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| Nota di contenuto | Modern Drying Technology: Energy Savings; Contents; Series Preface; Preface of Volume 4; List of Contributors; Recommended Notation; EFCE Working Party on Drying; Address List; 1 Fundamentals of Energy Analysis of Dryers; 1.1 Introduction; 1.2 Energy in Industrial Drying; 1.3 Fundamentals of Dryer Energy Usage; 1.3.1 Evaporation Load; 1.3.2 Dryer Energy Supply; 1.3.3 Evaluation of Energy Inefficiencies and Losses: Example; 1.3.3.1 Dryer Thermal Inefficiencies; 1.3.3.2 Inefficiencies in the Utility (Heat Supply) System; 1.3.3.3 Other Energy Demands; 1.3.4 Energy Cost and Environmental Impact |

1.3.4.1 Primary Energy Use; 1.3.4.2 Energy Costs; 1.3.4.3 Carbon Dioxide Emissions and Carbon Footprint; 1.4 Setting Targets for Energy Reduction; 1.4.1 Energy Targets; 1.4.2 Pinch Analysis; 1.4.2.1 Basic Principles; 1.4.2.2 Application of Pinch Analysis to Dryers; 1.4.2.3 The Appropriate Placement Principle Applied to Dryers; 1.4.2.4 Pinch Analysis and Utility Systems; 1.4.3 Drying in the Context of the Overall Process; 1.5 Classification of Energy Reduction Methods; 1.5.1 Reducing the Heater Duty of a Convective Dryer; 1.5.2 Direct Reduction of Dryer Heat Duty; 1.5.2.1 Reducing the Inherent Heat Requirement for Drying; 1.5.2.2 Altering Operating Conditions to Improve Dryer Efficiency; 1.5.3 Heat Recovery and Heat Exchange; 1.5.3.1 Heat Exchange Within the Dryer; 1.5.3.2 Heat Exchange with Other Processes; 1.5.4 Alternative Utility Supply Systems; 1.5.4.1 Low Cost utilities; 1.5.4.2 Improving Energy Supply System Efficiency; 1.5.4.3 Combined Heat and Power; 1.5.4.4 Heat Pumps; 1.6 Case Study; 1.6.1 Process Description and Dryer Options; 1.6.2 Analysis of Dryer Energy Consumption; 1.6.3 Utility Systems and CHP; 1.7 Conclusions; References

2 Mechanical Solid-Liquid Separation Processes and Techniques

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Sommario/riassunto

This multivolume work covers drying, a key industrial processes that accounts for about 10-percent of total energy consumption in industry. It guides engineers towards achieving energy savings through such approaches as improved apparatus design, optimization, and heat recovery. In so doing, it points the way to success for both researchers and practitioners in mastering this multiphase and multiscale process.