Content

VOLUME I

Plenary Lecture	
THE ROLE OF PROCESS INTENSIFICATION IN CUTTING GREENHOUSE GAS EMISSIONS D. Reay	1
Energy saving technology	
LOW TEMPERATURE SEPARATION SYSTEMS	13
R. Smith and S. Farrokhpanah	
THE SEQUENTIAL FRAMEWORK FOR HEAT EXCHANGER NETWORK SYNTHESIS - NETWORK GENERATION AND OPTIMIZATION R. Anantharaman and T. Gundersen	19
ELUTRIATION OF CARBON BLACK POWDER FROM A POWDER-PARTICLE FLUIDIZED BED FOR THE PROCESS GAS HEAT RECOVERY T. Nakazato and K. Hirata	25
THREE-DIMENSIONAL FLOW EFFECTS ON CONVECTIVE HEAT TRANSFER FROM A COLD OR A HOT WINDOW COVERED BY A SIMPLE PLANE BLIND TO A ROOM P. Oosthuizen	31
A STEPWISE FRAMEWORK FOR FLOWSHEET INTEGRATION IN EXTRACTIVE DISTILLATION X. Jia, S. Xiang, H. Yu and F. Han	37
SECONDARY FLOW EFFECTS IN A TRAPIZOIDAL ISOTHERMAL MINICHANNEL FLOW SYSTEM INVOLVING A SHARP-EDGED 180° BEND P. Oosthuizen	43
RETROFIT OF GAS SEPARATION PLANT BY PINCH TECHNOLOGY	49
D. Napredakul, K. Siemanond, T. Sornchamni and S. Laorrattanasak	
MULTIDIMENSIONAL, NON-ISOTHERMAL, DYNAMIC MODELLING OF PLANAR SOLID OXIDE FUEL CELLS K. Tseronis, I. Kookos and C. Theodoropoulos	55
Reactive and hybrid separations	
CFD-BASED MODELLING OF THE RESIDENCE TIME DISTRIBUTION IN STRUCTURED FIXED BEDS T. Atmakidis, E. Kenig, A. Viva and E. Brunazzi	61
ON ENERGY EFFICIENCY OF HYBRID SEPARATION PROCESSES M. Sorin, E. Ayotte-Sauve, Y. Azoumah and F. Rheault	67

REACTIVE ABSORPTION OF CO2 INTO AQUEOUS SOLUTIONS OF N,N-DIETHYLETHANOLAMINE P. Vaidya and E. Kenig	73
MODELING AND SIMULATION THE PROCESS IN A REACTIVE DIVIDING WALL COLUMN FOR GASOLINE ADDITIVE TAME SYNTHESIS IN THE OIL REFINERY G. Bumbac, V. Plesu, C. Ciornei and A.E. Plesu	79
OPTIMAL STRUCTURE OF REACTIVE AND NON-REACTIVE STAGES IN REACTIVE DISTILLATION PROCESSES A.O. Domancich, N.B. Brignole and P.M. Hoch	85
Combined heat & power	
CURRENT TRENDS IN EMISSIONS TARGETING AND PLANNING D. Crilly and T. Zhelev	91
OPERATION OF UTILITY SYSTEMS: OPTIMISATION-BASED DECISION-MAKING P. Velasco-Garcia, P. Varbanov, H. Arellano-Garcia and G. Wozny	99
SIMULATION OF PHASE DISTRIBUTIONS DURING FREEZE-DRYING THROUGH PORE-SCALE NETWORK MODELING Y. Liu, H. Sun and Y. Zhao	105
INFLUENCE OF GEOMETRIC PARAMETERS OF AN ANNULAR FIN OF DIFFERENT CROSS-SECTIONS ON ITS EFFICIENCY N. Labsi and Y.K. Benkahla	111
IMPLEMENTATION OF COGENERATION SYSTEMS IN GREECE P. Pilavachi, C. Roumpeas and S. Minett	117
SOX EMISSION & POLLUTION CONTROL AT MELLITAH GAS PLANT M. Hasan, A. Gembri, A. Shibani and M. Abukshim	127
CO2 Kyoto Protocol, sequestration, minimisation	
SELECTION OF FUEL CELL COMBINED CYCLES FOR COST-EFFECTIVE REDUCTION OF CARBON EMISSIONS: P-GRAPH F. Friedler, P. Varbanov and J. Klemes	133
TARGETING FOR MINIMUM LOW AND ZERO-CARBON ENERGY RESOURCES IN CARBON-CONSTRAINED ENERGY SECTOR PLANNING USING CASCADE ANALYSIS	139
D.C.Y. Foo and R.R. Tan	
REDUCTION OF GREENHOUSE GASES IN INTEGRATED PULP AND PAPER MILLS - POSSIBILITIES FOR CO2 CAPTURE AND STORAGE E. Hektor and T. Berntsson	145

