

BS EN 60079 14 2014 EXPLOSIVE ATMOSPHERES

ELECTRICAL

BS EN 60079 14 2014 EXPLOSIVE ATMOSPHERES ELECTRICAL BS EN 60079142014 ELECTRICAL EQUIPMENT FOR EXPLOSIVE ATMOSPHERES PART 14 PROTECTION BY INTRINSIC SAFETY I BS EN 60079142014 IS A CRUCIAL STANDARD WITHIN THE BROADER EN 60079 SERIES FOCUSING ON THE SAFETY OF ELECTRICAL EQUIPMENT USED IN POTENTIALLY EXPLOSIVE ATMOSPHERES THIS PARTICULAR PART 14 DELVES INTO THE SPECIFIC REQUIREMENTS AND PRINCIPLES OF INTRINSIC SAFETY I AS A METHOD OF PROTECTION AGAINST EXPLOSION HAZARDS EXPLOSIVE ATMOSPHERES ELECTRICAL EQUIPMENT SAFETY INTRINSIC SAFETY I EN 60079 BS STANDARD HAZARDOUS AREAS PROTECTION METHODS THE STANDARD METICULOUSLY OUTLINES THE DESIGN CONSTRUCTION TESTING AND DOCUMENTATION REQUIREMENTS FOR ELECTRICAL EQUIPMENT CLASSIFIED AS INTRINSICALLY SAFE I THIS APPROACH TO PROTECTION INVOLVES MINIMIZING THE ELECTRICAL ENERGY WITHIN THE EQUIPMENT TO A LEVEL THAT IS INCAPABLE OF IGNITING AN EXPLOSIVE ATMOSPHERE EVEN UNDER FAULT CONDITIONS THE KEY FEATURES OF BS EN 60079142014 INCLUDE DETAILED DEFINITIONS THE STANDARD PROVIDES CLEAR DEFINITIONS FOR ESSENTIAL TERMS LIKE INTRINSIC SAFETY HAZARDOUS AREA IGNITION SOURCE AND INHERENT SAFETY TO ENSURE A CONSISTENT UNDERSTANDING AMONG USERS CLASSIFICATION OF EQUIPMENT IT OUTLINES THE CRITERIA FOR CLASSIFYING ELECTRICAL EQUIPMENT AS INTRINSICALLY SAFE BASED ON ITS POTENTIAL TO IGNITE AN EXPLOSIVE ATMOSPHERE DESIGN AND CONSTRUCTION REQUIREMENTS THE STANDARD SPECIFIES THE DESIGN AND CONSTRUCTION PRINCIPLES THAT MUST BE ADHERED TO FOR EQUIPMENT TO BE CONSIDERED INTRINSICALLY SAFE THIS INCLUDES LIMITATIONS ON ELECTRICAL PARAMETERS COMPONENT SELECTION AND CIRCUIT DESIGN TESTING AND CERTIFICATION IT MANDATES RIGOROUS TESTING PROCEDURES FOR VERIFYING THE INTRINSIC SAFETY OF EQUIPMENT AND OUTLINES THE NECESSARY DOCUMENTATION FOR OBTAINING CERTIFICATION 2 INSTALLATION AND MAINTENANCE THE STANDARD PROVIDES GUIDELINES FOR THE SAFE INSTALLATION AND MAINTENANCE OF INTRINSICALLY SAFE EQUIPMENT IN EXPLOSIVE ATMOSPHERES THOUGHTPROVOKING CONCLUSION WHILE BS EN 60079142014 SETS FORTH A COMPREHENSIVE FRAMEWORK FOR ENSURING THE SAFETY OF INTRINSICALLY SAFE ELECTRICAL EQUIPMENT IN HAZARDOUS AREAS IT IS IMPORTANT TO RECOGNIZE THAT THIS STANDARD IS A LIVING DOCUMENT THE CONTINUOUS EVOLUTION OF TECHNOLOGY AND THE DISCOVERY OF NEW HAZARDS NECESSITATES ONGOING ADAPTATION AND REVISIONS OF SAFETY STANDARDS THIS HIGHLIGHTS THE CRUCIAL ROLE OF ONGOING RESEARCH AND DEVELOPMENT IN THE FIELD OF EXPLOSION PROTECTION ENSURING THAT THE STANDARDS REMAIN RELEVANT AND EFFECTIVE IN SAFEGUARDING LIVES AND PROPERTY FURTHERMORE THE IMPLEMENTATION OF THIS STANDARD

REQUIRES MORE THAN JUST COMPLIANCE WITH TECHNICAL SPECIFICATIONS IT DEMANDS A ROBUST CULTURE OF SAFETY ACROSS ALL LEVELS OF AN ORGANIZATION ENCOMPASSING DESIGN PRODUCTION INSTALLATION MAINTENANCE AND OPERATIONAL PRACTICES

FAQs 1 WHAT IS THE SIGNIFICANCE OF INTRINSICALLY SAFE AS A PROTECTION METHOD

INTRINSIC SAFETY FOCUSES ON PREVENTING IGNITION OF AN EXPLOSIVE ATMOSPHERE BY DESIGN RATHER THAN RELYING ON SAFETY MEASURES THAT MIGHT FAIL DURING OPERATION THIS INHERENTLY SAFE APPROACH SIGNIFICANTLY REDUCES THE RISK OF EXPLOSIONS AND IS PARTICULARLY VALUABLE IN ENVIRONMENTS WHERE POTENTIAL HAZARDS ARE DIFFICULT TO CONTROL

2 HOW DOES THIS STANDARD RELATE TO OTHER PARTS OF THE EN 60079 SERIES

BS EN 60079 14 2014 IS ONE OF MANY PARTS WITHIN THE BROADER EN 60079 SERIES ALL ADDRESSING VARIOUS ASPECTS OF ELECTRICAL EQUIPMENT USED IN EXPLOSIVE ATMOSPHERES OTHER PARTS COVER DIFFERENT PROTECTION METHODS LIKE EXPLOSIONPROOF ENCLOSURES D INCREASED SAFETY E AND NONINCENDIVE CIRCUITS n

