

APCOM 2019: Mining Goes Digital

Monday, 3 June 2019 - Thursday, 6 June 2019

Politechnika Wroclawska
Programme

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Monday 03 June 2019

Welcoming Reception and Evening Check in: Meet and Greet with drinks and light food at the Welcoming Reception (included in registration fee) - ----- - Conference Lobby (17:00-20:00)

Casual welcoming reception and evening check in at the IBIS Styles Hotel

Tuesday 04 June 2019

Plenary: Opening Plenary - D20-10-ABCD - Plenary Hall (09:00-10:30)

Plenary sessions

time	[id] title	presenter
09:00	[139] Welcome and opening	Mr MUELLER, Christoph (MT-Silesia)
09:30	[116] State-of-the-Art Mining Mechatronic Systems developed at KOMAG Institute of Mining Technology	Dr MALEC, Małgorzata (Institute of Mining Technology KOMAG)
10:00	[127] Rethinking Fleet & Personnel Management in the era of IoT, Big Data, Gamification, and low-cost Tablet Technology	Dr DESSUREAULT, Sean (MST Global)

Coffee Break - D20-Lobby-1 - Conference Lobby (10:30-11:00)

Mine Planning in Digital Transformation: S02 - Geomechanic Risk in Mine Planning - D20-10-D - 10D (11:00-13:00)

The session covers Data Analysis, Modelling, optimization and simulation topics in Mine Planning

time	[id] title	presenter
11:00	[52] Economic Optimization of Rib Pillar Placement In Underground Mines	Mr BARBOSA ANDRADE, Alexandre (AngloGold Ashanti)
11:30	[77] A Data-Science Model for the Estimation of Vulnerability to Collapse Damage in Production Level Support Pillars at El Teniente Mine	Mr QUEVEDO CARO, Ricardo (USACH) Mr QUEZADA CASTAÑEDA, René
12:00	[49] Incorporation of geological risk into underground mine planning	Mr ROSADO, RAFAEL (NEXA RESOURCES)
12:30	[43] Parametric Analysis to establish the optimal depth of an open-pit gold mine for three different ore body geometries.	Dr MOTTA, Régis (Geology department - UFRJ)

Resource Estimation and Geostatistics: S03 - New Technologies in Geostatistics - D20-10-AC - 10AC (11:00-13:00)

The session covers topics of Big Data, Algorithmics, Machine Learning, Neural Networks and other IT trends in Resource Estimation and Geostatistics

time	[id] title	presenter
11:00	[81] Evolving estimation techniques for an evolving world class stratiform copper deposit at Kamo-a-Kakula, Democratic Republic of the Congo	Mr GILCHRIST, George (Ivanhoe Mines)
11:30	[46] Recursive Convolutional Neural Networks in a Multiple-Point Statistics framework	Mr AVALOS, Sebastian (PhD Student, The Robert M. Buchan Department of Mining, Queen's University)
12:00	[17] Application of machine learning classification to geochemical and geophysical data	Dr SILVERSIDES, Katherine (The University of Sydney, Australian Centre for Field Robotics)

12:30	[87] Critical Review of Mineral Resource Classification Techniques in the Gold Mining Industry	Prof. DAGDELEN, Kadri (Colorado School of Mines)
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General Aspects of Digital Transformation: S04 - Trends in Digitalization and Education - D20-10-B - 10B

(11:00-13:00)

This session deals with general aspects of Digital Transformation in Mining like Education, Trends and Economic aspects

time	[id] title	presenter
11:00	[28] Digital technology trends and their implementation level in the mining industry	BARNEWOLD, Lars (RWTH Aachen University)
11:30	[74] Investing in engineering, research and education in Africa to derive a roadmap for ensuring local digital mining success.	Dr ASSIBEY-BONSU, Winfred (Group Geostatistician and Evaluator, Gold Fields Corporate Technical Services, Perth, W. Australia)
12:00	[40] Mining Engineering Education In A Digitalised Learning Environment: The Virtual-Reality-Mine Concept	Mr SUPPES, Rudolf (Institute of Mineral Resources Engineering (MRE), RWTH Aachen University)
12:30	[10] Development of Optimized Procurement Processes in Construction Management Supported by BIM (Building Information Modeling)	Mr BOEDE, Klaus (HOCHTIEF Polska)