REFORMING NATURAL GAS FOR CO2 PRE-COMBUSTION CAPTURE IN COMBINED CYCLE POWER PLANT J.M. Amann, M. Kanniche and C. Bouallou							
MINIMIZATION OF LIFE CYCLE CO2 EMISSIONS IN THE UTILITY SECTOR OF A PETROCHEMICAL PLANT P. Martinez and A.M. Eliceche							
CARBON DIOXIDE ABSORPTION IN NON NEWTONIAN FLUIDS USING A BUBBLE CONTACTOR D. Gomez-Diaz, J.M. Navaza, L. C. Quintans-Riveiro and B. Sanjurjo							
IN-VEHICLE / OUT-VEHICLE AIR QUALITY AND COMMUTER'S EXPOSURE TO POLLUTANTS A. Chan	169						
CARBON DIOXIDE ABSORPTION INTO NEW FORMULATED AMINE SOLUTION. (I)SOLUTION VISCOSITY MEASURING AND CORRELATION R.E. Tataru-Farmus, I. Siminiceanu and C. Bouallou	175						
Heat exchangers and integrated separation processes							
ALTERNATIVE DESIGN APPROACH FOR SPIRAL PLATE HEAT EXCHANGERS M. Picon-Nunez, L. Canizalez-Davalos and A. Morales-Fuentes	183						
A PHENOMENOLOGICAL MODEL FOR FLUID-DYNAMICS EVALUATION OF STRUCTURED PACKING SYSTEMS G. Bozzano, M. Dente and P. Corna							
OPTIMIZATION OF HEAT EXCHANGER NETWORK WITH FIXED TOPOLOGY BY GENETIC ALGORITHMS R. Bochenek, J. Jezowski and S. Bartman	195						
IMPROVING CONVENTIONAL DISTILLATION CONFIGURATION FOR TERNARY MIXTURES SEPARATION M. Emtir and A. Etomi	201						
ACCOUNTING FOR FOULING IN PLATE HEAT EXCHANGER DESIGN A. Gogenko, O. Anipko, O. Arsenyeva and P. Kapustenko	207						
PLATE HEAT EXCHANGERS FOR ENVIRONMENTALLY FRIENDLY HEAT PUMPS L. Tovazhnyanskyy, V. Sherstyuk , P. Kapustenko, G. Khavin, O. Perevertaylenko, S. Boldyryev and A. Garev	213						
GRAPHITE PLATE HEAT EXCHANGERS AS ENERGY SAVING TOOL FOR CORROSIVE MEDIA DUTIES P. Kapustenko, O. Perevertaylenko, G. Khavin and O. Arsenyeva	219						
THE INVESTIGATION OF VAPOR CONDENSATION IN HORIZONTALLY ORIENTED CHANNELS WITH CROSS CORRUGATED WALLS O Perevertaylenko E Nagorniy I Toyazhnyanskyy and P Kapustenko	225						

