

The Essentials of **Technical  
Communication**

ELIZABETH TEBEAUX  
SAM DRAGGA

FOURTH EDITION



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The Essentials of

# Technical Communication



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**ELIZABETH TEBEAUX**

TEXAS A&M UNIVERSITY

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TEXAS TECH UNIVERSITY



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Dedicated to  
David H. Stewart  
1926–2009

Our first English Department head, a scholar fully committed to the teaching of both writing and great literature. Without his support at the beginning of our careers, neither of us would have enjoyed as productive a life in technical communication as we have had. *The Essentials of Technical Communication* emerges from that support.



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# Preface

As we have emphasized in the first three editions of *The Essentials of Technical Communication*, no one wants to read what you write. In fact, they will read as little of what you write as they possibly can. Even if your document will be of value to your readers, you better make that point clear immediately, otherwise your document will likely be ignored or discarded. Your supervisor and colleagues may not have the necessary background, time, or inclination to sift through your e-mail, memo, or report and find the information they need.

We have developed *The Essentials of Technical Communication* as a practical introduction to all aspects of effective professional communication—a handbook to help you get your message across on the job, where time equals money and poorly crafted documents can produce a host of unwelcome consequences. We are teachers and researchers of technical writing, each of us with 40 years of experience, and we know that following a few simple guidelines leads to more efficient and effective communications. In this book we want to provide the guidelines you need as you plan, draft, and revise documents. Understanding these guidelines will help you manage your writing anxiety and enable you to write effectively and quickly—both requirements of employees who write for their jobs. *The Essentials of Technical Communication* will give you the information to help you design clear, concise, readable materials. From this foundation, you can learn to develop more complex documents as you advance in your career.

## Approach

We have a simple rationale for our approach: we believe that the effective writer in a work situation must learn and internalize basic concepts of rhetoric and then apply these in developing documents. We've filled this brief book with memorable, concise guidelines. Each chapter in Part One focuses on basic rhetorical principles, and Part Two applies those principles to the planning and writing of particular types of documents.

A brief book enables instructors to adapt the book to their own uses. Many teachers want to build on principles by adding their unique approaches. This book provides the flexibility to allow for that possibility. In addition, many employees who did not study technical or business communication in college will find this book useful in learning how to write effectively in the workplace.

## Organization

We have organized the book in two parts.

Part One (Chapters 1 through 6) lays out essential communication principles:

- ◆ Chapter 1, “Characteristics of Writing at Work,” describes technical writing, or writing in the workplace, to show how it differs from academic writing. We stress the important privacy and security risks involved in using social media, e-mail, and texting.
- ◆ Chapter 2, “Writing for Your Readers,” presents the essential elements of analyzing readers and then choosing the appropriate information, format, and style to meet the needs of the intended readers. We include a discussion of the composing process in this chapter.
- ◆ Chapter 3, “Writing Ethically,” discusses the ethics of technical documents. While most professionals have standards of good practice, writers must also consider principles of communication ethics. We focus on standards of practice and include cases and exercises based on these standards.
- ◆ Chapter 4, “Achieving a Readable Style,” explains how to write concise, pristine sentences and paragraphs.
- ◆ Chapter 5, “Designing Documents,” covers basic principles for creating accessible and inviting documents. In a world of excess information, readers often miss or ignore important messages unless quickly available and easy to read.
- ◆ Chapter 6, “Designing Illustrations,” provides guidelines for developing effective tables and figures. Graphics software offers infinite possibilities for data display, photo editing applications allow innumerable visual effects, and trillions of images are readily available online, but effective illustrations require an understanding of fundamental design principles and a thoroughgoing sensitivity to audience and purpose.

Part Two (Chapters 7 through 12) applies the principles from Part One to the types of documents most commonly prepared in the workplace:

- ◆ Chapter 7, “E-mails, Texts, Memos, and Letters,” presents the basics of correspondence and demonstrates how to ensure that these routine messages are clear, readable, and effective. We also again emphasize ethics and accessibility in this chapter.
- ◆ Chapter 8, “Technical Reports,” presents the elements of report development along with examples from abstracts and executive summaries to conclusions and recommendations.
- ◆ Chapter 9, “Proposals and Progress Reports,” explains the purpose and design of each. In this chapter we use several student examples of proposals, as these respond to real situations in a university setting. We also include examples of online progress reports as these provide public information about the status of research and transportation construction projects.

