

MODERN INFORMATION TECHNOLOGIES IN SCIENTIFIC PERIODICALS

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UDC 621.39

Introduction. In the past decade, the "Inzhenerno-Fizicheskii Zhurnal" (IFZh) has lived an interesting and difficult life — under the new economic and information conditions this publication has preserved its high scientific reputation and quality of edition preparation; it has changed to a new polygraphic base and has made full use of the capabilities of the Internet to conduct a new information-technology (IT) policy: the expansion of the regions of inflow and outflow of information and the provision of an unprecedented level of information exchange between scientific communities and of a surprisingly simple access to reservoirs of scientific information — as obvious today as it is quite incredible in historical terms. Behind all these achievements there are concrete people — the staff of the editorial office and members of the editorial board of the journal.

For scientific periodicals the use of the Internet global network of data transmission is a necessary condition of their successful development and even existence — science and the Internet are international in their nature. The use of technologies of the Internet gives a greater advantage to scientific periodicals (journals) — the geography of interaction with the reader expands and new authors and reviewers are invited to participate.

Through the efforts of the authors of this paper, an electronic version of the "Inzhenerno-Fizicheskii Zhurnal" — a periodical — appeared on the Internet among the first ones [1] and quickly gained recognition. The "Inzhenerno-Fizicheskii Zhurnal" is republished in English by Kluwer Academic/Plenum Publishers under the title "Journal of Engineering Physics and Thermophysics" (JEPTER). One can find all the necessary information on the journal — conditions for subscription and submission of papers, the archives of all the volumes of the "Inzhenerno-Fizicheskii Zhurnal" in the form of the contents and annotations of papers, the authors index for the past seven years, information on the authors whose papers have been published in the journal — at the Internet addresses www.itmo.by/jep-ter.html and www.wkap.nl/journals/jept in Russian and English. There is context (key-word) search and a subject classifier of papers, an e-mail mailing list to send out the subjects of the papers sci.inzh-jep-ter (teleconference), and a full-text mailing list sci.inzh-jep-ter.news. There are about 1500 addresses on the list, and they are constantly replenished with electronic addresses of the authors of the "Inzhenerno-Fizicheskii Zhurnal," the "International Journal of Heat and Mass Transfer," and other thematically close scientific publications. A mailing list has been set up for "News of Thermophysics and Heat Engineering" (subscribe.ru/catalog/science.exact.itmo) at the Mailing Service — Subscribe.ru.

Technical Design and Content of IFZh's Information Services. All support services of the editorial office are concentrated in one segment of the local area network Ethernet that has been constructed with the help of a Cisco router [2, 3] — thus using the segment to complete the entire applied traffic and making it possible to construct an efficient system of information protection based on firewalls which assign a policy of access to the services from the outside world. The servers of Web (HTTPd), e-mail (mail server), domain names (DNS server), files (FTP server), network time protocol service (NTPd), mailing lists (newsserv), antivirus protection (DrWeb), and modem pool for remote access by PPP and UUCP are concentrated on a backed-up computer controlled by the UNIX FreeBSD operation system, which optimizes the administration by the "price/quality" criterion (translation and interpretation of special terms and abbreviations can be found in [4]).

The two applied services that are the most important for the end-user are the web site and the mailing lists.

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The address of the IFZh site on the Internet is www.itmo.by/jepeter.html — this page has the most general information on the journal in English, as well as options for the Russian-language and English-language versions of the site that duplicate each other. The selection of the Russian language is not hindered by the selection of encoding — the Russified version of the HTTP Apache 1.3.20rusPL3O.5 server sets a variable Charset in the HTTP titles of all transmitted documents and the browsers are able to adjust themselves automatically to a particular encoding. Also here, there functions an access gate (a set of CGI scripts in Perl [5–7]) to the e-mail system for users — users@itmo.by (see item 24 "For the information of IFZh authors"). The basic program from [8] was significantly reworked in the area of security, work with Russian-language texts, correct performance at different browsers; several errors were corrected; new functional possibilities were added. In general, a totally different program emerged, which would be interesting to develop further — for example, to add the function of sending letters with attachments. At present, the gate makes it possible to look up the mail-box, to delete, to read (with attachments), to send and forward messages, and to respond to the sender.