Sustainable processing and production

NEW PROPOSAL FOR INTEGRATED PRODUCTION OF SUGAR AND BIOFUELS FROM SUGAR BEET G. Vaccari, G. Marchetti, G. Lenzini and E. Tamburini	231					
MODELING OF THE REACTOR-CRYSTALLIZER UNIT OF A PHOSPHORIC ACID PRODUCTION PLANT K. Theodosiadis, A. Papadopoulos and P. Seferlis						
DYNAMIC MODELING OF HYDROGEN GENERATION VIA HYDROLYSIS OF SODIUM BOROHYDRIDE A. Goncalves, P. Castro, A. Novais, V. Fernandes, C. Rangel and H. Matos						
ORGANOSOLV PULPING PROCESSES SIMULATIONS	249					
M. Gonzalez, A. Tejado, C. Pena, R. Llano-Ponte and J. Labidi						
ENERGY SAVINGS COMBINED WITH LIGNIN EXTRACTION FOR PRODUCTION INCREASE: CASE STUDY AT A EUCALYPTUS MILL IN PORTUGAL C. Laaksometsa, E. Axelsson, T. Berntsson and A. Lundstrom	255					
ENVIRONMENTAL REFERENCES IN THE LIFE CYCLE ASSESSMENT OF CHEMICAL PROCESSES: APPLICATION TO THE ALUMINIUM TRIFLUORIDE MANUFACTURE A. Dominguez, R. Aldaco, M. Margallo and A. Irabien	261					
DESIGN OF HYBRID HEAT PUMP DRYER - DEHUMIDIFIER FOR DRYING OF AGRICULTURAL PRODUCTS C.L. Law, W.R.W. Daud and L.C. Abdullah	263					
Process integration for sustainable development						
EVALUATION OF NATURAL GAS COMBINED CYCLE PLANTS IN CHINA THROUGH ENVIRONOMIC MODELING AND MULTI-OBJECTIVE OPTIMIZATION H. Li, F. Marechal and D. Favrat	269					
DESIGN CONSIDERATIONS IN STEAM SYSTEM DEBOTTLENECKING USING PROCESS INTEGRATION S. Coetzee and T. Majozi	275					
THE DEVELOPMENT OF ENERGY SHARING IN INDUSTRIAL AREAS OF JAPAN WITH PINCH TECHNOLOGY K. Matsuda	281					
INTERVAL BASED MINLP SUPERSTRUCTURE SYNTHESIS OF HEAT EXCHANGE NETWORKS A. Isafiade and D. Fraser	285					

ASSESSMENT OF PRE-COMBUSTION DECARBONISATION SCHEMES FOR POLYGENERATION FROM FOSSIL FUELS J. Hetland						
OPTIMIZATION OF CONVENTIONAL AND ENERGY-INTEGRATED DISTILLATION CONFIGURATIONS AT DIFFERENT FEED CONDITIONS M. Khalifa and M. Emtir						
NEW ALGORITHMS FOR HEAT EXCHANGER NETWORK OPTIMIZATION M.H. Panjeshahi, H. Rezaii-Dizajikan and A. Alimondegari						
MODELLING OF SMALL-SCALE BIOETHANOL PLANTS WITH RENEWABLE ENERGY SUPPLY B. Liebmann, M. Pfeffer, W. Wukovits, A. Bauer, T. Amon, G. Gwehenberger, M. Narodoslawsky and A. Friedl						
IDENTIFICATION OF A SUITABLE PROCESS SCHEME FOR THE NON-THERMAL PRODUCTION OF BIOHYDROGEN W. Wukovits, A. Friedl, M. Markowski, K. Urbaniec, M. Ljunggren, M. Schumacher, G. Zacchi and M. Modigell						
A SIMULTANEOUS APPROACH FOR DESIGNING OPTIMAL WASTEWATER TREATMENT NETWORK G. Poplewski and J. Jezowski						
OPTIMAL DESIGN OF WASTEWATER TREATMENT NETWORK FOR GLASS CONTAINER PLANT O. Kvitka, I. Dzhygyrey and J. Jezowski	327					
HEAT EXCHANGER NETWORK SYNTHESIS-A BILEVEL DECOMPOSITION METHOD BASED ON STREAM DATA GROUPING T. Laukkanen and C.J. Fogelholm						
MICROWAVE AND CATALYSIS AS PROCESS INTEGRATION FOR DIESEL SOOT ABATEMENT V. Palma, P. Russo, G. Matarazzo and P. Ciambelli						
APPROXIMATE GRAPHICAL TARGETING FOR WATER NETWORK WITH TWO CONTAMINANTS Y.L. Tan, D.C.Y. Foo, R.R. Tan and D.K.S. Ng						
Dynamic, flexible and sustainable plant operation						
PRODUCTION PLANNING BY PINCH ANALYSIS IN DYNAMIC AND SEASONAL MARKETS J. Ludwig, J. Geldermann and O. Rentz	353					