3 ARE THERE SPECIFIC INDUSTRIES WHERE THIS STANDARD IS PARTICULARLY RELEVANT

THE STANDARD FINDS WIDESPREAD APPLICATION ACROSS VARIOUS INDUSTRIES INCLUDING OIL GAS EXPLORATION PRODUCTION AND REFINING ACTIVITIES CHEMICAL PROCESSING MANUFACTURING AND HANDLING OF FLAMMABLE CHEMICALS PHARMACEUTICALS PRODUCTION OF VOLATILE AND FLAMMABLE SUBSTANCES MINING EXTRACTION OF FLAMMABLE MINERALS AEROSPACE HANDLING OF FUELS AND OXIDIZERS

3 4 HOW CAN I ENSURE THE SAFE OPERATION OF INTRINSICALLY SAFE EQUIPMENT

COMPLIANCE WITH BS EN 60079 14 2014 IS ESSENTIAL IT NECESSITATES SELECTING CERTIFIED INTRINSICALLY SAFE EQUIPMENT FOLLOWING INSTALLATION GUIDELINES METICULOUSLY IMPLEMENTING ROUTINE MAINTENANCE PROGRAMS EMPLOYING TRAINED PERSONNEL FAMILIAR WITH THE STANDARD

5 WHAT ARE THE CONSEQUENCES OF NONCOMPLIANCE WITH THIS STANDARD

NONCOMPLIANCE CAN LEAD TO INCREASED RISK OF EXPLOSIONS COMPROMISING THE SAFETY OF PERSONNEL AND FACILITIES LEGAL PENALTIES FINES OR IMPRISONMENT DEPENDING ON JURISDICTION LOSS OF REPUTATION DAMAGE TO AN ORGANIZATIONS REPUTATION FOR SAFETY ECONOMIC LOSS PROPERTY DAMAGE PRODUCTION DOWNTIME AND INSURANCE CLAIMS BEYOND COMPLIANCE THE TRUE VALUE OF BS EN 60079 14 2014 LIES IN FOSTERING A CULTURE OF PROACTIVE SAFETY IT IS NOT MERELY A SET OF RULES IT IS A ROADMAP TOWARDS CREATING A SAFER ENVIRONMENT FOR EVERYONE WORKING WITH ELECTRICAL EQUIPMENT IN POTENTIALLY EXPLOSIVE ATMOSPHERES

EXPLOSION PROTECTION PRACTICAL ELECTRICAL EQUIPMENT AND INSTALLATIONS IN HAZARDOUS AREAS ELECTRICAL SAFETY AND THE LAW MEASUREMENT AND SAFETY ELECTRICAL POWER ENGINEERING REFERENCE 6 APPLICATIONS HANDBOOK EXPLOSION SAFETY FOR INDUSTRIES ELECTRICAL CODES, STANDARDS, RECOMMENDED PRACTICES AND REGULATIONS ELECTRICAL PRODUCT COMPLIANCE AND SAFETY ENGINEERING, VOLUME 2 GENERAL REVENUE SHARING WIRING REGULATIONS IN BRIEF SHIP AND MOBILE OFFSHORE UNIT AUTOMATION QUALITY MANAGEMENT IN OIL AND GAS PROJECTS PLANT HAZARD ANALYSIS AND SAFETY INSTRUMENTATION SYSTEMS PRODUCTS AND SERVICES

CATALOGUE GUIDE TO APPLICATION OF BS EN 60079-14 EXPLOSION-PROOF EQUIPMENT IN
HAZARDOUS AREA ELECTRICAL SAFETY AND THE LAW PATHOLOGY LABORATORY GAS
SYSTEMS BIOGAS FROM WASTE AND RENEWABLE RESOURCES SHIP OPERATION TECHNOLOGY HEINRICH
GROH GEOFFREY BOTTRILL JOHN MADDEN B² LA G. LIPT² K K.C. AGRAWAL ESTELLITO RANGEL
JUNIOR ROBERT J. ALONZO STELI LOZHEN UNITED STATES. OFFICE OF REVENUE SHARING RAY
TRICKER HENRYK PEPLI² SKI ABDUL RAZZAK RUMANE SWAPAN BASU BRITISH STANDARDS INSTITUTE
STAFF ARVIND KUMAR SINGH KEN OLDHAM SMITH DEPARTMENT OF HEALTH: ESTATES AND
FACILITIES DIVISION DIETER DEUBLEIN MANFRED PFAFF

EXPLOSION PROTECTION PRACTICAL ELECTRICAL EQUIPMENT AND INSTALLATIONS IN HAZARDOUS
AREAS ELECTRICAL SAFETY AND THE LAW MEASUREMENT AND SAFETY ELECTRICAL POWER
ENGINEERING REFERENCE & APPLICATIONS HANDBOOK EXPLOSION SAFETY FOR INDUSTRIES ELECTRICAL
CODES, STANDARDS, RECOMMENDED PRACTICES AND REGULATIONS ELECTRICAL PRODUCT
COMPLIANCE AND SAFETY ENGINEERING, VOLUME 2 GENERAL REVENUE SHARING WIRING
REGULATIONS IN BRIEF SHIP AND MOBILE OFFSHORE UNIT AUTOMATION QUALITY MANAGEMENT IN
OIL AND GAS PROJECTS PLANT HAZARD ANALYSIS AND SAFETY INSTRUMENTATION SYSTEMS
PRODUCTS AND SERVICES CATALOGUE GUIDE TO APPLICATION OF BS EN 60079-14 EXPLOSION-
PROOF EQUIPMENT IN HAZARDOUS AREA ELECTRICAL SAFETY AND THE LAW PATHOLOGY
LABORATORY GAS SYSTEMS BIOGAS FROM WASTE AND RENEWABLE RESOURCES SHIP OPERATION
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THIS BOOK MAKES HAZARDOUS OR ELECTRICAL AREA CLASSIFICATION SIMPLE IN PLANTS PROCESSING
FLAMMABLE MATERIALS EVERY EFFORT IS MADE TO AVOID THE ESCAPE OF SUCH MATERIALS AND IN
ADDITION STRINGENT MEASURES ARE TAKEN TO EXCLUDE SOURCES OF IGNITION A COMPLEX ARRAY
OF STANDARDS SURROUND THIS TOPIC WHICH HAS LEAD TO AN OVERLY CONSERVATIVE APPROACH
BEING TAKEN THIS TYPE OF APPROACH MEANS THAT MUCH MORE EXPENSIVE ELECTRICAL APPARATUS
THAN IS NECESSARY IS INSTALLED TO AVOID THIS UNNECESSARY EXPENDITURE DR GROH CLEARLY
EXPLAINS THE RELEVANT STANDARDS SO THAT ACCURATE ASSESSMENT OF THE RISKS ASSOCIATED
WITH HAZARDOUS AREAS IS POSSIBLE HE ALSO IDENTIFIES POSSIBLE IGNITION SOURCES AND
METHODS OF DESIGNING APPARATUS WHICH DO NOT CAUSE SPARKS THEREBY MAINTAINING SAFETY
COVERS MUST HAVE INFORMATION REGARDING IEC CENELEC STANDARDS IN ELECTRICAL OR
HAZARDOUS AREA CLASSIFICATION PROVIDES A CLEAR OVERVIEW OF A COMPLEX AREA