Let us consider the content of the site by links (given in italics) at www.itmo.by/ifzh.html.

Search at the Site. The search machine Fluids 4.2.5 carries out search in Russian and English in the content of the site. One can use metasympols *, ?, &, |, !.

Internet-poll — Remembering Belarus. The result of cooperation with the Institute of Sociology of the National Academy of Sciences of Belarus. The processor is written in Perl.

The "Inzhenerno-Fizicheskii Zhurnal" is an information sponsor of the Minsk International Forum (MIF). Being an information sponsor of the Minsk International Forum on Heat and Mass Transfer, the journal publishes plenary papers and materials of roundtables in special issues — IFZh, 1996, Vol. 69, No. 6 and IFZh, 2001, Vol. 74, No. 4. The editors of IFZh have prepared an electronic version of the transactions of the MIF-4 — papers and statements in 11 volumes on the subjects of the panels are presented on the site in the PDF format.

For the Information of Authors. The section "For the information of IFZh authors" gives a very detailed introduction to joint rights and obligations which arise in the course of cooperation of authors with the editors. The aim of this very detailed description is to make this cooperation as productive and clear as possible. One must clearly understand that each item of the section was thoroughly verified by many years of practical editorial preparation work and work with information and publishing activity. For example, a correctly executed and thoroughly edited paper conveys an author's scientific thought more accurately and, hence, is more substantive to the reader; it appears on the pages of a Russian-language journal earlier and is translated into English without inaccuracies that annoy its author and the editors. It is important to request that the authors provide information on their readiness to receive a paper's proof in the PDF format by e-mail, and also to pay special attention to items 10 and 11 "For the information of IFZh authors," the implementation of which makes it possible to avoid distortions and inaccuracies during the translation of papers into English.

Author Index. The author index has been maintained since 1996 (Vol. 69), i.e., over the past seven years. Examples of designations: 690883 — volume 69, page 883; starting with volume 74: 7401139 — Vol. 74, No. 1, page 139.

English-Language Library (JEPTER). All the volumes of the journal in the form of the contents of the issues are available in English. Starting with Vol. 68, short annotations are provided along with the titles of the papers.

Russian-Language Library (IFZh). All the volumes of the journal in the form of the contents of the issues are available in Russian. Starting with Vol. 69, short annotations are provided along with the titles of the papers.

How to Obtain the "Inzhenerno-Fizicheskii Zhurnal." There is no electronic subscription to the Russian-language version through the Internet yet. This is not a technical problem but is due to the lack of relevant demand. Indeed, the link "How to obtain the 'Journal of Engineering Physics and Thermophysics'" will tell you about electronic subscriptions too.

Scientific-Technological and Theoretical Developments in the Field of Heat and Mass Transfer (based on materials of the "Information Line" in IFZh). According to item 23 of the section "For the information of IFZh authors," the function of the heading "Information Line" is to receive from authors, quickly publish, and disseminate on the Internet (preferably in English) messages on engineering and technical methods of solving scientific and technological problems in the field of the thematic profile of the journal, on scientific and practical conferences and seminars that are being prepared, and also information on new printed publications.

Subject Classifier of Papers. Classification on the basis of 22 subjects (see the site) for papers published from 1988 to 2002 by year and subject. Thus, it is quite easy to compile a list of papers on a certain subject — to conduct a thematic search.

Protection of Information — Our PGP Public Key. Item 26 of the section "For the information of IFZh authors" says that in order to meet the requirements of the laws of the Republic of Belarus "On Copyright and Related Rights" and "On the Press and Other Media" and to ensure national information priorities in the course of transmitting scientific papers via the international network of the Internet the editors are ready to receive papers via e-mail encrypted using the PGP algorithm (algorithm of encrypting with a public key). Today, correspondence with authors in electronic form prevails over correspondence via ordinary mail. For effective protection of electronic information against unauthorized access, i.e., reduction to the minimum of the risk of dissemination of papers in electronic form before their publication — preservation of the authors' rights over their scientific works — the editors have their own e-mail server (itmo.by) that receives and transmits to the Internet all correspondence, a DNS server (domain names). The e-mail server to remove viruses from the SMTP flow uses the DrWeb for FreeBSD package to link sendmail and antivirus software.