KINETIC STUDIES OF THE POLYSTYRENE PYROLYSIS REACTIONAL 359

P. Costa, F. Pinto, A.M. Ramos, I. Gulyurtlu, I. Cabrita and M. Bernardo

PATHWAYS

J. Gomez Prado, N. Zhang and C. Theodoropoulos						
ROBUST DECENTRALIZED CONTROL FOR FLEXIBLE PLANT OPERATION: CONCEPTUAL DESIGN AND OPTIMAL TUNING L.T. Antelo, O. Exler, J.R. Banga and A. Alonso	371					
CHANCE CONSTRAINED PROCESS OPTIMIZATION AND CONTROL UNDER UNCERTAINTY H. Arellano-Garcia and G. Wozny						
OPERATION PLANNING UNDER PRODUCT DEMAND UNCERTAINTY IN COMPLEX CHEMICAL PLANTS E. Schulz and S. Diaz	383					
MODEL BASED PROJECTIVE MONITORING OF PROCESS UNIT PERFORMANCES UNDER UNCERTAINTIES F. Manenti	389					
VOLUME II						
Batch processes						
SIMULTANEOUS SYNTHESIS OF PROPERTY-BASED WATER REUSE/RECYCLE AND INTERCEPTIONS NETWORKS FOR BATCH PROCESSES D.K.S. Ng, A. Rabie, M. El-Halwagi and D.C.Y. Foo	395					
THROUGHPUT MAXIMIZATION IN MULTIPURPOSE BATCH PLANTS: S-GRAPH VS TIME POINT BASED METHODS T. Holczinger, T. Majozi, M. Hegyhati and F. Friedler	401					
SYNTHESIS OF WATER-USING NETWORK WITH CENTRAL REUSABLE STORAGE IN BATCH PROCESSES C.L. Chen, J.W. Tang, Y.J. Ciou and C.Y. Chang	409					
OPTIMAL BATCHING AND SCHEDULING OF SINGLE STAGE BATCH PLANTS WITH SEQUENCE DEPENDENT CHANGEOVERS P. Castro, M. Erdirik and I. Grossmann	415					
TOWARDS THE DESIGN OF A ZERO EFFLUENT FACILITY IN THE PHARMACEUTICAL INDUSTRY J. Gouws and T. Majozi	421					
THERMAL FLUX USE FOR OPTIMAL CONTROL OF A SEMI-CONTINUOUS BATCH REACTIVE RECTIFIER C. Ciornei and V. Lavric	427					