Lunch - D20-Lobby-1 - Conference Lobby (13:00-14:00)

Resource Estimation and Geostatistics: S06 - Drilling Data in Resource Classification - D20-10-AC - 10AC

(14:00-15:30)

The session covers topics of Big Data, Algorithmics, Machine Learning, Neural Networks and other IT trends in Resource Estimation and Geostatistics

time	[id] title	presenter
14:00	[16] Multivariate Gaussian Process for distinguishing geological units using measure while drilling data	Dr SILVERSIDES, Katherine (The University of Sydney, Australian Centre for Field Robotics)
14:30	[30] Optimal Drill Spacing For Resource Classification - Practical Suggestions from historical Literature	Mr NOWAK, Marek (SRK Consulting (Canada) Inc)
15:00	[6] An Approach for Drilling Pattern Simulation	Mr USERO, Gustavo (Geovariances)

Mine Planning in Digital Transformation: S05 - Mine Planning - D20-10-D - 10D (14:00-15:30)

The session covers Data Analysis, Modelling, optimization and simulation topics in Mine Planning

time	[id] title	presenter
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14:00	[41] Multi Stage Dumping Sequence – A New Approach for Waste Disposal	Mr KUCKARTZ, Bruno (UFRGS)
14:30	[44] A procedure to generate optimized ramp designs using mathematical programming	Dr MORALES, Nelson (Delphos Mine Planning Lab, AMTC / DIMIN, Universidad de Chile)
15:00	[54] Understanding Plan's Priorities: Short Term Scheduling Optimization	Mr BARBOSA ANDRADE, Alexandre (AngloGold Ashanti)

Scheduling and Dispatch: S07 - Optimization of Dispatch and Scheduling - D20-10-B - 10B (14:00-15:30)

The session covers new methods in long- and short term scheduling and dispatch like genetic algorithm applications, new optimization methods as well as modelling and simulation

time	[id] title	presenter
14:00	[23] Improvements in plan-driven truck dispatching systems for surface mining operations	Dr SAMAVATI, Mehran (University of Sydney)
14:30	[38] A two-stage solution approach for a shift scheduling problem with simultaneous assignment of machines and workers	Mr SEIFI, Cinna (Clausthal University of Technology)
15:00	[61] Framework of operational indices optimization in constrained-production scheduling problems at open pit mining operations	Mr MOGHADAM, Mohammad Reza (1 Department of Mining Engineering, South Tehran Branch, Islamic Azad University, Tehran, Iran)

Coffee Break - D20-Lobby-1 - Conference Lobby (15:30-16:00)

Mine Safety in Digital Transformation: S10 - New Systems in Coal Mine Safety - D20-10-B - 10B (16:00-17:30)

Topics of this session are new IT related technology in mine safety like proximity and collision warning systems, gas detection in coal mines, dust dispersion modelling as well as IoT and Robotics in Mine Safety

time	[id] title	presenter
16:00	[63] Proximity Detection of Explosive Methane Clouds in Longwall Mines	Prof. BRUNE, Jürgen F. (Colorado School of Mines)
16:30	[123] A sensitive carbon monoxide monitoring system for forecasting coal spontaneous combustion	Dr WANG, Zhaowei (Laser Institute, Qilu University of Technology (Shandong Academy of Sciences))
17:00	[124] Application of laser methane sensor in on-line monitoring of gas pipeline	Mr MENG, Hui (Shandong Micro-Sensor Photonics Ltd)

Internet of Things and Robotics: S08 - UAV Applications in Mining - D20-10-D - 10D (16:00-17:30)

The session covers applications of unmanned aerial vehicles (UAV) in open pit mines, mechatronic systems as well as (walking) robot applications

time	[id] title	presenter
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16:00	[83] Application of UAV imaging and photogrammetry for high-resolution modeling of open pit geometry and slope stability monitoring	Prof. SATTARVAND, Javad (Department of Mining and Metallurgical Engineering, University of Nevada, Reno)
16:30	[47] Lithological Hyperspectral Characterisation for UAV Sensor Selection	Mr BERETTA, Filipe (UFRGS)
17:00	[84] Enhancement of Explosive Energy Distribution in Open Pit Blasting Operations Using UAVs and Machine Learning	Prof. SATTARVAND, Javad (Department of Mining and Metallurgical Engineering, University of Nevada, Reno)

