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Printing machinery - Energy efficiency assessment method for ink drying and curing device

印刷机械 油墨干燥及固化装置能效评价方法

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

1.Structure and drafting rules for standardization documents" Drafting is required. Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents. This document was proposed by the China Machinery Industry Federation. This document is under the jurisdiction of the National Technical Committee for Standardization of Printing Machinery (SAC/TC 192). This document was drafted by: Zhejiang Meige Machinery Co., Ltd., Shaanxi Beiren Printing Machinery Co., Ltd., Zhejiang Weigang Technology Co., Ltd. Co., Ltd., Hubei Jinghua Color Printing Co., Ltd., Beiren Intelligent Equipment Technology

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Ink drying and curing devices are the main energy-consuming parts of printing presses. Energy efficiency evaluation will help guide printing companies to choose energy-saving High-efficiency products stimulate the innovative power of printing equipment manufacturers in the development and research of energy-saving technologies, and help the printing industry achieve energy saving and low carbon Production is of great significance. Ink drying (curing) is a complex process involving the interaction of heat, mass and momentum. Based on the theory of energy efficiency, various physical and chemical factors involved in the printing production process are fully considered, and a set of energy efficiency evaluation processes, The qualified judgment conditions for the drying and curing state of printed ink, the energy consumption test methods for different types of ink drying and curing devices, and the energy consumption test methods for different types of ink drying and curing devices. This document will guide the ink drying and curing devices and even printing presses. Carry out energy efficiency classification and provide methods and basis for third-party organizations to evaluate energy-saving effects. Printing machinery ink

drying and curing device Energy efficiency evaluation method

1 Scope

GB/T 44685-2024 gives the Chinese method for assessing the energy efficiency of ink drying and curing devices on printing machinery. The dryer is where a press spends most of its energy: hot air dryers on a web offset or gravure line consume more than the press drive, and the alternatives, infrared, ultraviolet and electron beam curing, trade that energy for a different profile, which makes them impossible to compare without a defined method. The standard sets the types of drying and curing device covered and then the energy efficiency evaluation procedure: the boundary of the device for measurement purposes, the operating conditions under which it is assessed, the measurements of energy input and of production output, the treatment of the solvent recovery or oxidation systems that belong to the dryer, the calculation of the efficiency indicators, the grading of the result and the report. It took effect on 29 September 2024, and for a press manufacturer or a printer comparing dryers it is the basis of any efficiency claim.

This document specifies the abbreviations and types of ink drying and curing equipment, describes the energy efficiency evaluation process and method. This document applies to hot air drying devices, infrared drying devices, ultraviolet curing devices and electron beam curing devices in various types of printing presses Energy efficiency evaluation.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies. in this document.

GB/T 2589-2020 General rules for comprehensive energy consumption calculation

GB/T 7706-2008 Letterpress decorative printed matter

GB/T 19862-2016 General requirements for power quality monitoring equipment

GB/T 22778-2021 LCD digital quartz stopwatch

GB/T 23649-2009 Printing technology process control - Optical, geometric and metrological requirements for reflection densitometers for printing

GB/T 26395-2011 Water-based gravure ink for cigarette packaging

GB/T 26461-2011 Paper gravure ink

GB/T 26497-2022 Electronic Balance

GB/T 32201-2015 Gas flow meter CY/T 254-2022 Inkjet printing ink usage requirements and test methods

HJ 371-2018 Technical requirements for environmental labeling products - Gravure inks and flexographic inks

JB/T 6530 Printing machine product model compilation method QB/T 2624-2012 Sheet-fed offset printing ink QB/T 2824-2017 Thermal set offset rotary ink QB/T 4580-2013 UV curable inkjet printing ink QB/T 4753-2014 General technical requirements for screen printing inks QB/T 5478-2020 UV-light-emitting diode light-curing offset printing ink black QB/T 5603-2021 Flexographic UV Curing Ink

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Hot-air drying device The fan is used to force the air passing through the heat source to exchange moisture and heat with the printed matter in a forced convection manner, thereby accelerating the ink film on its surface. The layers change to become a solid or quasi-solid device.