ПРИЧИНЫ И РЕШЕНИЯ КОРРОЗИИ ТЕРМОСТАТА В СИСТЕМЕ ОХЛАЖДЕНИЯ ДВИГАТЕЛЕЙ ВНУТРЕННЕГО СГОРАНИЯ

Мунаввархонов Зокирхон Тохирхон угли
НамИСИ, доцент
Имомназаров Сарвар Қовилжонович
НамИСИ, доцент
Махмудов Авазбек Акрамжон угли
НамИСИ, преподователь
Оғаликов Мирзаакбар Ботиралиевич
НамИСИ, тютор

Аннатация. В статье анализируются принципы работы термостатов, используемых в двигателях внутреннего сгорания, их значение в регулировании температуры, а также их коррозионностойкие свойства. Также были даны рекомендации по повышению эффективности термостатов и усилению их коррозионной стойкости.

Ключевые слова: термостат, температура, водяной насос, коррозия, топливо, система охлаждения.

CAUSES AND SOLUTIONS OF THERMOSTAT CORROSION IN THE COOLING SYSTEM OF INTERNAL COMBUSTION ENGINES

Munavvarkhonov Zokirkhon Toxirkhon ogli
NamECI, dosent
Imomnazarov Sarvar Qoviljonovich
NamECI, dosent
Maxmudov Avazbek Akramjon o‘g’li
NamECI, teacher
Og’aliqov Mirzaakbar Botiraliyevich
NamECI, tyutor

Abstract. The article analyzes the operating principles of thermostats used in internal combustion engines, their importance in temperature regulation, and their corrosion-resistant properties. Recommendations were also given for increasing the efficiency of thermostats and enhancing their corrosion resistance.

Keywords: thermostat, temperature, water pump, corrosion, fuel, cooling system.

Introduction. The cooling system of an internal combustion engine plays a vital role in controlling the temperature of the engine and ensuring its optimal performance. The thermostat is one of the most important components of this system, which is used to deliver coolant to the engine at the required temperature. Corrosion of the thermostat reduces the efficiency of the system and can lead to overheating of the engine. This article will provide detailed information on the causes of corrosion of the thermostat in the cooling system of an internal combustion engine and how to solve this problem.

The thermostat is a mechanical device that controls the temperature of the coolant in the cooling system to deliver it to the engine. The thermostat usually opens when the temperature of the fluid reaches a certain level, and when the engine starts to heat up, it sends coolant to the system. If the thermostat becomes corroded, it may not function properly. As a result, the cooling system cannot transfer enough fluid to the engine. This causes the engine to overheat. High engine temperatures reduce its performance, and in more serious cases, can damage the engine's mechanical components.

Figure 1. Thermostat corrosion

A malfunctioning or corroded thermostat reduces the efficiency of the engine's thermal management system. If the engine continues to operate at high temperatures, this reduces its performance and increases fuel consumption. Also, when the temperature management system is malfunctioning, the engine cannot use energy efficiently, which reduces overall performance.

Rusting or corroding the thermostat can cause it to stop working or completely break down.

Causes of thermostat corrosion:

-Poor quality coolant or the use of the wrong antifreeze can cause thermostat corrosion. Chemicals in the antifreeze or the expiration date of the coolant accelerate the corrosion process.

- If the temperature in the cooling system is low or the thermostat is malfunctioning, this can change the composition of the coolant and cause it to corrode. The cooling system is constantly changing heat and cold, which makes the fluid in it susceptible to corrosion.

- Air can enter the cooling system, reducing its pressure and increasing the corrosion process. Air prevents the coolant from circulating and causes the thermostat to corrode.

- Over time, various parts of the cooling system, including the thermostat itself, wear out. Wear can cause the thermostat to corrode, which in turn causes it to rust.

Maintaining and preventing thermostat rust:

-regularly check the coolant and monitor its shelf life. It is necessary to constantly check the composition and quality of antifreeze, and if necessary, renew the fluid.

-it is necessary to ensure the normal operation of the thermostat and monitor the operation of the system at the correct temperature. The temperature of the coolant must be maintained at an optimal level.

-to ensure that there is no air in the cooling system, the system must be properly filled and bled. It is necessary to regularly check the system and eliminate any problems in a timely manner.

-it is necessary to regularly check the thermostat and other cooling system components and replace them when necessary. Regularly monitoring the operation of the system and replacing spare parts prevents the thermostat from rusting.

№	Problem/Cause	Solution
1	Poor coolant quality	Use high-quality fluid and before its expiration date; renew regularly.
2	Air in the cooling system	It is necessary to properly fill and bleed the system. Regularly check for air in the system.
3	Malfunction of the cooling system	Regularly check and adjust the pressure and other parameters of the system.
4	Wear and deterioration of the cooling system	Regularly check the thermostat and system components and replace them if necessary.
5	Low coolant temperature	Regularly monitor the temperature of the cooling system and maintain it at an optimal level.
6	Thermostat wear	Regularly check the thermostat and replace it

		if necessary.
7	Invalid antifreeze or coolant	Use good quality antifreeze and coolant.
8	Corrosion in the cooling system	Use anti-corrosion protection fluids and regularly clean the system.

This table lists important steps to avoid and prevent the main causes of thermostat corrosion. Ensuring that the thermostat and cooling system are working properly is essential to ensuring that the engine continues to run efficiently. The cooling system of an internal combustion engine plays a very important role in its efficient operation. The thermostat performs a key function in delivering coolant to the engine at the required temperature and maintaining the engine at an optimal temperature. However, over time, the thermostat is prone to corrosion, which can negatively affect the operation of the system.

Conclusion. Regular maintenance and keeping the system in good condition is essential to prevent thermostat corrosion. This not only ensures the long life of the engine, but also increases its efficiency and operational safety. Thus, by ensuring the proper functioning of the cooling system, it is possible to guarantee optimal engine performance and a long service life.

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