THIS BOOK PROVIDES THE READER WITH AN UNDERSTANDING OF THE HAZARDS INVOLVED IN USING

ELECTRICAL EQUIPMENT IN POTENTIALLY EXPLOSIVE ATMOSPHERES IT IS BASED ON THE NEWLY ADOPTED INTERNATIONAL IEC⁷⁹ SERIES OF STANDARDS THAT ARE NOW HARMONIZING AND REPLACING OLDER NATIONAL STANDARDS EXPLOSION PROOF INSTALLATIONS CAN BE EXPENSIVE TO DESIGN INSTALL AND OPERATE THE STRATEGIES AND TECHNIQUES DESCRIBED IN THIS BOOK CAN SIGNIFICANTLY REDUCE COSTS WHILST MAINTAINING PLANT SAFETY THE BOOK EXPLAINS THE ASSOCIATED TERMINOLOGY AND ITS CORRECT USE FROM AREA CLASSIFICATION THROUGH TO THE SELECTION OF EXPLOSION PROTECTED ELECTRICAL APPARATUS DESCRIBING HOW PROTECTION IS ACHIEVED AND MAINTAINED IN LINE WITH THESE INTERNATIONAL REQUIREMENTS THE IEC STANDARDS REQUIRE THAT ENGINEERING STAFF AND THEIR MANAGEMENT ARE TRAINED EFFECTIVELY AND SAFELY IN HAZARDOUS AREAS AND THIS BOOK IS DESIGNED TO HELP FULFILL THAT NEED A BASIC UNDERSTANDING OF INSTRUMENTATION AND ELECTRICAL THEORY WOULD BE OF BENEFIT TO THE READER BUT NO PREVIOUS KNOWLEDGE OF HAZARDOUS AREA INSTALLATION IS REQUIRED AN ENGINEER S GUIDE TO THE HAZARDS AND BEST PRACTICE FOR USING ELECTRICAL EQUIPMENT IN POTENTIALLY EXPLOSIVE ATMOSPHERES FULLY IN LINE WITH THE NEWLY ADOPTED INTERNATIONAL STANDARDS THE IEC⁷⁹ SERIES CLEAR EXPLANATIONS OF TERMINOLOGY AND BACKGROUND INFORMATION MAKE THIS THE MOST ACCESSIBLE BOOK ON THIS SUBJECT

ELECTRICAL SAFETY AND THE LAW DESCRIBES THE HAZARDS AND RISKS FROM THE USE OF ELECTRICITY EXPLAINING WITH THE HELP OF CASE STUDIES AND ACCIDENT STATISTICS THE TYPES OF ACCIDENTS THAT OCCUR AND HOW THEY CAN BE PREVENTED BY THE USE OF SAFE INSTALLATIONS EQUIPMENT AND WORKING PRACTICES IT DESCRIBES THE BRITISH LEGISLATION ON THE SAFETY OF ELECTRICAL SYSTEMS AND ELECTROTECHNICAL MACHINERY CONTROL SYSTEMS MUCH OF WHICH STEMS FROM EUROPEAN DIRECTIVES AND WHICH WILL THEREFORE BE AFFECTED BY THE UK S DECISION TO LEAVE THE EU BREXIT AND THE MAIN STANDARDS AND GUIDANCE THAT CAN BE USED TO SECURE COMPLIANCE WITH THE LAW THERE ARE DETAILED DESCRIPTIONS COVERING THE RISKS AND PREVENTIVE MEASURES ASSOCIATED WITH ELECTRICAL INSTALLATIONS CONSTRUCTION SITES WORK NEAR UNDERGROUND CABLES AND OVERHEAD POWER LINES ELECTRICAL EQUIPMENT AND INSTALLATIONS IN EXPLOSIVE ATMOSPHERES ELECTRICAL TESTING AND ELECTROTECHNICAL CONTROL SYSTEMS DUTY HOLDERS RESPONSIBILITIES FOR DESIGNING INSTALLING AND MAINTAINING SAFE SYSTEMS ARE EXPLAINED AS WELL AS THEIR RESPONSIBILITIES FOR EMPLOYING COMPETENT STAFF THE FIFTH EDITION HAS BEEN SUBSTANTIALLY UPDATED TO TAKE ACCOUNT OF CONSIDERABLE CHANGES TO THE LAW STANDARDS AND GUIDANCE IT HAS BEEN EXPANDED TO INCLUDE A NEW CHAPTER ON THE CORPORATE MANSLAUGHTER AND CORPORATE HOMICIDE ACT A NEW CHAPTER DESCRIBING LANDLORDS LEGAL RESPONSIBILITIES FOR ELECTRICAL SAFETY IN PRIVATE RENTED PROPERTIES AND SOCIAL HOUSING A NEW CHAPTER ON THE ELECTRICITY SAFETY QUALITY AND CONTINUITY REGULATIONS NEW INFORMATION ON OFFENCES PENALTIES SENTENCING GUIDELINES AND RELEVANT CASE LAW A DESCRIPTION OF THE MAIN REQUIREMENTS OF BS 7671 2008 AND OTHER

PRINCIPAL STANDARDS MANY OF WHICH HAVE BEEN AMENDED IN RECENT YEARS NEW CASES STUDIES TO ILLUSTRATE THE HAZARDS AND RISKS INFORMATION ON CHANGES TO GB S HEALTH AND SAFETY SYSTEM

THIS HANDBOOK IS DEDICATED TO THE NEXT GENERATION OF AUTOMATION ENGINEERS WORKING IN THE FIELDS OF MEASUREMENT CONTROL AND SAFETY DESCRIBING THE SENSORS AND DETECTORS USED IN THE MEASUREMENT OF PROCESS VARIABLES

