генератора. Подальша взаємодія відбитих хвиль із новим імпульсом вхідного газу спричиняє турбулентне перемішування зустрічних потоків і витік газу у камеру низького тиску.

Повторення цього циклу забезпечує пульсаційний режим роботи системи, що супроводжується ударно-хвильовими взаємодіями та нерівномірним розподілом тиску.

Висновки

У роботі було досліджено поведінку потоку газу при різних видах осьового стрижня, який розміщувався у центр основного потоку газу.

Використання такого стрижня не лише модифікує структуру вхідного струменя, а й визначає характер хвильових процесів та сприяє розвитку кумулятивних термогазодинамічних ефектів, які критично впливають на ефективність генератора.

Література

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DIGITAL PHOTOGRAMMETRY IN MACHINE BUILDING

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Visual perception of analytical information is important for humans, and the volume and speed of perception of visual images are significant. It takes only a few seconds to perceive the characteristics of spatial objects while looking at a visual image. However, it takes hours to decipher and compare thousands of numbers that can represent the same objects. Therefore, the importance of visual representation of calculation results cannot be overestimated.

Laser scanning has recently been used for the visual representation of spatial objects. Laser scanners are used for spatial scanning of objects. A laser scanner uses laser beams to obtain a three-dimensional, positioned, single point cloud. The advantage of a laser scanner is that it creates a highly accurate image that is used in

3D modeling. Laser scanners are used in industries where accurate measurements are required. However, laser scanners and their software are very expensive.

There is another approach to studying the shape, size, position, and other characteristics of objects—digital photogrammetry. Digital photogrammetry does not require expensive equipment; you can use a regular phone to photograph an object. A database of photographs of the object of interest is created (the object is photographed from different angles), which is then processed to determine the spatial coordinates of the object's points. In other words, a three-dimensional point cloud is created.

Applications have been developed that stitch together and process the resulting database of photographs of the object. One of them is Autodesk ReCap Pro.

Autodesk ReCap Pro has long been one of the most popular applications due to its level of performance and built-in options. With its help, you can skip starting from scratch and immediately move on to integrating the object into the real environment. This software consists of two applications.

The Autodesk ReCap Photo application is a cloud service. Autodesk ReCap Photo allows you to upload photo arrays to Autodesk servers and receive a digital surface model (DSM) of the object being studied (point cloud) (Fig. 1).

The DSM visualizes real objects with the ability to edit them. When editing, it is possible to separate an object or element of an object for further use in design (Fig. 2). It is also possible to delete or add points to the cloud to improve the quality of the DSM. DSM visualization allows you to eliminate possible errors when creating a three-dimensional model based on the received photo database. The use of DSM allows you to improve real objects or develop design documentation at the stage of designing new objects. Thanks to the identity of the DSM and the real object, the accuracy and quality of the design is improved.

Figure Fig. 1 – Point cloud

Figure 2 – Digital model of the object

The resulting DSM can be used in Autodesk Inventor and other packages for designing or improving metal structures and their elements (Fig. 3).

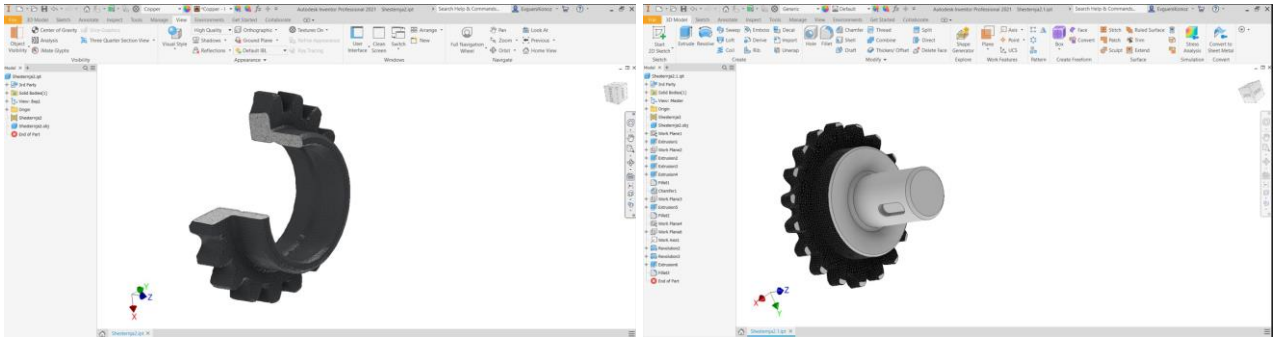

Figure 3 – Reproduction and refinement of objects in 3D models

Thanks to the identity of the DSM and the real object, the accuracy and quality of the design is improved.

UDC 62-21

TAKING INTO ACCOUNT CONDITIONS AND SIMPLIFICATIONS IN ACCORDANCE WITH THE REQUIREMENTS OF CURRENT STANDARDS IN THE AUTODESK INVENTOR PACKAGE

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The paper considers the issue of improving the construction of parametric three-dimensional models of parts and the development of their drawings in order to solve the problems of compliance with the requirements of current standards, in particular, the representation of part sections on drawings in the Autodesk Inventor package.