APPLICATION OF INFORMATION TECHNOLOGIES FOR MODELING THE BEARING PULLER SCREW

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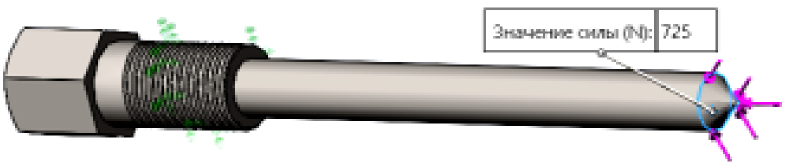
Key words: bearing puller, screw, static strength, SolidWorks Simulation.

The study of the behavior of structures can be carried out using an experimental approach. This method allows you to evaluate the behavior of the structure under the influence of various external factors. However, it is expensive and time-consuming. Therefore, in the process of developing high-tech competitive products, leading companies use finite-element modeling, partially replacing an expensive natural experiment with a cheaper and more rational computational one, because the modern level of computer technology allows solving complex problems quite quickly.

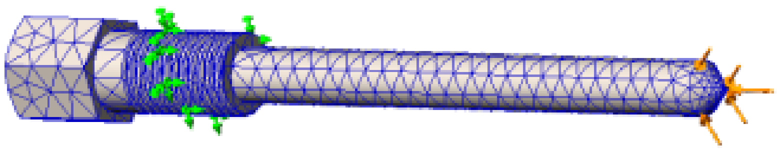
Thus, the authors [1] considered the use of SolidWorks Simulation for calculations on the static strength of the collet of a screw bearing puller. The continuation of the study is the effect of fasteners on its performance [2], as well as the possibility of replacing its material with a cheaper and more accessible one in repair shops [3]. But the puller does not consist only of a collet - studies of the performance of its other parts are required. Therefore, the purpose of this work is to determine the static strength of the puller screw (item 1 in fig. 1 [1]).

For this: a solid model of the screw is built in SolidWorks; the main parameters of the model and the material of the part are determined (selected from the library of SolidWorks DIN Materials steel 1.6587 (18CrNiMo7-6) – an analogue of the screw material – steel 18X2H2M; according to the calculation scheme, restrictions were added to the screw model (fig. 1, a); loads were applied (fig. 1, b); formed a finite-element mesh (min. element size 0.278071 mm, max. element size 5.56142 mm, 4 Jacobian points – fig. 1, c).

a



b



c

Fig. 1. Adding a constraint to the screw model (a), applying a load to it (b), forming a finite element mesh

After starting the program, the results were obtained calculation (fig. 2).

Имя	Тип	Мин	Макс
Напряжение1	VON: Напряжение Von Mises	1,044e+01N/m^2 Узел: 5041	2,378e+07N/m^2 Узел: 6371

Имя	Тип	Мин	Макс
Перемещение1	URES: Результирующее перемещение	0,000e+00mm Узел: 8	3,016e-03mm Узел: 5

Имя	Тип	Мин	Макс
Деформация1	ESTRN: Эквивалентная деформация	5,467e-11 Элемент: 1129	2,578e-05 Элемент: 3211

Имя	Тип	Мин	Макс
Запас прочности1	Авто	3,304e+01 Узел: 6371	7,522e+07 Узел: 5041

Fig. 2. Von Mises stress, total displacements URES and deformations ESTRN, margin of safety FOS of the screw model

Thus, with the help of SolidWorks and its SolidWorks Simulation application, the operability of the bearing puller screw has been proven (the minimum margin of safety is greater than the allowable one).

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РОЗРОБКА ІНФОРМАЦІЙНОЇ СИСТЕМИ ДЛЯ ОПТИМІЗАЦІЇ ПРОЦЕСУ ПОШУКУ ВІДДАЛЕНОЇ РОБОТИ

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Ключові слова: інформаційна система, пошук роботи, працевлаштування віддалена робота, робітник, роботодавець, рекрутинг, фриланс.

Протягом останніх п'яти років дистанційна робота стала однією з найбільш важливих та глобальних тенденцій [1]. Можливість працювати з будь-якого місця на планеті поступово витісняє традиційну офісну роботу, суттєво впливаючи на усі бізнес-процеси. За дослідженнями, частка віддалених працівників буде зростати, оскільки більше людей виявляють інтерес до гнучкості та свободи на робочому місці. Те саме