SOME UNIQUE FEATURES SPECIAL THRUST ON ENERGY CONSERVATION POLLUTION CONTROL AND SPACE SAVING IN CONSONANCE WITH THE LATEST GLOBAL REQUIREMENTS SPECIAL COVERAGE ON EARTHQUAKE ENGINEERING AND TSUNAMI SEISMIC TESTING OF CRITICAL MACHINES IN ALL THERE ARE 32 CHAPTERS AND 2 APPENDICES EACH CHAPTER IS VERY INTERESTING AND FULL OF RARE INFORMATION THE BOOK CONTAINS 5 PARTS AND EACH PART IS A MINI ENCYCLOPEDIA ON THE SUBJECTS COVERED MANY TOPICS ARE RESEARCH WORK OF THE AUTHOR AND MAY HAVE RARE INFORMATION NOT AVAILABLE IN MOST WORKS AVAILABLE IN THE MARKET TABLES OF ALL RELEVANT AND EQUIVALENT STANDARDS IEC BS ANSI NEMA IEEE AND IS AT THE END OF EACH CHAPTER IS A RARE FEATURE APPLICATIONS OF THE HANDBOOK FOR PROFESSIONALS AND PRACTISING ENGINEERS AS A REFERENCE HANDBOOK FOR ALL PROFESSIONALS AND PRACTISING ENGINEERS ASSOCIATED WITH DESIGN ENGINEERING PRODUCTION QUALITY ASSURANCE PROTECTION AND TESTING PROJECT ENGINEERING PROJECT DESIGN AND PROJECT IMPLEMENTATION A VERY USEFUL BOOK FOR EVERY INDUSTRY FOR SELECTION INSTALLATION AND MAINTENANCE OF ELECTRICAL MACHINES FOR PRACTISING ENGINEERS IT WOULD BE LIKE KEEPING A GOSPEL BY THEIR SIDES FOR INHOUSE TRAINING PROGRAMMES UNIQUE HANDBOOK FOR INHOUSE TRAINING COURSES FOR INDUSTRIES POWER GENERATING TRANSMISSION AND DISTRIBUTION ORGANIZATIONS FOR STUDENTS AND RESEARCH SCHOLARS AS A REFERENCE TEXTBOOK FOR ALL ELECTRICAL ENGINEERING STUDENTS IN THE CLASSROOMS AND DURING PRACTICAL TRAINING IT CAN BRIDGE THE GAP BETWEEN THE THEORY OF THE CLASSROOM AND THE PRACTICE IN THE FIELD A HIGHLY RECOMMENDED BOOK FOR ALL ENGINEERING COLLEGES WORLDWIDE RIGHT FROM 1ST YEAR THROUGH FINAL YEAR IT WILL PROVE TO BE A GOOD GUIDE DURING HIGHER STUDIES AND RESEARCH ACTIVITIES SUBJECTS LIKE EARTHQUAKE ENGINEERING INTELLIGENT SWITCHGEARS SCADA POWER SYSTEMS SURGES TEMPORARY OVER VOLTAGE SURGE PROTECTION REACTIVE POWER CONTROL AND BUS SYSTEMS ETC ARE SOME PERTINENT TOPICS THAT CAN FORM THE BASIS OF THEIR HIGHER STUDIES AND RESEARCH WORK THE BOOK SHALL HELP IN TECHNOLOGICAL AND PRODUCT DEVELOPMENT AND GIVE A FRESH IMPETUS TO R D

INDUSTRIAL EXPLOSIONS CAN OCCUR ANYWHERE WHERE COMBUSTIBLE POWDERS AND OR FLAMMABLE VAPOURS ARE HANDLED SUCH AS FACILITIES DEALING WITH WOOD FLOUR STARCH SUGAR RUBBER PLASTICS PHARMACEUTICALS OIL GAS AND OTHER INDUSTRIES EXPLOSIONS CAN LEAD TO LOSS OF LIVES AND COLOSSAL COSTS TO COMPANIES FOUND CULPABLE FOR FAILING TO FOLLOW SAFETY

PROTOCOLS EXPLOSION SAFETY FOR INDUSTRIES PRESENTS A SET OF PREVENTATIVE MEASURES RULES AND STANDARDS TO MITIGATE THE RISK OF EXPLOSIONS BY PREVENTING POTENTIAL EXPLOSIVE ATMOSPHERE FORMATION COVERAGE INCLUDES RISKS AND HAZARDS EQUIPMENT SELECTION EARTHING SYSTEMS STATIC ELECTRICITY AND LIGHTNING PROTECTION AMONG OTHERS THIS BOOK AIMS TO HELP THOSE RESPONSIBLE FOR THE DESIGN INSTALLATION OPERATION AND MAINTENANCE OF PROCESS PLANTS COMPLY WITH THE PROVISIONS OF INTERNATIONAL SAFETY LEGISLATION READERS WILL DEVELOP A THOROUGH UNDERSTANDING OF THE SCIENCE BEHIND EXPLOSIONS AND THE METHODS AND MEASURES NEEDED TO PREVENT ACCIDENTS IRRESPECTIVE OF THEIR WORKPLACE OR INDUSTRY THIS BOOK IS A COMPREHENSIVE GUIDE FOR INDUSTRIAL EXPLOSION PREVENTION AND PROTECTION FOR SAFETY ENGINEERS SPECIALISTS AND MANAGERS AS WELL AS FOR PHYSICISTS CHEMISTS MECHANICAL ENGINEERS AND ELECTRICAL ENGINEERS