- ◆ Chapter 10, “Instructions, Procedures, and Policies,” describes how to develop clear instructions for a variety of situations to assure safety and efficiency of operation.
- ◆ Chapter 11, “Oral Reports,” provides a short guide to developing and then presenting a concise, effective slide presentation.
- ◆ Chapter 12, “Résumés and Job Applications,” describes how to prepare job application documents and prepare for interviews.

## Key Features

- **Quick Tips:** Every chapter offers a brief section of concisely stated essential advice to jump-start your study and practice of effective technical communication.
- **Sample Documents:** This text, although concise, includes a range of sample documents covering the essential types and styles you will encounter in the workplace. Many of these documents are available for download on the book’s companion website, [www.oup.com/us/tebeaux](http://www.oup.com/us/tebeaux), along with links to documentation resources.
- **Case Studies:** In most chapters case studies show how different types of documents function in different situations. These cases contextualize the documents to give you a sense of how and when the techniques we outline can and should be applied.
- **Checklists:** At chapter ends, we have included checklists—lists of questions you can use to ensure that your professional documents achieve your purpose. We hope you find these a handy reference tool.
- **Exercises:** Exercises at the end of each chapter guide practice in the techniques outlined in the text. Some of the exercises are designed to be done in class—individually or in in small groups—while others could be out-of-class assignments.
- **Appendices:** Appendix A offers a brief guide to grammar, punctuation, and usage. Appendix B gives a synopsis of information literacy and briefly explains three widely used systems for citing sources of information: APA, Chicago, and IEEE. Appendix C includes a sample report.
- **Companion Website:** The book’s Companion Website at [www.oup.com/us/tebeaux](http://www.oup.com/us/tebeaux) offers additional resources for students, including chapter overviews, self-quizzes, downloadable versions of the checklists from the book, helpful links, annotated document pages, and downloadable sample documents, including those from the exercises at chapter ends. The site also includes an Instructor’s Manual, featuring downloadable PowerPoint files for use as lecture aids, chapter objectives, teaching strategies, workshop activities, writing projects, worksheets, and discussion questions. The Companion Website also includes revision assignments, multimodal writing assignments, and multilingual writing assignments.

## New to This Edition

While improving upon our first three editions, we did not change those aspects of the book that have made it consistently popular with professors and students of technical communication. This new edition maintains the concise and practical nature of the original. We have, however, made several important changes based on the excellent suggestions from our expert panel of reviewers. We made each change to prepare students (1) to write in an increasingly dynamic, digital age and (2) to write for an increasingly diverse audience—both in the classroom and in the workplace.

Changes made for this fourth edition include the following:

- Chapter 1: Includes updated material on the need for information security as the most important difference between writing at school and writing at work. We believe that teachers have an ethical obligation to advise students about the risks of social media, texting, and e-mail, all of which in personal and business use carry legal liability.
- Chapter 2: Offers simplified and clarified wording and phrasing to make this chapter easier to read.
- Chapter 3: Includes accessibility as a key ethical consideration. We believe communicators must make their documents equally available to people regardless of their physical abilities.
- Chapter 4: Offers a revised organization and updated discussion of style with several new examples and exercises.
- Chapter 5: Includes advice on making documents accessible and on usability testing the design of your documents.
- Chapter 6: Includes new sample illustrations and added advice on usability testing your illustrations.
- Chapter 7: Includes advice on writing for social media and new exercises.
- Chapter 8: Offers a simplified and updated discussion with revised advice about writing reports in teams.
- Chapter 9: Includes new sample documents and new examples of online interactive reports.
- Chapter 10: Offers advice about usability testing your instructions.
- Chapter 11: Includes new sample documents to illustrate effective and ineffective slide presentations.
- Chapter 12: Includes advice about managing a social media profile to reinforce your professional reputation.

Finally, the Companion Website and Instructor's Resources have been updated with new examples, exercises, and materials. Of particular note is the revised Instructor's Manual, which now contains sections in each chapter on multimodal and multilingual writing, as well as new links, writing projects, and teaching strategies. The test bank has been updated as well and now offers a revised and expanded selection of test questions.



