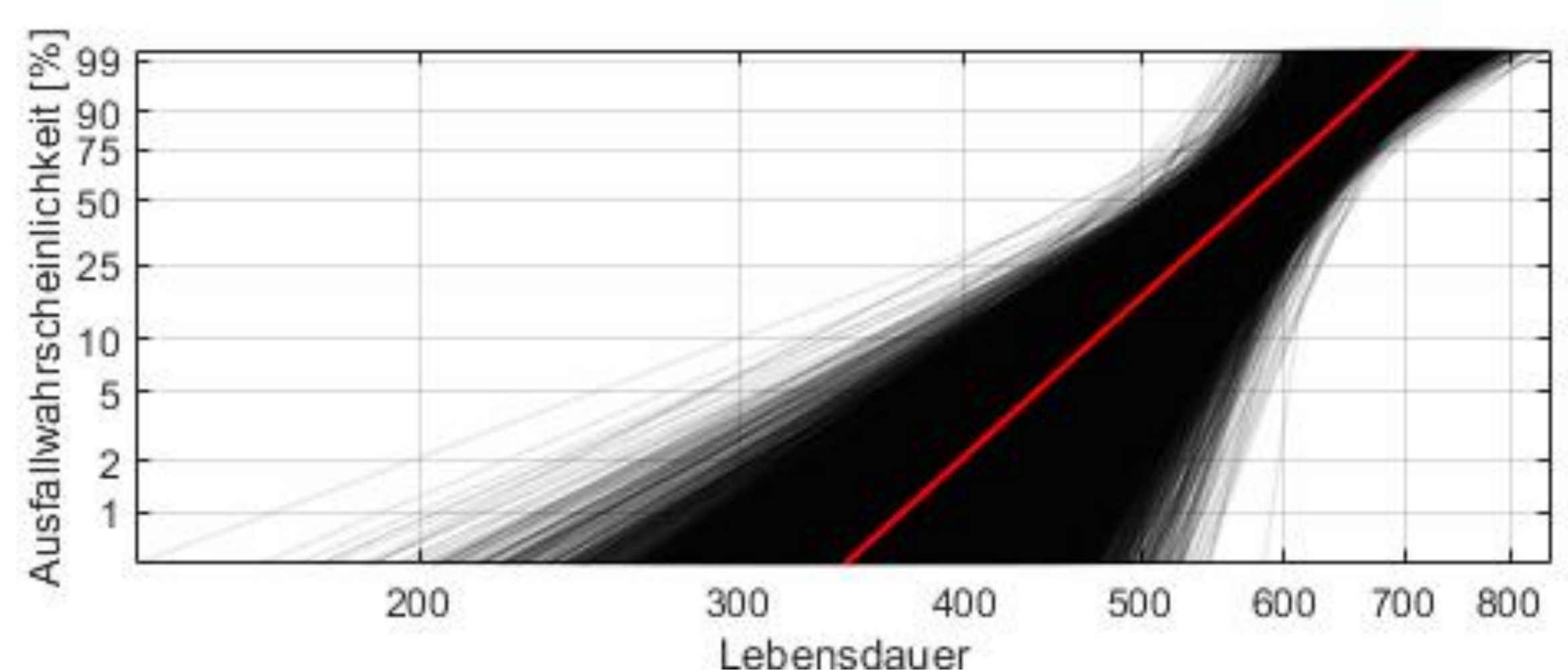
Optimal test specimen distribution for series and parallel systems for maximum demonstration success.



Optimal test level in terms of cost.

Planning of Efficient Tests by Taking Into Account Prior Knowledge

The objective of any reliability demonstration test should be the reliability demonstration itself. The probability of providing this demonstration is captured by the concept of Probability of Test Success. This enables an objective comparison of different test scenarios. Due to the prior knowledge taken into account, additional testing efforts can be saved via Bayes' theorem. The question can thus be answered which components, if any, in combination with different types of tests, lead to the most efficient reliability demonstration possible, and which has the greatest chance of success. Considerations of costs and test time are also possible and necessary for the efficiency analysis.



Bootstrap-Procedure