ELECTRICAL CODES STANDARDS RECOMMENDED PRACTICES AND REGULATIONS CAN BE COMPLEX SUBJECTS YET ARE ESSENTIAL IN BOTH ELECTRICAL DESIGN AND LIFE SAFETY ISSUES THIS BOOK DEMYSTIFIES THEIR USAGE IT IS A HANDBOOK OF CODES STANDARDS RECOMMENDED PRACTICES AND REGULATIONS IN THE UNITED STATES INVOLVING ELECTRICAL SAFETY AND DESIGN MANY ENGINEERS AND ELECTRICAL SAFETY PROFESSIONALS MAY NOT BE AWARE OF ALL OF THOSE DOCUMENTS AND THEIR APPLICABILITY THIS BOOK IDENTIFIES THOSE DOCUMENTS BY CATEGORY ALLOWING THE READY AND EASY ACCESS TO THE RELEVANT REQUIREMENTS BECAUSE THESE DOCUMENTS MAY BE UPDATED ON A REGULAR BASIS THIS BOOK WAS WRITTEN SO THAT ITS INFORMATION IS NOT RELIANT ON THE LATEST EDITION OR RELEASE OF THOSE CODES STANDARDS RECOMMENDED PRACTICES OR REGULATIONS NO SINGLE DOCUMENT ON THE MARKET TODAY ATTEMPTS TO NOT ONLY LIST THE MAJORITY OF RELEVANT ELECTRICAL DESIGN AND SAFETY CODES STANDARDS RECOMMENDED PRACTICES AND REGULATIONS BUT ALSO EXPLAIN THEIR USE AND UPDATING CYCLES THIS BOOK ONE STOP INFORMATION CENTER FOR ELECTRICAL ENGINEERS ELECTRICAL SAFETY PROFESSIONALS AND DESIGNERS DOES COVERS THE CODES STANDARDS RECOMMENDED PRACTICES AND REGULATIONS IN THE UNITED STATES INVOLVING ELECTRICAL SAFETY AND DESIGN PROVIDING A COMPREHENSIVE REFERENCE FOR ENGINEERS AND ELECTRICAL SAFETY PROFESSIONALS DOCUMENTS ARE IDENTIFIED BY CATEGORY ENABLING EASY ACCESS TO THE RELEVANT REQUIREMENTS NOT VERSION SPECIFIC INFORMATION IS NOT RELIANT ON THE LATEST EDITION OR RELEASE OF THE CODES STANDARDS RECOMMENDED PRACTICES OR REGULATIONS

THIS SECOND VOLUME OF AN ARTECH HOUSE BESTSELLER PRESENTS AN ENHANCED APPROACH TOWARD PRODUCT COMPLIANCE AND SAFETY ENGINEERING WRITTEN BY EXPERTS IN THE FIELD THIS NEW VOLUME PRESENTS PRACTICAL MATERIAL USEFUL FOR NOVICE AND ADVANCED PRACTITIONERS NBSP SAFETY ASPECTS OF PRODUCT APPROVALS ENERGY MANAGEMENT ENVIRONMENTAL CONCERNS MATERIAL SCIENCE RADIATION HAZARDOUS LOCATION AND GLOBAL MARKET ACCESS ARE EXPLORED

PRACTICAL FEATURES RELATED TO GLOBAL MARKET ACCESS ARE PRESENTED INCLUDING SPECIFIC DOCUMENTATION AND LOCAL LABELING REQUIREMENTS AS WELL AS LANGUAGE USED FOR SAFETY INSTRUCTIONS AND USER MANUALS COMPLIANCE AND SAFETY ASPECTS OF SPECIFIC APPLICATIONS SUCH AS INFORMATION TECHNOLOGY EQUIPMENT AUDIO VIDEO MULTIMEDIA MEDICAL HOUSEHOLD ALARMS SYSTEMS LUMINAIRES INCLUDING LED LAMPS AND LAMP CONTROL INDUSTRIAL MACHINERY AND SEMICONDUCTOR MANUFACTURING ARE DISCUSSED NBSP ENVIRONMENTAL ATTRIBUTES INCLUDING TEMPERATURE ATMOSPHERIC PRESSURE RELATIVE HUMIDITY VIBRATION SHOCK AND PACKAGING TRANSPORTATION AND HOW THEY AFFECT PRODUCT SAFETY ARE ANALYZED INFORMATION ABOUT TESTING ENVIRONMENTAL HALT AND HASS IS ALSO PROVIDED FOCUSING ON THE COMPLIANCE OF ELECTRICAL PRODUCTS WITH DEDICATED ENVIRONMENTAL REGULATION SIMILARITIES AND DIFFERENCES BETWEEN ATEX AND IECEX ARE DEFINED MATERIALS INCLUDING METAL CORROSION ADHESIVES INSULATION MATERIALS AND INFORMATION ABOUT SAFETY OF HAZARDOUS MATERIALS ARE EXAMINED AN INVALUABLE GUIDE FOR ANYONE BASED IN THE ELECTRICAL INDUSTRY WORKING ON ELECTRICAL SYSTEMS WHO REQUIRES A COMPREHENSIVE SOURCE OF INFORMATION ON THE SPECIFIC REQUIREMENTS OF THE IEE WIRING REGULATIONS THIS ESSENTIAL REFERENCE PRESENTS THE SPECIFICS OF THE ACTUAL REGULATORY STANDARD ITSELF USING A UNIQUE TOPIC BASED APPROACH

SHIP AND MOBILE OFFSHORE UNIT AUTOMATION A PRACTICAL GUIDE A PRACTICAL GUIDE GIVES ENGINEERS A MUCH NEEDED REFERENCE ON RELEVANT STANDARDS AND CODES ALONG WITH PRACTICAL CASE STUDIES ON HOW TO USE THESE STANDARDS ON ACTUAL PROJECTS AND PLANS PACKED WITH THE CRITICAL PROCEDURES NECESSARY FOR EACH PHASE OF THE PROJECT THE BOOK ALSO GIVES AN OUTLOOK ON TRENDS OF DEVELOPMENT FOR CONTROL AND MONITORING SYSTEMS INCLUDING USAGE OF ARTIFICIAL INTELLIGENCE IN SOFTWARE DEVELOPMENT AND PROSPECTS FOR THE USE OF AUTONOMOUS VESSELS ROUNDING OUT WITH A GLOSSARY AND INTRODUCTORY CHAPTER SPECIFIC TO THE NEW MARINE ENGINEER JUST STARTING THIS BOOK DELIVERS A SOURCE OF VALUABLE INFORMATION TO HELP OFFSHORE ENGINEERS BE BETTER PREPARED TO SAFELY AND EFFICIENTLY DESIGN TODAY S OFFSHORE UNIT CONTROL SYSTEMS HELPS READERS UNDERSTAND THE WORLDWIDE OFFSHORE UNIT REGULATIONS NECESSARY FOR MONITORING SYSTEMS AND AUTOMATION INSTALLATION INCLUDING ISO IEC IEEE IMO SOLAS AND MODU ABS DNVGL API NMA AND NORSOK PRESENTS REAL WORLD EXAMPLES THAT APPLY STANDARDS PROVIDES TACTICS ON HOW TO PROCURE CONTROL AND MONITORING SYSTEMS SPECIFIC TO THE OFFSHORE INDUSTRY