Reference information on authors (according to a questionnaire) whose papers have been published in our journal is placed in a database accessible via the Internet, i.e., the fact of the authors' cooperation with the editors is registered to the maximum in electronic forms.

There are two mailing lists to send out messages via e-mail — they are sci.ifzh-jepter and sci-ifzh-jepter.news. The first one is not a list but rather a teleconference in which there is transmission of the contents of issues and short annotations of IFZh papers and there is a possibility to organize discussions and ask questions. Indeed, at first only the subjects (titles) of the papers are given, which minimizes the mail traffic significantly. The second list performs the functions of a full-text mailing, for example, it is used for periodic distribution of the contents of the journal's issues in English, messages about scientific and practical conferences and seminars, etc. One can subscribe to the mailing lists using commands in the body of an e-message:

subscribe sci-ifzh-jepter

subscribe sci-ifzh-jepter.news,

which must be mailed to the address newsserv@itmo.by. Using the "help" command sent to newsserv@itmo.by, one can get detailed instruction in Russian and English on the work with the mailing lists.

The computer method of making a prototype has made it possible to compile and replenish with each new issue the glossary of special technical terms and, on its basis, to implement IFZh paper correction software — misprints and mistakes in writing are very unlikely to get into the journal.

On Subscription. Subscription and the effects of nonpaper technologies on it and on library business in general is a subject for separate detailed investigations and examinations. A six-month subscription and a subscription for each issue separately for the paper version of the "Inzhenerno-Fizicheskii Zhurnal" is possible via local post offices using catalogs "Gazety i zhurnaly Respubliki Belarus" ("Newspapers and Magazines of the Republic of Belarus") of the National Association "Belpochta" (Belarusian Post) in Belarus, "Gazety i zhurnaly rossiiskie i zarubezhnye" ("Russian and Foreign Magazines and Newspapers") of the "Rospechat" ("Russian Press") Agency in Russia, and "Izdaniya stran SNG" ("Publications of the CIS Countries") of national agencies. In all countries of the world, one can subscribe to IFZh via the catalog "Éxport periodiki" ("Export of Periodicals") of the "Mezhdunarodnaya Kniga" ("International Book") Corporation [9]. Index 74920 is used throughout all the catalogs.

Conclusions. The main result of the current IT-activities of the IFZh editorial office is that (a) the papers published in the journal are found via the Internet and requested by addressees from different countries of the world to be sent by e-mail, (b) there appear authors from far abroad who have not published their papers in IFZh before, and (c) cooperation with the authors is conducted on a permanent basis and in a very speedy manner irrespective of the geography of their residence. Over one million visits a year to the site of the "Inzhenerno-Fizicheskii Zhurnal," indices at the well-known search systems of the Internet, and numerous links from other sites are signs of stable interest in IFZh on the part of the thermophysics community. Thanks to modern IT-technologies, the "Inzhenerno-Fizicheskii Zhurnal" has acquired qualities invariant to language and interstate barriers, which is today a necessary condition for the development of a scientific periodical and a prerequisite for uniting world scientific thought with the aim of solving scientific and technological problems of the present that are problems of a new scale.

Prospects. Much is still to be done. For instance, a reference and search system for historic and comparative analysis of scientific notions and terms from papers in IFZh and JEPTER in Russian and English would help to exercise a systematic approach to English–Russian and Russian–English translations and understanding of texts related to the subject profile of the journal.

Acknowledgments. The authors are grateful to N. V. Pavlyukevich, Z. P. Shul'man, I. S. Chebot'ko, and A. I. Polovinkin for their valuable advice and practical assistance in setting up and developing the information services of the "Inzhenerno-Fizicheskii Zhurnal" on the Internet and to A. A. Bulavko and G. L. Timonovich for their support of the work of and attention to the IFZh segment in the local area network of the A. V. Luikov Heat and Mass Transfer Institute of the National Academy of Sciences of Belarus.

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