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ESDU International and Engineering Libraries: Past, Present, and Future

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Abstract
ESDU International PLC, the Engineering Sciences Data Unit in the United Kingdom, produces sets of publications (also known as ESDU) that are available in print (loose-leaf notebook), on CD-ROM, and, as of 1999, on the World Wide Web in conjunction with the company IHS Engineering Products. ESDU provides validated design methods and data in more than 1,200 individual documents, contained in more than 230 volumes that are organized into twenty-two sets within four engineering disciplines: aerospace, mechanical, structural, and process engineering. Academic and corporate engineering libraries have acquired ESDU sets in print and occasionally on CD-ROM. With ESDU now available on the Web, special librarians, engineering professors, students, and practicing engineers can evaluate its relevance to their programs and projects. For an academic engineering library, acquiring ESDU is a potential joint venture with a college or school of engineering. ESDU can be a component in a corporate engineering library to support research and development. Engineering librarians are further challenged to make end users aware of ESDU and teach them how to use it where it is available.

Introduction
The initials ESDU stand for “Engineering Sciences Data Unit”—a term that refers to both the organization as an entity and its twenty-two published sets of engineering data and information, including validated design methods. Beginning in 1940 as the Technical Department of the United Kingdom’s Royal Aeronautical Society (RAeS), ESDU International has evolved over the past fifty-nine years to hold a unique role in publishing technical data for engineering design. In 1963, ESDU was spun off from the RAeS Technical Department as a PLC, or “public limited company.” Since then, ESDU has been expanded to include data information sets for aerospace, mechanical, structural, and process engineering. In 1997, ESDU International PLC, based in London, England, was acquired by the IHS Group (full corporate name: Information Handling Services) in its IHS Engineering Products subsidiary, a major producer and distributor of technical information, including standards, specifications, and other engineering documents. The twenty-two ESDU sets are available in print, on CD-ROM, and, as of 1999, on the Web through IHS (www.esdu.com). Traditionally published in loose-leaf binders, ESDU is now also available on academic discount or by standard subscription. ESDU series volumes or Data Items can also be purchased as needed from IHS.

Data from Technical Committees
ESDU engineers and staff members collect and analyze data from many sources such as books, journals, proceedings, technical reports, unpublished sources, and Web sites. Under the guidance of its sixteen international Technical Committees composed of members from government, industry, and academia, ESDU reviews and distills the gathered information to define and apply it in engineering design. As stated in its brochure, “ESDU provides validated engineering methods, data, principles, worked examples, and related equations on over 1,200 specific aerospace, process, structural, and mechanical engineering topics.” These topics are contained in individual documents known as Data Items. The ESDU Data Items are not published until they have received the unanimous approval of the committees, ensuring the quality and reliability of the information.

Data Items (formerly known as Data Sheets) present information in outline form and are utilized as
instructions in the engineering application design process. Each Data Item includes an introduction and an explanation of the equations required for calculations. Practicing engineers or engineering professors and students can use the methods in the outline as a practical guide to calculate specific design data. Mathematical formulas are given and the derivations of the methods applied in the design process are explained in each Data Item. These methods are supported with figures and tables plus bibliographic references to the books or other sources used to obtain them. Relevant endorsements by U.K. engineering societies, such as the Institution of Mechanical Engineers or the Royal Aeronautical Society, are also indicated.

ESDU engineering software has been developed and is included for some of the Data Items. These are Fortran programs known as “ESDUpacs” operating in a front-end system known as “VIEWpac.” Complete details on the organization and content of ESDU are available on its Web site at www.esdu.com and in its annual comprehensive Validated Data Engineering Index. The index also includes an explanation of how the quality of the Data Items is assured. For example, engineers at academic institutions in the United Kingdom are volunteer members of ESDU’s committees that approve the content of the Data Items.

ESDU as a U.K. Tradition

The unique history of ESDU as an organization and as a set of publications is somewhat complicated by the fact that both were created and based at the Royal Aeronautical Society in the United Kingdom. Unlike the U.K.-based INSPEC service, which has long-term affiliations with Britain’s Institution of Electrical Engineers (IEE) and America’s Institution of Electrical and Electronics Engineers (IEEE), ESDU only recently teamed with its American partner, IHS, in a corporate acquisition. (IHS had previously affiliated with the IEE and the IEEE to produce IEL, the IEE/IEEE Electronic Library.) Such affiliations may increase as established science and technology publishers seek platforms for Web versions of their sources. Such information producers may also create their own Internet sites for their publications. CRC Press has done this with its ENGnetBASE (www.engnetbase.com), a collective Web version of its key engineering handbooks, and with its HBCPnetBASE version of the CRC Handbook of Chemistry and Physics (www.hbcpnetbase.com).

ESDU Listed or Cited as a Resource

There are a number of bibliographies that list ESDU as a resource, and several indexes list its individual publications. ESDU is mentioned briefly in the three editions of Information Sources in Engineering, a U.K.-published book found in most American academic libraries that collect in the areas of science and technology. It is noteworthy that the three editions of that book vary in content and approach over the years, as they were edited by different persons and had different contributors. Consequently, it is best to have all three editions together to compare the information given when researching an engineering topic bibliographically or seeking to identify a source such as ESDU.