THIS BOOK PROVIDES THE TOOLS AND TECHNIQUES MANAGEMENT PRINCIPLES PROCEDURES CONCEPTS AND METHODS TO ENSURE THE SUCCESSFUL COMPLETION OF AN OIL AND GAS PROJECT WHILE ALSO ENSURING THE PROPER DESIGN PROCUREMENT AND CONSTRUCTION FOR MAKING THE PROJECT MOST QUALITATIVE COMPETITIVE AND ECONOMICAL FOR SAFER OPERATIONAL OPTIMIZED PERFORMANCE IT DISCUSSES QUALITY DURING DESIGN FEED DETAILED ENGINEERING SELECTION OF PROJECT TEAMS

PROCUREMENT PROCEDURE OF EPC CONTRACT MANAGING QUALITY DURING MOBILIZATION
PROCUREMENT EXECUTION PLANNING SCHEDULING MONITORING CONTROL QUALITY AND TESTING TO
ACHIEVE THE DESIRED RESULTS FOR AN OIL AND GAS PROJECT THIS BOOK PROVIDES ALL THE
RELATED INFORMATION TO PROFESSIONAL PRACTITIONERS DESIGNERS CONSULTANTS CONTRACTORS
QUALITY MANAGERS PROJECT MANAGERS CONSTRUCTION MANAGERS AND ACADEMICS INSTRUCTORS
INVOLVED IN OIL AND GAS PROJECTS AND RELATED INDUSTRIES FEATURES PROVIDES INFORMATION ON
THE VARIOUS QUALITY TOOLS USED TO MANAGE CONSTRUCTION PROJECTS FROM INCEPTION TO
HANDOVER DISCUSSES THE LIFE CYCLE PHASES DEVELOPED ON SYSTEMS ENGINEERING APPROACH AND
HOW IT IS DIVIDED INTO MANAGEABLE ACTIVITY ELEMENT COMPONENTS SEGMENTS TO MANAGE AND
CONTROL THE PROJECT INCLUDES A WIDE RANGE OF TOOLS TECHNIQUES PRINCIPLES AND
PROCEDURES USED TO ADDRESS QUALITY MANAGEMENT COVERS QUALITY MANAGEMENT SYSTEMS
AND DEVELOPMENT OF QUALITY MANAGEMENT SYSTEMS MANUALS DISCUSSES QUALITY AND RISK
MANAGEMENT AND HEALTH SAFETY AND ENVIRONMENTAL MANAGEMENT DURING THE DESIGN AND
CONSTRUCTION PROCESS

PLANT HAZARD ANALYSIS AND SAFETY INSTRUMENTATION SYSTEMS SERVES AS A COMPREHENSIVE
GUIDE TO THE DEVELOPMENT OF SAFETY INSTRUMENTED SYSTEM SIS OUTLINING THE CONNECTIONS
BETWEEN SIS REQUIREMENTS PROCESS HAZARD ANALYSIS SIS LIFECYCLE IMPLEMENTATION SAFETY
ANALYSIS AND REALIZATION IN CONTROL SYSTEMS THE BOOK ALSO EXPLORES THE IMPACT OF
RECENT ADVANCES SUCH AS SIL SIS AND FAULT TOLERANCE IN LINE WITH TECHNOLOGICAL
DEVELOPMENTS IT COVERS SAFETY IN WIRELESS SYSTEMS AS WELL AS IN INDUSTRIE 4 0 AND
DIGITAL TRANSFORMATION PLANT HAZARD ANALYSIS AND SAFETY INSTRUMENTATION SYSTEMS
INCORPORATES PRACTICAL EXAMPLES THROUGHOUT THE BOOK IT COVERS SAFETY ANALYSIS AND
REALIZATION IN CONTROL SYSTEMS PROVIDING UP TO DATE DESCRIPTIONS OF MODERN CONCEPTS
LIKE SIL SIS AND SIF THE INCLUSION OF SECURITY ISSUES ALONGSIDE SAFETY ISSUES IS
PARTICULARLY RELEVANT FOR THE PROGRAMMABLE SYSTEMS USED IN MODERN PLANT
INSTRUMENTATION SYSTEMS THE NEW CHAPTERS IN THIS UPDATED EDITION ADDRESS SECURITY
CONCERNS CRUCIAL FOR PROGRAMMABLE SYSTEMS IN MODERN PLANTS INCLUDING TOPICS SUCH AS
DISCUSSION OF HAZARDOUS ATMOSPHERES AND THEIR IMPACT ON ELECTRICAL ENCLOSURES THE USE
OF IS CIRCUITS AND THEIR LINKS TO SAFETY CONSIDERATIONS IN MAJOR DEVELOPMENTAL AREAS
INCLUDING IIOT CLOUD COMPUTING WIRELESS SAFETY INDUSTRY 4 0 AND DIGITAL TRANSFORMATION
THIS BOOK IS A VALUABLE RESOURCE FOR PROCESS CONTROL ENGINEERS PROCESS ENGINEERS
INSTRUMENTATION ENGINEERS SAFETY ENGINEERS AND MECHANICAL MANUFACTURING ENGINEERS FROM
VARIOUS DISCIPLINES HELPING THEM UNDERSTAND HOW INSTRUMENTATION AND CONTROLS PROVIDE
LAYERS OF PROTECTION FOR BASIC PROCESS CONTROL SYSTEMS ULTIMATELY INCREASING OVERALL
SYSTEM RELIABILITY PLANT HAZARD ANALYSIS AND SAFETY INSTRUMENTATION SYSTEMS WILL ALSO
BE A GREAT GUIDE FOR RESEARCHERS STUDENTS AND GRADUATE LEVEL PROFESSIONALS IN PROCESS