Resource Estimation and Geostatistics: S09 - Resource Modeling and Simulation - D20-10-AC - 10AC (16:00-17:30)

The session covers topics of Big Data, Algorithmics, Machine Learning, Neural Networks and other IT trends in Resource Estimation and Geostatistics

time	[id] title	presenter
16:00	[11] Multivariate geostatistical simulation of compositional data using Principal Component Analysis – Application to a Nickel laterite deposit	Mrs BOLGKORANOU, Maria (Queen's University at Kingston, Canada)
16:30	[27] Covariance table and PPMT: a fast automatic spatial continuity mapping to multiple correlated variables	Mr KLOECKNER, Jonas (Universidade Federal do Rio Grande do Sul)
17:00	[34] Application of Multivariate Localized Uniform Conditioning and Conditional Simulation for a high complex Stockwork Niobium Deposit in Brazil	Mr USERO, Gustavo (Geovariances)

Social Events: Conference Dinner (separate Ticket!) - ----- - Conference Lobby (20:00-23:00)

Conference Dinner (extra ticket needed!) at the IBIS Styles Hotel with legendary Polish food, drinks and world known music by European artists touring the world with a well known tribute show

Wednesday 05 June 2019

Plenary: S11 - From Geostats to Human Machine Interaction - D20-10-ABCD - Plenary Hall (09:00-10:30)

Plenary sessions

time	[id] title	presenter
09:00	[8] Application of Locally Varying Anisotropy (LVA) Kriging at the Grasberg Porphyry Cu-Au-Ag Deposit, Papua, Indonesia	Mr ISSEL, Andrzej (Freeport McMoRan Inc)
09:30	[76] Performance assessment of antithetic random fields in a stochastic mine planning model	Mr NELIS, Gonzalo (University of Chile)
10:00	[118] Interaction of man and machine in highly automated equipment: Lessons learned from aviation	HOVGAARD, Finn (Sr. Airline Captain (SAS))

Coffee Break - D20-Lobby-1 - Conference Lobby (10:30-11:00)

General Aspects of Digital Transformation: S12 - Optimized Economy of Mining Operations - D20-10-D - 10D (11:00-13:00)

This session deals with general aspects of Digital Transformation in Mining like Education, Trends and Economic aspects

time	[id] title	presenter
11:00	[114] The application of correlation models for the analysis of market risk factors of KGHM capital group	Prof. WYŁOMAŃSKA, Agnieszka (Wrocław University of Science and Technology)
11:30	[7] The so called „Green Paradoxon“	Dr BENDIEK, Ansgar (HOCHTIEF PPP Solutions GmbH)
12:00	[129] Improvement of investment processes in mining company by implementation of Project Management System	Mr WACH, Maciej (Department of Investments, KGHM Polska Miedź S.A.)
12:30	[143] Human factors obstacles in the implementation of new technologies and automation in the mining industry: Chilean perspective.	Dr WIDZYK - CAPEHART, Eleonora (University of Chile, AMTC)

Mine Operation and Equipment: S14 - Mine Equipment in Digital Transformation - D20-10-AC - 10AC (11:00-13:00)

The session covers papers on new methods and techniques related to optimization of mining operations, communications and Big Data analysis of equipment data as well as Big Data and algorithmic aspects of product quality analysis

time	[id] title	presenter
11:00	[89] Monitoring of a stoping operation, digital transformation in practice	Mr KVIST, Olav (Epiroc)
11:30	[119] An Integrated Model for Opportunistic Maintenance	Dr GOLBASI, Onur (Middle East Technical University)

12:00	[117] Evaluation of trackless mobile machine collision management systems	Dr HAMERSMA, Herman A. (Department of Mechanical and Aeronautical Engineering, University of Pretoria, South Africa)
12:30	[120] Performance analysis of mine equipment operators and simulation of future scenario with autonomous trucks	Mr FELSCH JR., Walter (CSN mineração; Universidade Federal de Ouro Preto)