Unfortunately, little has appeared in the engineering periodical literature about ESDU as an information resource. Based on a database search of Ei, Engineering Information, Inc. COMPENDEX*WEB for the 1980s and 1990s, ESDU was listed in 1,381 records. However, these listings identified the individual Data Item publications and supplements, not articles about ESDU. Similarly, ESDU has received little mention in library sources such as periodicals or conference papers. ESDU was not mentioned in the book What Every Engineer Should Know About Engineering Information Sources (1984), a U.S.-based series that continues to grow. This book needs to be revised, expanded, and updated. There was no listing for ESDU in the second edition of the U.S.-published book Information Sources in Science and Technology. It was not mentioned in Reference Sources in Science, Engineering, Medicine, and Agriculture either. Equally unfortunate is ESDU’s absence in the European Sources of Scientific and Technical Information, a book published in the United Kingdom. It was only listed once (under “Mechanical Engineering”) in Scientific and Technical Information Sources. ESDU was evidently not listed in the most recent edition of the Directory of Engineering Document Sources published in 1997 by Global Engineering Documents, an IHS Group Company. This will certainly change in the next edition in light
of the acquisition of ESDU by IHS.

Knowledge of ESDU in the United States appears to have diminished or become limited over the years. It is important to note that ESDU is listed in the Scientific and Technical Organizations and Agencies Directory and the Directory of European Research and Development. The most current and thorough listing of ESDU was found in the twentieth edition of the Information Industry Directory, published in 1999. Minimal awareness of ESDU is also evident in a book written in 1984 by two librarians in the United Kingdom. Titled Information Sources in Science and Technology, it was stated in only a short paragraph that “Brief mention may also be made of the Engineering Sciences Data series.”

Past Use of ESDU in American Engineering Libraries

Traditionally, libraries have acquired ESDU data sets in the original loose-leaf notebook format. As such, these items were cataloged, listed in the library OPAC, and made available in reference stacks or perhaps on the shelves of an index table. If librarians and end users were aware of the existence and relevance of ESDU, it was more likely that the data sets would be used. Engineering librarians often evaluated ESDU in conjunction with budget cuts or when journals and other serial publications were reconsidered as part of a cancellation project in response to funding limitations. Consequently, ESDU in the print format has often been a target for cancellation.

ESDU in Engineering Libraries Today

Thirty-five non-U.S. universities subscribe to the service, most of them in the United Kingdom. A search of the Web led to an example of ESDU being used as part of a course at the University of New South Wales in Sydney, Australia. The resulting Web page is part of the Faculty of Engineering Handbook 1999 with a listing of the course numbered “AERO 3100—Aerospace Design I” and includes the following sentence in its description: “An introduction to airworthiness regulations, ESDU data sheets and the use of computer-aided design techniques.”

Based on this example, ESDU is worthy of consideration as a potential information source within the aerospace design and other ESDU-related curricula at universities, colleges, and institutes worldwide. The University of Hertfordshire in the United Kingdom explains ESDU as a resource—and how to access it, on its Learning Resources Centres (i.e., libraries) Web site at www.herts.ac.uk/lis/subjects/engineering/about/esdu.htm. Dr. Ken Badcock, Department of Aerospace Engineering, University of Glasgow, provided a software review on the Web of an ESDU set on CD-ROM. He noted there that although “the data are not primarily intended for educational use...” that “Interactivity could be incorporated into the use of the data sets by exercises based on the design correlations presented.”

According to IHS ESDU representative Pat Wimberly, there are also many corporate subscribers, but she was not at liberty to disclose them. From its inception, though, ESDU has been an essential resource in the U.S. aircraft industry. One known example is the Cessna Aircraft Company in Wichita, Kansas, a subsidiary of Textron, Inc. In that setting aircraft design engineers rely on ESDU, which they regularly use. With internships, co-ops, and positions for new engineering graduates, it is quite possible that the working environment is where many engineers gain first knowledge of what ESDU is and how it is used. It remains to be formally documented how relevant and useful ESDU can be in the academic or corporate special library setting. The lingering question is how widely is ESDU used by engineering faculty, students, researchers, and practicing engineers, for what purposes, and in what format?

The Future of ESDU

Engineers, librarians, and researchers will need to know more about ESDU to understand its content. Together they will need to ascertain its relevance and potential use in their activities. Increasing the awareness of ESDU among these groups will permit them to effectively evaluate, select, access, and process such technical data and information in their teaching, research, course work, or industry applications. For those engineers who need it, the reference data and engineering methods available in ESDU are a valuable and convenient source.

The new formats for ESDU—CD-ROM and now the
Web—make this resource more accessible and perhaps relevant in the special library setting. Subscriptions can be customized so it can be acquired in part by section. Teaching library end users in government, industry, and academe how to use ESDU effectively is the next step. As with all library information service products, this will be an ongoing task with the constant influx of new users on campuses or in industry.

References

16. Ibid.

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