SAFETY DISCIPLINES ELECTRICAL AND INDUSTRIAL ENGINEERS SPECIALIZING IN SAFETY AND AREA CLASSIFICATIONS AS WELL AS PLANT MANAGERS AND ENGINEERS IN THE INDUSTRY OFFERS A FRAMEWORK TO CHOOSE WHICH HAZARD ANALYSIS METHOD IS THE MOST APPROPRIATE COVERS ALARP HAZOP FMEA LOPA PROVIDES AND PRACTICAL GUIDANCE ON HOW TO MANAGE SAFETY INCIDENTS AT PLANTS THROUGH THE USE OF SAFETY INSTRUMENTATION SYSTEMS PROVIDES COMPREHENSIVE DETAILS ON THE FUNDAMENTALS AND RECENT ADVANCES IN SAFETY ANALYSIS AND REALIZATION IN CONTROL SYSTEMS EXPLORES THE IMPACTS OF INDUSTRY 4.0 AND DIGITALIZATION IN SAFETY CULTURE AND WHAT THIS COULD MEAN FOR THE FUTURE OF PROCESS SAFETY INCLUDES A STEP BY STEP GUIDE WHICH WALKS YOU THROUGH THE DEVELOPMENT OF SAFETY INSTRUMENTED SYSTEMS AND INCLUDES COVERAGE OF STANDARDS SUCH AS IEC 61508 61511 AND ANSI ISA 84 SAFETY COVERAGE IN WIRELESS NETWORK SAFETY ISSUES IMPACTING INDUSTRIE 4.0 AND DIGITAL TRANSFORMATION

EXPLOSIVE ATMOSPHERES PROTECTED ELECTRICAL EQUIPMENT ELECTRICAL EQUIPMENT ELECTRICAL SAFETY ELECTRICAL INSTALLATIONS INSTALLATION SELECTION HAZARDOUS AREAS CLASSIFICATION FOR ELECTRICAL EQUIPMENT ZONE 0 HAZARDOUS AREAS ZONE 1 HAZARDOUS AREAS ZONE 2 HAZARDOUS AREAS TEMPERATURE CLASSIFICATION SYSTEMS ELECTRIC SPARKS ELECTRIC WIRING SYSTEMS ELECTRIC CABLES ELECTRIC CONDUITS OVERLOAD PROTECTION TYPE D PROTECTED ELECTRICAL EQUIPMENT TYPE E PROTECTED ELECTRICAL EQUIPMENT TYPE I PROTECTED ELECTRICAL EQUIPMENT TYPE P PROTECTED ELECTRICAL EQUIPMENT EARTHING MARKING MULTICORE CABLES VERIFICATION VOLTAGE ELECTRIC CURRENT

THIS BOOK PROVIDES A COMPREHENSIVE OVERVIEW OF HAZARDOUS AREAS CONTAINING EXPLOSIVE GASES VAPORS AND COMBUSTIBLE DUST IT ALSO DISCUSSES ABOUT THE DIFFERENT TYPES OF PROTECTION TECHNIQUES USED IN EXPLOSION PROOF ELECTRICAL EQUIPMENT THIS BOOK FURTHER PROVIDES GUIDANCE ON HOW TO DEAL WITH ELECTRICAL EXPLOSIONS CAUSED BY FIRES DUE TO ARCS AND SPARKS CAUSED BY A FAILURE IN THE DESIGN MANUFACTURE SELECTION INSTALLATION OR MAINTENANCE OF ELECTRICAL EQUIPMENT AMONG THE TOPICS COVERED IN THIS BOOK ARE OVERVIEW OF HAZARDOUS AREAS VARIOUS TYPES OF PROTECTION AVAILABLE MECHANISMS FOR EXPLOSION PRESSURE TO BUILD INSIDE FLAMEPROOF ENCLOSURES CONCEPT OF PREVENTING EXPLOSIONS IN FLAMMABLE AND DUSTY ENVIRONMENTS UNIQUE FEATURES OF EXPLOSION PROOF MOTORS PROCESS OF TESTING AND CERTIFYING EXPLOSION PROOF EQUIPMENT IN INDIA AND ABROAD AND MECHANISMS FOR THE INITIATION AND PREVENTION OF EXPLOSIONS RESULTING FROM NON ELECTRIC SOURCES THE BOOK ALSO DISCUSSES TOPICS SUCH AS THE SELECTION INSTALLATION INSPECTION AND MAINTENANCE OF ELECTRICAL EQUIPMENT IN ADDITION THIS BOOK WILL BE USEFUL FOR RESEARCHERS AND PROFESSIONALS WORKING IN THE FIELDS OF ELECTRICAL ENGINEERING MECHANICAL ENGINEERING PETROLEUM ENGINEERING MINING ENGINEERING AND TESTING LABORATORIES

THAT TEST AND CERTIFY EXPLOSION PROOF EQUIPMENT

THIS BOOK SUMMARISES THE BRITISH LEGISLATION COVERING ELECTRICAL SAFETY INCLUDING THOSE REGULATIONS DERIVED FROM EUROPEAN DIRECTIVES IT ALSO ADDRESSES THE LEGISLATION RELATING TO THE SUPPLY AND USE OF SAFETY RELATED ELECTROTECHNICAL CONTROL SYSTEMS PARTICULARLY ON MACHINERY AS WELL AS DESCRIBING THE LEGAL FRAMEWORK AND THE MAIN LEGAL DUTIES AND APPLICABLE STANDARDS THE BOOK DESCRIBES ELECTRICAL HAZARDS AND HOW THEY ARISE THE TYPES OF ACCIDENTS AND DANGEROUS OCCURRENCES ASSOCIATED WITH THE USE OF ELECTRICITY THE MAIN SAFETY PRECAUTIONS AND PROTECTION TECHNIQUES TESTING AND MAINTENANCE OF ELECTRICAL SYSTEMS SAFETY DURING TESTING WORK THE SAFETY OF ELECTRICAL INSTALLATIONS AND EQUIPMENT USED IN FLAMMABLE ATMOSPHERES AND THE PARTICULAR RISKS ASSOCIATED WITH UNDERGROUND CABLES AND CONSTRUCTION ACTIVITY THE FOURTH EDITION HAS BEEN COMPLETELY REWRITTEN AND EXPANDED TO INCLUDE LEGISLATION SUCH AS THE PROVISION AND USE OF WORK EQUIPMENT REGULATIONS 1999 STANDARDS AND GUIDANCE MATERIAL ISSUED OR AMENDED SINCE THE LAST EDITION A NEW CHAPTER ON SAFETY RELATED ELECTROTECHNICAL CONTROL SYSTEMS INCORPORATING COMMENTARY ON BS EN 954 1 AND BS IEC 61508 THE MAIN GENERIC STANDARDS ADDRESSING THE SAFETY INTEGRITY OF SUCH SYSTEMS A NEW CHAPTER ON THE COMPETENCE OF PRACTITIONERS WORKING WITH ELECTRICAL SYSTEMS AND SAFETY RELATED CONTROL SYSTEMS THIS BOOK WILL MAKE A VERY USEFUL ADDITION TO ANY SAFETY LIBRARY AND WILL PROVIDE A GOOD REFERENCE SOURCE ON ELECTRICAL SAFETY SAFETY AND HEALTH PRACTITIONER NOVEMBER 2002