Mine Planning in Digital Transformation: S13 -Uncertainty in Mine Planning and Scheduling - D20-10-B - 10B
(11:00-13:00)

The session covers Data Analysis, Modelling, optimization and simulation topics in Mine Planning

time	[id] title	presenter
11:00	[105] Performance Evaluation of CSM Direct Block Scheduling Method for Open Pit Mines	Dr DAGDELEN, Kadri (Colorado School of Mines)
11:30	[79] An alternative to cut-off grade accounting for processing capacity using spatial clustering	Prof. KUMRAL, Mustafa (McGill University)
12:00	[78] Incorporating grade uncertainty into sublevel stope sequencing	Ms SARI, Yuksel Asli (McGill University)
12:30	[131] Underground Mine Planning Optimization Process to Improve Values and Reduce Risks	Dr WANG, Hongliang (Newmont Mining)

Lunch - D20-Lobby-1 - Conference Lobby (13:00-14:00)

Mine Safety in Digital Transformation: S16 - New Technology for Underground Safety - D20-10-B - 10B (14:00-15:30)

Topics of this session are new IT related technology in mine safety like proximity and collision warning systems, gas detection in coal mines, dust dispersion modelling as well as IoT and Robotics in Mine Safety

time	[id] title	presenter
14:00	[20] More Safety in Underground Mining with IoT and Autonomous Robots	Mrs GÜNTHER, Franziska (TU Bergakademie Freiberg, Institute of Mining and Special Civil Engineering)
14:30	[19] Development of Blast-Induced Ground Vibration Wireless Monitoring System	Mr RAGAM, Prashanth (Ph.D. Scholar)
15:00	[125] Fibre Optic Sensors For Coal Mine Combustion Detection	Dr LIU, Tongyu (Laser Institute, Qilu Technology University (Shandong Academy of Science), Shandong Micro-Sensor Photonics Ltd)

Resource Estimation and Geostatistics: S15 - Ore grade estimation - D20-10-AC - 10AC (14:00-15:30)

The session covers topics of Big Data, Algorithmics, Machine Learning, Neural Networks and other IT trends in Resource Estimation and Geostatistics

time	[id] title	presenter
14:00	[37] Multi-located cokriging: an Application to Grade Estimation in Mining Industry	Dr MADANI, Nasser (Department of Mining Engineering, School of Mining and Geosciences, Nazarbayev University, Astana, Kazakhstan)
14:30	[35] Open Pit and Underground Mining Transitions Planning: A MILP Framework for Optimal Resource Extraction Evaluation	Mr AFUM, Bright Oppong (Laurentian University)
15:00	[53] Grade estimation in a tabular deposit using unstructured grids	Dr ARCARI BASSANI, Marcel Antonio (Federal University of Rio Grande do Sul)

Scheduling and Dispatch: S17 - Scheduling I - D20-10-D - 10D (14:00-15:30)

The session covers new methods in long- and short term scheduling and dispatch like genetic algorithm applications, new optimization methods as well as modelling and simulation

time	[id] title	presenter
14:00	[58] An Intelligent Simulation and Optimization Framework for Evaluating the Surface Mining Operations	Prof. ASKARI-NASAB, Hooman (University of Alberta)
14:30	[64] Mine Schedule Optimization and Mine Operational Realities: Bridging the Gap	Dr BRICKEY, Andrea (South Dakota School of Mines & Technology)
15:00	[24] A Genetic Algorithm Based Approach for Simultaneous Short-Term Production Scheduling of Multiple Mines	Mr PATHAK, Pranjal (Indian Institute of Technology Kharagpur)

Coffee Break - D20-Lobby-1 - Conference Lobby (15:30-16:00)

Resource Estimation and Geostatistics: S19 - MWD Data Analysis and Drill Spacing - D20-10-AC - 10AC (16:00-17:30)

