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Nota di contenuto	Castings Practice; Contents; Dedication; Preface; Summary; Rule 1. Achieve a good quality melt; 1.1 Background; 1.2 Melting; 1.3 Holding; 1.4 Pouring; 1.5 Melt treatments; 1.5.1 Degassing; 1.5.2 Additions; 1.6 Filtration; 1.6.1 Packed beds; 1.6.2 Alternative varieties of filters; 1.6.3 Practical aspects; Rule 2. Avoid turbulent entrainment (the critical velocity requirement); 2.1 Maximum velocity requirement; 2.2 The 'no fall' requirement; 2.3 Filling system design; 2.3.1 Gravity pouring of open-top moulds; 2.3.2 Gravity pouring of closed moulds; 2.3.3 Horizontal transfer casting 2.3.4 Counter-gravity2.3.5 Surface tension controlled filling; 2.3.6 Inclusion control: filters and traps; 2.3.7 Practical calculation of the filling system; Rule 3. Avoid laminar entrainment of the surface film (the non-stopping, non-reversing condition); 3.1 Continuous expansion of the meniscus; 3.2 Arrest of vertical progress; 3.3 Waterfall flow; 3.4 Horizontal stream flow; 3.5 Hesitation and reversal; Rule 4. Avoid bubble damage; 4.1 Gravity-filled running systems; 4.2 Pumped and low-pressure filling systems; Rule 5. Avoid core blows; 5.1 Background; 5.2 Prevention Rule 6. Avoid shrinkage damage6.1 Feeding systems design

background; 6.1.1 Gravity feeding; 6.1.2 Computer modelling of feeding; 6.1.3 Random perturbations to feeding patterns; 6.1.4 Dangers of solid feeding; 6.1.5 The non-feeding roles of feeders; 6.2 The seven feeding rules; Rule 1: Do not feed; Rule 2: Heat-transfer requirement; Rule 3: Mass-transfer requirement; Rule 4: Junction requirement; Rule 5: Feed path requirement; Rule 6: Pressure gradient requirement; Rule 7: Pressure requirement; 6.3 The new feeding logic; 6.3.1 Background; 6.3.2 The new approach; 6.4 Active feeding 6.5 Freezing systems design 6.5.1 External chills; 6.5.2 Internal chills; 6.5.3 Fins; Rule 7. Avoid convection damage; 7.1 Convection: the academic background; 7.2 Convection: the engineering imperatives; 7.3 Convection damage and casting section thickness; 7.4 Countering convection; Rule 8. Reduce segregation damage; Rule 9. Reduce residual stress (the 'no water quench' requirement); 9.1 Introduction; 9.2 Residual stress from casting; 9.3 Residual stress from quenching; 9.4 Distortion; 9.5 Heat treatment developments; 9.6 Epilogue; Rule 10. Provide location points; 10.1 Datums 10.2 Location points 10.2.1 Rectilinear systems; 10.2.2 Cylindrical systems; 10.2.3 Trigonal systems; 10.2.4 Thin-walled boxes; 10.3 Location jigs; 10.4 Clamping points; 10.5 Mould design: the practical issues; 10.6 Casting accuracy; 10.7 Tooling accuracy; 10.8 Mould accuracy; 10.9 Summary of factors affecting accuracy; 10.10 Metrology; Appendix; The 1.5 factor; The Bernoulli equation; Rate of pour of steel castings from a bottom-pour ladle; Running system calculation record; Design methodology for investment castings; References; Index

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## Sommario/riassunto

Each chapter of Professor Cambell's new book Castings Practice will take a look at one of his 10 rules. It is to be expected that the Rules will one day be taken as an outline or blueprint for an international specification on the methods for making reliable castings. John Cambell has over two decades of experience in the casting industry and is the author of over 40 technical papers and patents. He has become well-known in the foundry industry as the originator of the Cosworth casting process, which is becoming accepted throughout the world as a new production process for the casting

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