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We are grateful to the dedicated book publishers of Oxford University Press for their conscientious efforts to make this book eloquent, elegant, concise, and cogent. We extend our thanks to the reviewers commissioned by Oxford for the earlier editions of this text: Susan Aylworth, California State University, Chico; Latonia Bailey, Crowder College; Elizabeth Childs, Auburn University; Cathy Corr, University of Montana-Missoula; Ed Cottrill, University of Massachusetts-Amherst; Richie Crider, University of Maryland; Melody DeMeritt, California Polytechnic State University; Scott Downing, Kenai Peninsula College, University of Alaska Anchorage; Leslie Fife, Oklahoma State University; Maureen Fitzsimmons, Syracuse University; Elizabeth Holtzinger-Jennings, Pennsylvania State University; Danica Hubbard, College of DuPage; Kendall Kelly, Southwest Texas State University; Kevin LaGrandeur, New York Institute of Technology; Elizabeth Lopez, Georgia State University; Lisa McClure, Southern Illinois University, Carbondale; Raynette Meyer, Aiken Technical College; Elizabeth Monske, Northern Michigan University; Brenda Moore, New Jersey Institute of Technology; Marguerite Newcomb, University of Texas at San Antonio; Mark Noe, University of Texas-Pan American; Roxanna Pisiak, Morrisville State College; Liza Potts, Old Dominion University; Ritu Raju, Houston Community College; Leslie St. Martin, College of the Canyons; Denise Stodola, Kettering University; Dawn Taylor, South Texas College; Aaron Toscano, University of North Carolina at Charlotte; Michelle Weisman, College of the Ozarks; and Linda Young, Oregon Institute of Technology. And we add our thanks to those who reviewed for this new edition: Paul M. Dombrowski, University of Central Florida; Jennifer Haber, St. Petersburg College; Helena Halmari, Sam Houston State University; Kevin LaGrandeur, New York Institute of Technology; David L. Major, Austin Peay State University; Richard Jeffrey Newman, Nassau Community College; Casey J Rudkin, Kenai Peninsula College; Michael Shuman, University of South Florida; William Clay Kinchen Smith, Santa Fe College; and Sonia Stephens, University of Central Florida.

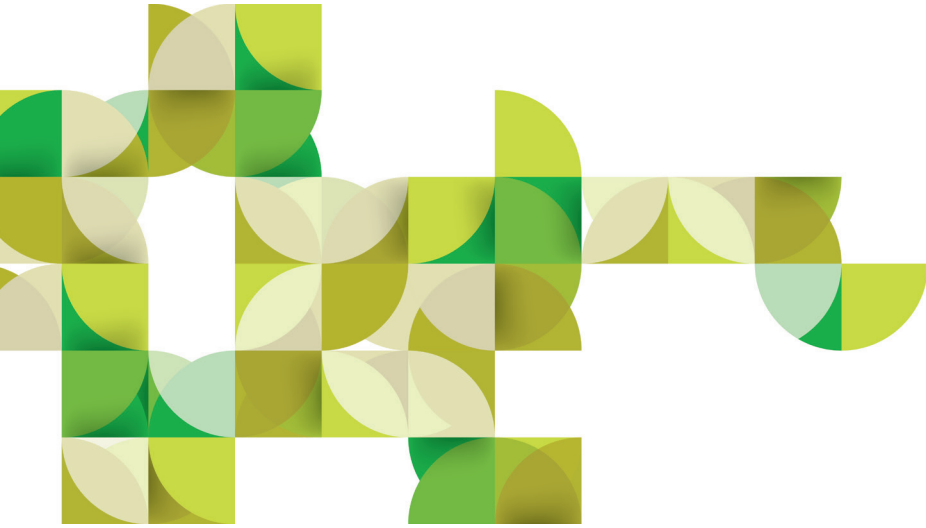
We also thank the innumerable colleagues and students who have challenged and inspired us in the teaching of technical communication. And, as always, special thanks to Jene and Linda for their love and support.