ON COVER TITLE PAGE SPECIALIST SERVICES

WRITTEN AS A PRACTICAL INTRODUCTION TO BIOGAS PLANT DESIGN AND OPERATION THIS BOOK FILLS A HUGE GAP BY PRESENTING A SYSTEMATIC GUIDE TO THIS EMERGING TECHNOLOGY INFORMATION OTHERWISE ONLY AVAILABLE IN POORLY INTELLIGIBLE REPORTS BY US GOVERNMENTAL AND OTHER OFFICIAL AGENCIES THE AUTHOR DRAWS ON TEACHING MATERIAL FROM A UNIVERSITY COURSE AS WELL AS A WIDE VARIETY OF INDUSTRIAL BIOGAS PROJECTS HE HAS BEEN INVOLVED WITH THUS COMBINING DIDACTICAL SKILL WITH REAL LIFE EXAMPLES ALONGSIDE BIOLOGICAL AND TECHNICAL ASPECTS OF BIOGAS GENERATION THIS TIMELY WORK ALSO LOOKS AT SAFETY AND LEGAL ASPECTS AS WELL AS ENVIRONMENTAL CONSIDERATIONS

THIS TECHNICAL BOOK PRESENTS IN A CONCISE AND CONCENTRATED FORM ALL THE ESSENTIAL ASPECTS OF OPERATING A SHIP THESE INCLUDE THE BASICS OF BUOYANCY AND PROPULSION TECHNOLOGY SHIP SAFETY OCCUPATIONAL SAFETY AND ENVIRONMENTAL PROTECTION ON BOARD AS WELL AS IMPORTANT AUXILIARY EQUIPMENT THESE ASPECTS ARE EXPLAINED IN MORE DETAIL USING NUMEROUS EXAMPLES THE BOOK IS INTENDED FOR SHIP S ENGINEERS AT UNIVERSITY ON BOARD AND

IN SHIPPING COMPANIES AS WELL AS FOR DESIGN ENGINEERS IN THE SHIPYARD THIS BOOK IS A TRANSLATION OF THE ORIGINAL GERMAN 1ST EDITION SCHIFFSBETRIEBSTECHNIK BY MANFRED PFAFF PUBLISHED BY SPRINGER FACHMEDIEN WIESBADEN GMBH PART OF SPRINGER NATURE IN 2018 THE TRANSLATION WAS DONE WITH THE HELP OF ARTIFICIAL INTELLIGENCE MACHINE TRANSLATION BY THE SERVICE DEEPL COM A SUBSEQUENT HUMAN REVISION WAS DONE PRIMARILY IN TERMS OF CONTENT SO THAT THE BOOK WILL READ STYLISTICALLY DIFFERENTLY FROM A CONVENTIONAL TRANSLATION SPRINGER NATURE WORKS CONTINUOUSLY TO FURTHER THE DEVELOPMENT OF TOOLS FOR THE PRODUCTION OF BOOKS AND ON THE RELATED TECHNOLOGIES TO SUPPORT THE AUTHORS

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WHEN IT COMES TO READING, FREE EBOOK SITES OFFER NUMEROUS ADVANTAGES.

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FUTURE OF FREE EBOOK SITES

THE FUTURE LOOKS PROMISING FOR FREE EBOOK SITES AS TECHNOLOGY CONTINUES TO ADVANCE.

TECHNOLOGICAL ADVANCES

IMPROVEMENTS IN TECHNOLOGY WILL LIKELY MAKE ACCESSING AND READING EBOOKS EVEN MORE SEAMLESS AND ENJOYABLE.

EXPANDING ACCESS

EFFORTS TO EXPAND INTERNET ACCESS GLOBALLY WILL HELP MORE PEOPLE BENEFIT FROM FREE EBOOK SITES.

ROLE IN EDUCATION

AS EDUCATIONAL RESOURCES BECOME MORE DIGITIZED, FREE EBOOK SITES WILL PLAY AN INCREASINGLY VITAL ROLE IN LEARNING.

CONCLUSION

IN SUMMARY, FREE EBOOK SITES OFFER AN INCREDIBLE OPPORTUNITY TO ACCESS A WIDE RANGE OF BOOKS WITHOUT THE FINANCIAL BURDEN. THEY ARE INVALUABLE RESOURCES FOR READERS OF ALL AGES AND INTERESTS, PROVIDING EDUCATIONAL MATERIALS, ENTERTAINMENT, AND ACCESSIBILITY FEATURES. SO WHY NOT EXPLORE THESE SITES AND DISCOVER THE WEALTH OF KNOWLEDGE THEY OFFER?

FAQs

ARE FREE EBOOK SITES LEGAL? YES, MOST FREE EBOOK SITES ARE LEGAL. THEY TYPICALLY OFFER BOOKS THAT ARE IN THE PUBLIC DOMAIN OR HAVE THE RIGHTS TO DISTRIBUTE THEM. HOW DO I KNOW IF AN EBOOK SITE IS SAFE? STICK TO WELL-KNOWN AND REPUTABLE SITES LIKE PROJECT GUTENBERG, OPEN LIBRARY, AND GOOGLE BOOKS. CHECK REVIEWS AND ENSURE THE SITE HAS PROPER SECURITY MEASURES. CAN I DOWNLOAD EBOOKS TO ANY DEVICE? MOST FREE EBOOK SITES OFFER DOWNLOADS IN MULTIPLE FORMATS, MAKING THEM COMPATIBLE WITH VARIOUS DEVICES LIKE E-READERS, TABLETS, AND SMARTPHONES. DO FREE EBOOK SITES OFFER AUDIOBOOKS? MANY FREE EBOOK SITES OFFER AUDIOBOOKS, WHICH ARE PERFECT FOR THOSE WHO PREFER LISTENING TO THEIR BOOKS. HOW CAN I SUPPORT AUTHORS IF I USE FREE EBOOK SITES? YOU CAN SUPPORT AUTHORS BY PURCHASING THEIR BOOKS WHEN POSSIBLE, LEAVING REVIEWS, AND SHARING THEIR WORK WITH OTHERS.

