

Conclusions

As a result of this work, a mathematical model of heat transfer in structurally inhomogeneous layer of forest fuel, exposed to high temperature steel particles, was developed. We obtained the temperature field in the "particle-layer forest fuel-inclusion" in different period preceding the layer combustion.

When working with a mathematical model, it is necessary to use the knowledge from different disciplines, otherwise the true results will not be achieved.

Dependence analysis, given in Figure 3, shows the difference in heat transfer in a layer of forest fuel in the presence of inclusions in its structure. In a warm surface layer it is mainly due to the transfer of heat along the vertical coordinate from the heated particles. In deeper layers of the forest fuel the impact of a more heated charcoal inclusion also affects the heat transfer in the surrounding material.

As a result of computational experiments, it was found that presence of inclusions does not significantly affect the processes of heat transfer in a structurally inhomogeneous layer of forest fuel models for a monolithic structure of this layer. Thus, the developed mathematical apparatus can be used when creating new forest fire danger forecasting. This mathematical apparatus can be used for both homogeneous and inhomogeneous layers of forest fuel.

REFERENCES

1. Flannigan M.D., Stocks B.J., Wotton B.M. Climate change and forest fires // *Science of the Total Environment*. 2000. Vol. 262. No 3. P. 221 – 229.
2. A.M. Grishin, *Mathematical modelling of forest fires and new methods fighting them*. (1992), (In Russian).
3. G.V. Kuznetsov, N.V. Baranovsky Numerical investigation of the problem of ignition of forest fuel layer is heated to high temperatures particle in the plane formulation // *Chemical Physics and mezoskopiya*. 2011, No. 2. P. 173-181, (In Russian).

THE FEASIBILITY STUDY OF ELECTRONIC COMPONENTS APPLICATION IN MICRAN

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Micran is a modern innovative company working on basis full research - development cycle: research - development - production - sale - maintenance. Main work spheres are telecommunication and signal (connection), development microwave electronic components and products based on them, microwave instrumentation, radiolocation, test and measurement equipment and information security.

Nowadays, every company or institute should submit a feasibility study to develop and manufacture of unit (product, item), and Micran is no exception.

Micran has several departments of development and manufacture: microwave department, telecommunication department, information-measuring department, and so on. There are responsible workers, who engage in creation of the feasibility study. Therefore, there is not great base of the FSs have already created. This facilitates the FS creation process much.

The feasibility study (FS) is a document, which provides an information about applicability, or not, of a foreign-manufactured electronic component in a present unit. It is prepared by a developer (engineer, researcher) and a draftsman (drawer, originator).

The developer is a project manager. His work is that:

- to hand over a components' list of the project to the draftsman. It is the list which contains a component name, a functional area, a case, a size and a temperature range of the foreign-manufactured electronic component;
- to write a explanation by the draftsman request. There is explanation of native (Russian) analog choice, the possibility or impossibility substitution by native (Russian) analog;
- to check the finished FS.

The draftsman is appointed by department to create the FS for a specific project. His work is that:

- to search in base the FS possibly have already created. If there is no such document, it will be created from the outset;
- to fill a title (head), in particular a full component name, a functional area, a manufacturer, a country of the manufacturer, an unit name and an unit number;
- to describe the electronic component, to write its application, installation and temperature range;
- to search proximate native (Russian) analogs. The native (Russian) analog is selected on main electrical specifications and technological, exploitative ones;
- to fill a table with a main specifications;
- to fill the explanation, to write why this native (Russian) analog is selected, and why it can substitute the foreign-manufactured electronic component or not.

It follows that the FS consists of several parts:

- the head;
- the general description;
- the table;
- the explanation;
- the conclusion.

The most difficult of all this process is searching of the native (Russian) analog. The native (Russian) analog is searched from the Internet, a Nomenclature-2005 and a list DIM (the Defence Industry Ministry).

The list DIM is an official edition of the Defence Ministry of the Russian Federation and obligatory for all institutions, companies and enterprises executed development (modernization), production, maintenance and repair of military devices

on the Defense Ministry request. The native (Russian) analog should be included in the list DIM necessarily. Only analogs approved by the list DIM can substitute the foreign-manufactured components.

The FS creation process is more difficult than it looks. The draftsman should know all electronic components, understand the circuitry ones. Sometimes one FS creation takes a half day or a full day.

REFERENCES

1. O kompanii [Electronic resource]: Micran. – Access mode: <http://www.micran.ru/>.
2. Standart organizacii OmSTU [Electronic resource]: OmSTU. – Access mode: http://xn--c1arfsf.xn--plai/educational_activities/dokumenty_smk/standards/STO_OmGTU_73.02-2012.pdf.
3. Kobzar D. Procedurnye voprosy primeneniya elektronnyh sredstv v voennoi tehnike: normativnaya baza i pravda zhizni [Electronic resource]: Statya. – Access mode: www.cta.ru/cms/f/356562.pdf.

THE ORIGIN OF THE EXPRESSION “ONCE IN A BLUE MOON”. CAN THE MOON REALLY BE BLUE?

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Looking in the sky, we can see the moon, the only satellite of the earth. It can be growing, aging or full. We usually see the full moon once a month, but there are months when we can see the full moon twice. “Blue moon” is a term that is used in astronomy for designation one of these two moons during one lunation. The lunation is a period, consisting of 29 days, 12 hours, 44 minutes, and 3 seconds, the amount of time from one new moon to the next one.

Dating back to the 1800's the term "blue moon" that was used by “Farmer's Almanac” to denote the appearance of the third full moon in a season where four full moons will occur. We usually see 12 fool moons annually. It means that the fool moon appears one time per month and three times per quarter. Sometimes a quarter can have three full moons.

The term has emerged because every full moon has its own name in every season. This tradition has existed thousands of years in many cultures. The names generally accepted today are those coming from “Farmer’s Almanac”. For example, in the second quarter of the year moons will be “pink” (in April), “flower” (for May) and “strawberry” (for June). However, whether the forth full moon appear during this quarter it would be called a “blue moon”. It means that the order of full moons during the second of the year would be “pink, flower, blue and strawberry”.