Elizabeth Tebeaux, Professor Emerita, Texas A&M University  
Sam Dragga, Professor Emeritus, Texas Tech University



PART **ONE**

# Principles







# Characteristics of Writing at Work

*Technical writing* (sometimes called business or professional writing) describes writing that occurs in a business or work setting. University offices, corporations, research centers, hospitals, businesses of all sizes, even nonprofit organizations produce large quantities of technical writing, which differs from academic writing in several important ways. These differences mean that you cannot write on the job the way you have written in school. Writing in school and writing at work differ because the purposes and the context of each differ. Thus, the products of each contrast sharply.



## Quick Tips

On the job, keep in mind that **no one wants to read anything you write. Most of the time they will not read all of what you write.** They will read because they need to, not because they want to. They will read because you have information they need to take actions or make decisions. They don't get paid to read: they get paid to take actions and make decisions. The more time they need to read your document, the less productive time they have.

Make sure everything you write is clear, correct, necessary, and polite. And never assume that anything you write is confidential.

Modern organizations must keep their information secure, whether it exists in paper or virtual form. Organizations that lose information to cyber thieves often face severe consequences.

## Writing at Work Versus Writing at School

Workplace writing requires that you continue to apply what you have learned about effective paragraph development, correct sentence structure, punctuation, and usage. As an educated adult, your writing should exemplify correctness. Beyond these fundamental principles, business or technical writing will differ from writing you have done as a student in five important ways.

Writing at work:

1. Requires acute awareness of security and legal liability
2. Requires awareness that documents may be read by unknown readers, inside and outside the organization, for an infinite time
3. Achieves job goals
4. Addresses a variety of readers who have different perspectives from those of the writer
5. Requires a variety of written documents

**Requires acute awareness of security and legal liability.** The most fundamental characteristic of technical writing rests in the legal liability associated with workplace information.

Chief information officers in educational, business, government, and research organizations work diligently to protect the privacy of information about their employees and the knowledge generated by these employees by following both federal and state privacy laws. Identity and information theft can occur at any time, despite the best efforts of any chief information officer's staff and security team. People throughout the world continue to attack computing systems to gain access to credit card numbers, personal and medical information, and transcripts of academic work, creative work, and research data—essentially whatever hackers can access, either for their own use or to sell to crime cartels.

Electronic communication has become a blessing and a curse. Today's workplace requires extensive technology. Research organizations, hospitals, banks, financial organizations, law firms, physicians, and even small, locally owned businesses have to pursue strict security on all information they have about customers, clients, and patients. Organizations, like architectural firms, computer companies, engineering companies, and manufacturers, must protect their intellectual property from theft. The knowledge they produce for clients becomes the value of the organization. When you begin a job, you need to learn the security rules of your employer and follow them. For example, you will likely not be allowed to use your company e-mail for any purpose other than company business. Your company telephones will likely have the same restrictions. You should never access your personal blogs or social networking sites from your employer's computer.

To avoid potential security breaches:

- Remember that any text message you send will not be secure and may be legally accessed, whether the cell phone you use belongs to you or your employer. Company e-mail can be viewed by the company webmaster. Once you begin working for an organization, use caution in what you discuss via text message and e-mail.
- Avoid blogs, unless your company uses secure blogs for creating collaborative reports, for example. Remember that others can see what you have written. Be sure that your comments exemplify tasteful, helpful, and accurate tone and content.
- Any electronic communication—texts, e-mails, and social media messages—can be subject to subpoena. Your Internet provider must comply with “good cause” subpoenas. Again, what you say in cyberspace never goes away.
- Avoid using browsers available on company computers to locate information on any topic not related to your work.
- Use social media carefully. Your company may have a page on one of the social media sites, but do not use it or respond to it. Ask the purpose of the site and the rules for its use by employees. Note: Many students have been expelled from their universities for inappropriate use of social media. A business organization, because of concerns for information security, will watch how employees use social media. You can lose your job if your comments on blogs, wikis, and other forms of social media disparage the organization and perhaps divulge proprietary information.
- Many organizations, before they hire new employees, will check social media to see what potential employees have said about themselves. Again, criminals across the world also check. Divulging confidential information, personal or professional, can have major consequences for you and organizations for which you work, have worked, or will work. Because virtual messages never go away, ask yourself, “If I decided to run for public office in 20 years, would I want people I don’t even know to see what I said about myself today?”
- If you have a personal web page, be sure that what you place on the page makes a positive statement about you and does not discredit your employer in any way.
- Guard your external storage drives carefully. Never leave one in your computer when you work in a public place, even for a few minutes. When you purchase a flash drive, be sure it has been manufactured by a reputable company. Never buy nonpackaged flash drives. Never use a flash drive given to you as a gift from an advertiser. You do not know what material, malware, or viruses have been placed on the drive.
- Never forget that everything you write can be accessed by others. Tip: Always write as if someone you do not know might be reading over your shoulder. And follow all rules your employer stipulates. Accepting and agreeing to follow rules of confidentiality of company information may be a condition of employment with that organization. When you interview for a job, ask about the company’s website, all social media sites, and management of those sites.