Integration of renewables, biomass and energy conversion technologies

SIMULATION OF A STAND-ALONE POWER SYSTEM USING RENEWABLE ENERGY SOURCES AND HYDROGEN STORAGE D. Ipsakis, C. Elmasidis, F. Stergiopoulos, S. Vouretakis and P. Seferlis	433
ADDRESSING UNCERTAINTIES IN THE DESIGN AND OPERATION OF RESIDENTIAL DISTRIBUTED ENERGY RESOURCES: CASE STUDY OF A MICRO-CHP SYSTEM M. Houwing, A. Ajah, P. Herder and I. Bouwmans	439
TECHNO-ECONOMIC ASPECTS OF A WOOD-TO-ETHANOL PROCESS:ENERGY DEMAND AND POSSIBILITIES FOR INTEGRATION P. Sassner, M. Galbe and G. Zacchi	447
EFFECT OF EXPERIMENTAL CONDITIONS ON PYROLYSIS OF PLASTICS MIXED WITH FORESTRY BIOMASS F. Paradela, F. Pinto, I. Gulyurtlu, I. Cabrita, N. Lapa and J. F. Santos Oliveira	453
CONCEPTUAL DESIGN OF A HYTHANE-BASED INFRASTRUCTURE SYSTEM FOR COMBINED POWER AND DISTRICT HEAT PRODUCTION A. Ajah, A. Mesbah, J. Grievink , A.C. Patil, P. Herder and R.M. Stikkelman	459
NOVEL TO THE OF THE OWN OF SECURITION AND ADDRESS OF THE OWN OF THE OWN	465
NOVEL TYPE OF TECHNOLOGY FOR BIOMASS UTILIZATION L. Urban, V. Masa, M. Pavlas and P. Stehlik	
L. Urban, V. Masa, M. Pavlas and P. Stehlik	471
L. Urban, V. Masa, M. Pavlas and P. Stehlik Industrial application & optimal design A NOVEL APPROACH TO AUTOMATED MECHANISM RECOGNITION BASED ON MODEL DISCRIMINATION	-7-
Industrial application & optimal design A NOVEL APPROACH TO AUTOMATED MECHANISM RECOGNITION BASED ON MODEL DISCRIMINATION J. Schoeneberger, H. Arellano-Garcia and G. Wozny MODELING, DESIGN AND OPTIMIZATION OF INDUSTRIAL PHOSPHORIC ACID PRODUCTION PROCESSES	-7-
Industrial application & optimal design A NOVEL APPROACH TO AUTOMATED MECHANISM RECOGNITION BASED ON MODEL DISCRIMINATION J. Schoeneberger, H. Arellano-Garcia and G. Wozny MODELING, DESIGN AND OPTIMIZATION OF INDUSTRIAL PHOSPHORIC ACID PRODUCTION PROCESSES A. Papadopoulos, K. Theodosiadis and P. Seferlis HYDROGEN PURIFICATION BY PRESSURE SWING ADSORPTION	477
Industrial application & optimal design A NOVEL APPROACH TO AUTOMATED MECHANISM RECOGNITION BASED ON MODEL DISCRIMINATION J. Schoeneberger, H. Arellano-Garcia and G. Wozny MODELING, DESIGN AND OPTIMIZATION OF INDUSTRIAL PHOSPHORIC ACID PRODUCTION PROCESSES A. Papadopoulos, K. Theodosiadis and P. Seferlis HYDROGEN PURIFICATION BY PRESSURE SWING ADSORPTION D. Nikolic, A. Giovanoglou, M. Georgiadis and E. Kikkinides MINIMISATION OF FRESHWATER CONSUMPTION IN BREWERY	477

