## Contents

C405/009	Laser velocimeter measurements in a turbocharger turbine E F Benisek and A G Struble	1
C405/005	Flows in vaned and vaneless stators of radial-inflow turbocharger turbines N C Baines and M Lavy	7
C405/008	A method to predict performance of vaneless radial turbines under steady and unsteady flow conditions  H Chen and D E Winterbone	13
C405/023	Investigation of the flow characteristics of radial inflow turbocharger volutes A Whitfield and A B Mohd Noor	23
C405/036	Alternative turbocharger systems for the automotive diesel engine B E Walsham	39
C405/013	Double resonance system—a new way to improve the low-speed operation of supercharged engines <i>G Cser</i>	51
C405/054	Effects of controlled turbine bypass on a commercial diesel turbocharged engine  M W G Brown and A B Horner	59
C405/037	Optimal control of an integrated engine transmission with controllable pressure charging  J Hall and F J Wallace	71
C405/022	The transient response of a turbocharger vehicle diesel engine with injection timing control C Arcoumanis, Z Bazari and S H Chan	83
C405/038	On-road performance of two alternative transmission systems for heavy vehicles  F J Wallace and Z Dequan	99
C405/004	Pulsating flow behaviour of a twin-entry vaneless radial-flow turbine JH Yeo and NC Baines	113
C405/017	Unsteady flow performance of turbocharger radial turbines  M Capobianco and A Gambarotta	123
C405/019	Development of a model to predict the vibration response of a large turbocharger rotor under pulsating flow conditions G M Chapman and J B Turnbull	133
C405/042	A compact two-stage turbocharger module  D W H Tennant	141
C405/015	Measurement of the performance of a radial inflow turbine in conditional steady and unsteady flow DE Winterbone, B Nikpour and GI Alexander	153
C405/053	Development work on turbochargers for two- and four-stroke diesel engines with and without turbo-compound systems  M Appel and J Bucher	163
C405/034	The interaction of diesel engine turbocharging and tuned inlet manifold systems under steady speed and transient operation K Banisoleiman, L A Smith and B A French	171
C405/044	Application of variable valve timing to a highly turbocharged diesel engine	189

	5	
C405/041	Investigation of the flow phenomena in the inlet of an unshrouded centrifugal compressor impeller operating at part load R Girsberger and K H Rohne	197
C405/040	A simple method for predicting centrifugal compressor performance characteristics  E Swain	207
C405/024	Turbocharger compressor developments for broad range and high pressure ratio applications  D Flaxington and B Mahbod	219
C405/045	Turbocharging for submarines—a special case ETFKirkman and RA Hopper	229
C405/012	The role of digital dynamic simulation in the design of a turbocharger test stand DA Penz, CD Mullinax, MY Young and AG Struble	241
C405/011	A severe turbocharger bench engine test for lubricant evaluation GB Toft and R Mainwaring	255
C405/021	Towards a more reliable turbocharger for rail traction  K Dunn and U Gribi	267
C405/049	The application of ball bearings to automotive turbochargers JET Blake	277
C405/057	Experiences with supercharging the Porsche 944 engine  H Richter and N Hemmerlein	283
C405/032	Comprex with gas pocket control  A Mayer, I El Nashar and J Perewusnyk	289
C405/060	Ceramic rotors for passenger car turbochargers B Engels and R Lingenauber	295
C405/025	Study of ceramic rotor and turbine housing material of a turbocharger up to the turbine inlet gas temperature 1050°C Y Miyagi, K Miyashita, H Sugihara and T Tomita	309
C405/055	Turbocharging techniques for sports car engines C Brüstle, J Wagner, K Tran Van and K Burk	317
C405/043	The benefits of variable geometry turbocharging from the military aspect JR Starkey and P C Franklin	329
C405/052	Turbochargers and the military vehicle  DP Hartwell	339