In school, your primary obligation is to avoid plagiarism. But what you write at work can be used against you in lawsuits. Once you sign your name to a report or letter, your signature makes you responsible for the content. Hostile readers can use what you say to support claims against you and the organization you represent. Because we live in an increasingly litigious society, designing documents that will prevent their misuse should be one of your primary goals.

**Requires awareness that documents may be read by unknown readers.** Always anticipate unknown readers who may receive copies of your reports or e-mail. Ask yourself this important question: “Does my report or e-mail contain any information that could be misconstrued and affect me or the organization adversely if unknown readers see my communication?” While academic writing responds to assignments, applicable only for a specific semester, course, and professor, workplace communications have no specific life span. They can be read and then used in ways you never intended or envisioned.

You cannot underestimate the problem that unknown readers present. Nearly everything you write for an organization will remain in the organization’s archive indefinitely. Copies of your reports and letters will be placed in files accessible to readers who may not know anything about you or the situation you discuss in your document. These documents will often be used in assessing your performance and in determining your promotion potential. What you say suggests how well you have done your job. Unknown readers may also use your reports to gain understanding of a work situation they have inherited with a new job assignment. On the job, what you write becomes much more than a knowledge indicator for a grade.

**Achieves job goals.** In school, you write to show your professor that you know the subject matter and to make a good grade. But in the workplace, writing is the major way that people achieve their job goals and document their work. Writing becomes documentation that you have done your work and how you have done it. How well you write will suggest how well you have done your work. It will become part of the organization’s permanent archives.

**Addresses a variety of readers who have different perspectives.** In college, you write your assignments for a single reader, a professor, a specialist in a subject area. But in a work setting, you can expect to write to readers who have varied educational and technical backgrounds, readers who have different roles inside and outside the organization, and readers who may know less about a topic than you do. Your supervisor, for example, may have majored in a field of study very different from yours, or your supervisor’s responsibilities may have channeled his or her technical knowledge into other areas. For example, you may report directly to a person whose educational background has been in physical chemistry or electrical engineering but whose responsibilities may now be in personnel management, database administration, quality control, or financial analysis. Many technical people earn a master’s degree in business administration to assist them in management roles.

In a work context, these readers will feel no commitment to read what you write unless your messages help them as they do their own work. They will generally not read all documents completely. Each will be interested in how your message affects his or her job goals. What seems clear and important to you may lack clarity and importance to others. Because e-mail has become a common way of communicating within organizations, you really have no idea who will read what you write as any message and its attachments may be forwarded. Documents posted online on an organization's website have no security from prying eyes and hackers.

We live and work in an information age where the quantity of information grows rapidly, where people have more to read than they can ever hope to read. As they see your report or your e-mail subject line, they will immediately ask themselves questions such as "What is this?" "Why should I read it?" "How does it affect me?" "What am I going to have to do?" Without a carefully stated subject line, your readers may delete your message before opening it. If they do open your e-mail, they will want to find the main points and ideas quickly, and they will become impatient if they are unable to find them by glancing at the page. They will not usually read any document completely or bother to respond to it unless, at the beginning, the message indicates that reading it serves their best interests. How they respond to the first few sentences of your writing will often determine how much more of it they read.

On the job, your readers are not a captive audience, as your teachers have been. They do not have to read what you write. If you want your writing read, make your message clear and easy to read; make your message as interesting, relevant, and concise as possible. Because your readers often read selectively, conciseness and clarity are basic ingredients of effective business communication. Mechanical correctness remains a desirable quality, but correct writing that cannot be read easily and quickly will not be read.