Industrial & experimental studies

FOULING INVESTIGATION OF BRAZED PLATE HEAT EXCHANGERS D. Kukulka, E. Czechowski, R. Kolodziej and P. Kukulka	507
CONTRIBUTION TO THE QUANTITATIVE RISK ASSESSMENT OF CHEMICAL PROCESSES V. Václavek, A. Novotna and M. Hartmanová	513
PROCESS INTENSIVATION WITH INTEGRATED SEPARATION PRINCIPLES H.J. Bart, P. Dimitrova, A. Kostova and M. Schmidt	519
WASTE STREAMS IDENTIFICATION FOR WATER NETWORK D.K.S. Ng, D.C.Y. Foo and R.R. Tan	525
GAS ABSORPTION ENHANCEMENT BY A SURFACE ACTIVE SUBSTANCE D. Gomez-Diaz, J.M. Navaza and B. Sanjurjo	531
EVALUATION OF SURFACE ROUGHNESS ON THE FOULING OF SURFACES P. Kukulka, D. Kukulka and M. Devgun	537
SPATIAL MOMENT ANALYSIS: AN APPLICATION TO QUANTITATIVE IMAGING OF SOLUTE DISTRIBUTIONS IN POROUS MEDIA O. Paladino, M. Massabo, F. Catania and G. Bracco	543
UP TO DATE EXPERIMENTAL FACILITY FOR TESTING LOW-NOX BURNERS V. Kermes, P. Skryja and P. Stehlik	549
e-learning and e-teaching	
THE USE OF E-ASSESSMENT IN CHEMICAL ENGINEERING EDUCATION S. Perry, I. Bulatov and E. Roberts	555
E-LEARNING SUPPORT FOR BOLOGNA BASED CURRICULA FOR CHEMICAL ENGINEERING EDUCATION A.M. Josceanu, R. Isopescu, P. Postelnicescu, R. Onofrei and V. Plesu	561
AN ON-LINE PRE-INDUCTION PACK FOR ENGINEERS (PIPE) IN CHEMICAL ENGINEERING E. Ventura-Medina, M. Bannerman, D. Rossiter and S. Perry	567
EXPERIENCE WITH APPLICATION OF PROFESSIONAL SOFTWARE FOR TEACHING PROCESS DESIGN V. Václavek, A. Novotna and K. Sobeslavová	573
SELF LEARNING AND "TRANSDISCIPLINARITY" IN INDUSTRIAL PROCESSES STUDIES OR INDUSTRIAL SURVEILLANCE AT EMAC.TO LEARN COMPLEXITY, TO UNDERSTAND AND ACT IN COMPLEX SYSTEMS C. Sablayrolles, M. Falempe and P. Arlabosse	579

Energy Efficiency in Buildings and PEPNet (WS)

MICRO-CHP: OVERVIEW OF SELECTED TECHNOLOGIES, PRODUCTS AND FIELD TEST RESULTS V. Kuhn, J. Klemes and I. Bulatov	587
INTEGRATING RENEWABLE ENERGY SOURCES INTO ENERGY SYSTEMS FOR THE REDUCTION OF CARBON FOOTPRINTS OF BUILDINGS AND BUILDING COMPLEXES S. Perry, J. Klemes and I. Bulatov	593
IEA HPP ANNEX 28 - STANDARD TESTING AND PERFORMANCE CALCULATION FOR INTEGRATED HEAT PUMP SYSTEMS C. Wemhoener and T.H. Afjei	599
INHOUSE4000 - EXPERIENCE WITH A PEM FUEL CELL SYSTEM FOR STATIONARY APPLICATIONS IN BUILDINGS K. Grosser, J. Arnold, H. Krause, F. Beckmann, C. Hildebrandt and J Nitzsche	605
MULTI-PERIOD OPTIMISATION OF DUAL-MODE HEAT PUMP SYSTEMS	611
W. Zhang, J.K. Kim and J. Klemes	
CUSTOMIZED ABSORPTION HEAT PUMPS FOR UTILIZATION OF LOW-GRADE HEAT SOURCES C. Keil, S. Plura, M. Radspieler and C. Schweigler	617
EFFICIENT HEATING VENTILATION AND AIR CONDITIONING IN BUILDINGS W. Grattieri, G.L. Lapini and R. Vanzan	623
SMALL-SCALE POLYGENERATION MARKET UPTAKE: THE SLOVENIAN CASE E. Kranjcevic and S. Merse	629
Waste minimisation, processing and management	
WASTE AND BIOMASS UTILISATION FOCUSED ON ENVIRONMENT PROTECTION AND ENERGY GENERATION	635
P. Stehlik	
GASIFICATION OF A PLASTIC WASTE IN A PILOT FLUIDIZED BED REACTOR U. Arena, L. Zaccariello and M.L. Mastellone	641
CONCEPTUAL APPLICATION OF BIOLOGICAL REMOVAL OF TOXIC METALS: IN SITU CR(VI) REDUCTION K. Meli, E. Bamuza-Pemu, P. Molokwane and E.M.N. Chirwa	647

