

# Methodology for Determining Quantitative Parameters of Product Reliability

E.A. Kozhukhova<sup>1</sup>, Moscow Aviation Institute (National Research University), Kozhuhovaea@mail.ru  
V.A. Brykin<sup>2</sup>, Moscow Aviation Institute (National Research University), benbrykin@gmail.com

<sup>1</sup> Senior Lecturer of Department, Moscow, Russia

<sup>2</sup> Engineer, Moscow, Russia

**Citation:** Kozhukhova E.A., Brykin V.A. Methodology for Determining Quantitative Parameters of Product Reliability, *Kompetentnost' / Competency (Russia)*, 2022, no. 2, pp. 32–35.  
DOI: 10.24412/1993-8780-2022-2-32-35

## key words

randomness of processes,  
confidence probability,  
Kolmogorov's criterion of  
agreement, measure of discrepancy

The reliability indicator is a quantitative characteristic of reliability in certain conditions and the main indicator is called, which is an integral part of the overall assessment of the completeness of the specified functions. The quantitative parameters of reliability are determined by a set of indicators. Each type of product has its own recommendations for the selection of indicators. The study provides examples of determining the distribution law of a random variable and further shows that Kolmogorov's goodness-of-fit criterion in a number of cases gives an overestimated value of the agreement between the experimental and theoretical distributions. As a conclusion, it is said that checking by the  $\chi^2$  criterion is more laborious, it is advisable to start checking the consistency of the empirical and theoretical distributions by the Kolmogorov's criterion, and only if there are positive results, proceed to checking by the  $\chi^2$  criterion.

## References

1. Enin A.N. Avtomatizatsiya proektirovaniya protsessov proizvodstva i izmeritel'nykh protsessov na osnove metoda posledovatel'noy optimizatsii [Automation of design of production processes and measuring processes based on the method of sequential optimization], *Interexpo Geo-Siberia*, 2008, no. 2.
2. GOST 27.002–89 Reliability in technology. Basic concepts. Terms and definitions, Moscow, Publishing house of standards, 1991.
3. Ishkov A.S., Solodimova G.A., Kuchkovskaya N.A. Upravlenie nadezhnost'yu i kachestvom datchikov kak izdeliy otvetstvennogo naznacheniya [Management of the reliability and quality of sensors as critical products], *RQCS*, 2018, no. 2(2).
4. Ostapenko S.N., Yakunina O.A., Palikhov G.V. Statisticheskie metody pri otsenke pokazateley nadezhnosti tekhnologicheskikh sistem predpriyatiya [Statistical methods in assessing the reliability indicators of technological systems of an enterprise], *News of TuiSU. Technical sciences*, 2020, no. 10.
5. Filatov I.N., Denisova A.A. Analiz vozniknoveniya zadachi prinyatiya resheniya o kachestve produktov v usloviyah neopredelennosti [Analysis of the emergence of the problem of making a decision on the quality of products in conditions of uncertainty], *Information and control systems*, 2011, no. 6.

## НОВАЯ КНИГА

Паньков А.Н., Прилепко М.Ю.



### Испытания средств измерений вибрации в целях утверждения типа

Учебный курс по дополнительной профессиональной программе повышения квалификации. — М.: ACMС, 2021

Учебный курс предназначен для самостоятельного изучения основ вибродиагностики, характеристик и конструкции средств измерений вибрации, методов определения метрологических характеристик, этапов проведения их испытаний в целях утверждения типа.

Пособие может быть рекомендовано при проведении работ по поверке, калибровке и испытаниям в целях утверждения типа средств измерений вибрации. Пособие рассчитано на квалификацию слушателей, обучающихся по программе «Вибрационный контроль, мониторинг и диагностика машинного оборудования».

**По вопросам приобретения обращайтесь по адресу:** Академия стандартизации, метрологии и сертификации (ACMC), 109443, Москва, Волгоградский пр-т, 90, корп. 1. Тел. / факс: 8 (499) 742 4643. Факс: 8 (499) 742 5241. E-mail: info@asms.ru