**Requires a variety of written documents.** Most academic writing includes essays, essay examinations, research papers, and laboratory reports. You direct your writing to your teachers. At work, however, employees can expect to write a variety of documents not relevant to academic writing assignments: letters, e-mails, information and procedure memos, proposals, progress reports, project reports, feasibility studies, economic justification reports, policy statements, travel reports, news releases, speeches, training procedures, budget forecasts, employee evaluations, user documentation, and perhaps articles for publication in trade journals. What you write will change with your responsibilities, the kind of job you have, and your position in the organization. How you write each document will depend on the topic discussed, the situation leading to the document, your readers' needs and perspectives, and your purpose in writing.

## The Foundations of Effective Writing at Work

Developing effective documents requires a process involving at least six stages:

1. Planning the document
2. Determining content

3. Arranging ideas
4. Drafting
5. Revising
6. Editing

While you may do each of these steps as a separate activity, when writing you will more than likely move back and forth from one activity to the other as you develop your document. Following this process will help ensure that the information is appropriate as well as correctly and effectively presented.

## The Qualities of Good Technical Writing

Surveys show that organizations rank writing skills in this order of importance:

1. Accuracy
2. Clarity
3. Conciseness
4. Readability
5. Usability
6. Correctness

These qualities mean that a document

- makes a good impression when readers first interact with it: the document is neat, readable, well organized, and inviting
- can be read selectively—for instance, by some users, only the summary; by other users, only the introduction and conclusions; by still other users, the entire report
- shows a plan that reveals the purpose and value of the document
- makes sense: ideas appear in a logical sequence immediately evident from the document design
- uses visuals, if necessary, to help readers understand ideas or data
- conveys an overall impression of authority, thoroughness, soundness, and honest work
- makes sense to people who were not part of the initial readership
- makes a positive statement about the writer and the organization
- enables people who need to use your writing to perform a task to do so

Beyond all these basic characteristics, good technical writing has no typographical errors, grammatical slips, or misspelled words. Little flaws distract attention from the writer's main points and call into question the writer's literacy.

As you study and practice writing for a workplace setting, keep in mind these qualities as well as the differences between the writing you do as an employee and the writing you do as a student.

**CASE 1-1**

Bradshaw Engineering, LLP, understands the changes and challenges occurring in the field of chemical engineering. Matt Lunsford, one of the research engineers, tells Jerry Bradshaw, the senior principal, about a journal article he has read about carbon capture. Jerry has an established practice of posting summaries and articles on the company website to help employees remain informed. Matt provides a memo of transmittal to Jerry (Case Document 1-1A) and two short summaries of the article he has read and shared with Jerry (Case Documents 1-1B and 1-1C). Note how Matt develops the summaries with the knowledge level of both engineers and nonengineers in mind. He also uses basic principles of document design to create readable documents. How do his three documents reflect the qualities of good technical writing (see “The Qualities of Good Technical Writing”)?

Matt “transmits” his summaries with a memo of transmittal to Jerry. At work, you will need transmittal documents (discussed in Chapter 7 for sending documents) as they introduce the documents to readers. Avoid the habit of using Post-it notes to transmit information. If the note is lost, the report may not reach its intended reader.

**CASE DOCUMENT 1-1A**

**DATE:** September 3, 2016  
**TO:** Jerry Bradshaw  
**FROM:** Matthew Lunsford  
**SUBJECT:** **Technical and General Summaries of Article about Carbon Capture Technology**

I have completed and attached two summaries of a journal article describing technologies for carbon capture. The first, a technical summary, I have prepared for engineers here at BE. The second, a general summary, targets other employees. As you requested, all BE employees need to understand current research that relates to our work here at BE.

**Subject and Purpose of Summaries**

The summaries inform our employees about technological developments involving carbon capture. With the growing awareness of carbon dioxide emissions and their effect on the environment, reducing carbon dioxide emissions has been the subject of several important projects that BE has worked on in the last few years. Technology discussed in this article, such as power generation, could soon be standard in industries with which we work, and all of us need to remain aware of advances in carbon capture technology.

**Reason for Summaries**

Your request for summaries of state-of-the-art research helps all of us. Thus, BE encourages employees to stay up to date on current engineering developments relevant to our projects and planning.