INVESTIGATING PERFORMANCE & RELIABILITY OF STOCHASTIC METHODS FOR OPTIMIZATION OF LOW TEMPERATURE GAS SEPARATION PROCESSES N. Tahouni, R. Smith and M.H. Panjeshahi	653					
WATER AND WASTEWATER NETWORK RETROFIT THROUGH REGENERATION BY CRITICAL COMPONENT ANALYSIS V. Lavric, P. Iancu and A.E. Plesu						
tHE USE OF RAINWATER AS PROCESS WATER IN A FACTORY : SOFTWARE AIDED EVALUATION METHODOLOGY AND CASE STUDIES W. Schiettecatte, J. Helsen and E. Brauns	665					
BIOREMEDIATION OF ORGANIC POLLUTANTS IN A RADIOACTIVE WASTEWATER: EVALUATION OF FEASIBILITY OF TREATMENT B.O. Oboirien and E.M.N. Chirwa						
A NEW HEURISTIC PROCEDURE FOR THE OPTIMAL DESIGN OF WASTEWATER TREATMENT SYSTEMS J. Teles, P. Castro and A. Novais	679					
TECHNO-ECONOMIC ASSESSMENT OF REGIONAL BIOMASS USE J. Geldermann	685					
NEWLY DEVELOPED FACILITIES FOR OFF-GAS CLEANING L. Bebar, D. Jecha, M. Dudekova, R. Dvorak and P. Stehlik	691					
REDUCTION OF PERSISTENT POLLUTANTS EMISSIONS L. Bebar, T. Parizek and P. Stehlik	697					
Early Market Introduction of New Energy Technologies in liaison with science and industry (WS)						
PROMOTION AND ASSESSMENT OF EARLY STAGE TECHNOLOGIES BY THE EMINENT INITIATIVE SUPERCRITICAL WATER GASIFICATION TECHNOLOGY AS AN EXAMPLE J. Zeevalkink, J. Koppejan and W. Hesseling	703					
THE POTENTIAL OF THE EMINENT TOOL IN THE SCREENING AND EVALUATION OF EMERGING TECHNOLOGIES FOR CO2 REDUCTION RELATED TO BUILDINGS S. Perry, I. Bulatov and J. Klemes	709					
ENERGY PRODUCTION FROM HYDROGEN CO-GENERATED IN CHLORALKALI PLANTS BY THE MEANS OF PEM FUEL CELLS SYSTEMS R.L. Santorelli, A. Schervan and A. Delfrate	715					
INNOVATIVE SLAGGING GASIFICATION USING THE BRITISH GAS LURGI (BGL) GASIFIER - A CO-GASIFICATION CASE STUDY FOR WESTERN MACEDONIA E. Karlopoulos, N. Koukouzas and A. Katsiadakis	721					

OPPORTU	JNITIES	FOR	PROCESS	INTEGRATED	EVAPORATION	IN A	731
EUCALYP	TUS PU	LP MII	LL AND CO	MPARISON WI	TH A SOFTWOOD	MILL	
STUDY							
T 4 1	O T 1		1.6 01	1 T D .			

E. Axelsson, C. Laaksometsa, M. Olsson and T. Berntsson

ASSESSMENT OF A FULLY INTEGRATED SARGAS PROCESS OPERATING 737 ON COAL WITH NEAR ZERO EMISSIONS

J. Hetland and T. Christensen

CRITICAL ANALYSIS OF FUEL CELL COMBINED CYCLES FOR 743 DEVELOPMENT OF LOW-CARBON ENERGYTECHNOLOGIES

P. Varbanov, J. Klemes and F. Friedler