The session covers topics of Big Data, Algorithmics, Machine Learning, Neural Networks and other IT trends in Resource Estimation and Geostatistics

time	[id] title	presenter
16:00	[98] Rock mass characterization using MWD data and photogrammetry	Mr MANZOOR, Sohail (Luleå University of Technology, Sweden)
16:30	[55] Influence of drilling spacing on the mineral resources uncertainty: Brazilian Amazon bauxite case.	EVANGELISTA SILVA, Carlos José (Jose Evangelista)
17:00	[99] Ore Grade Prediction Using Informative Features of MWD Data	Mrs LIAGHAT, Samaneh (Luleå University of Technology)

Mine Operation and Equipment: S18 - LHD Operation in Digital Transformation - D20-10-B - 10B (16:00-17:30)

The session covers papers on new methods and techniques related to optimization of mining operations, communications and Big Data analysis of equipment data as well as Big Data and algorithmic aspects of product quality analysis

time	[id] title	presenter
16:00	[110] Comprehensive, experimental verification of the effects of the lock-up function implementation in LHD trucks in the deep underground mine	Mr KANIEWSKI, Tomasz (KGHM PM SA)
16:20	[111] Analysis of dynamic external loads to LHD machine subsystems during operation in the deep underground mine	Mrs HEBDA-SOBKOWICZ, Justyna (Faculty of Geoengineering Mining and Geology, Wrocław University of Science and Technology)
16:40	[112] Selection of variables acquired by the on-board monitoring system to determine operational cycles for LHD haulage vehicle.	Mr SLIWINSKI, Pawel (KGHM PM S.A.)
17:00	[107] From machine construction to mechatronic system design: Digital Transformation is changing the way of thinking!	KOCHANIK, Szymon (MT-Silesia Sp. z o.o.)

Scheduling and Dispatch: S20 - Scheduling 2 - D20-10-D - 10D (16:00-17:30)

The session covers new methods in long- and short term scheduling and dispatch like genetic algorithm applications, new optimization methods as well as modelling and simulation

time	[id] title	presenter
16:00	[82] Mathematical modeling of crew scheduling and rostering for train transportation of products and supplies in the mining industry	Dr AMAYA, Jorge (Universidad de Chile)
16:30	[136] Short-term open-pit mine production scheduling with hierarchical objectives	Mr MANRÍQUEZ, León (Universidad de Chile)
17:00	[26] The simulation of the excavation sites of coal mines	Prof. KUBRIN, Sergey (Institute of Comprehensive Exploitation of Mineral Resources Russian Academy of Sciences)

Casual Conference Barbecue: Barbecue with live music (included in registration fee) - ----- - Wrocław Zoo (19:30-23:30)

Casual Barbecue with an live music at the Letnia Restaurant in the Wrocław Zoo. Free access for all regular conference attendees (included in registration fee).

Thursday 06 June 2019

Plenary: Day 3 - D20-10-ABCD - Plenary Hall (09:00-10:30)

Plenary sessions

time	[id] title	presenter
09:00	[108] Rethinking mining transport: Trackless trains for mass transport in mining	BIRO, George (MobileTronics GmbH)
09:30	[59] Coupled CFD-DEM modelling of mine dust dispersion in underground development roadway	Mr TAN, LIHAI (University of Wollongong)
10:00	[101] Recoverable resource estimation mixing different quality of data	MARIZ, Christianne (Geovariances)

Coffee Break - D20-Lobby-1 - Conference Lobby (10:30-11:00)

Resource Estimation and Geostatistics: S22 - Resource Estimation - D20-10-AC - 10AC (11:00-13:00)

The session covers topics of Big Data, Algorithmics, Machine Learning, Neural Networks and other IT trends in Resource Estimation and Geostatistics

time	[id] title	presenter
11:00	[103] Decluster Weights as a Measure of Average Sample Spacing Applications in Mineral Resource Classification	Dr BRYAN, Rex (Geostat Systems LLC)
11:30	[88] Transforming Exploration Data Through Machine Learning	Mr GABBITUS, Mark
12:00	[32] Use of completely heterotopic soft data into geostatistical simulation without modelling the Linear Model of coregionalization (LMC)	Mrs ARAUJO, Cristina (Federal University of Rio Grande do Sul)
12:30	[12] Application of ASTER Multispectral Data and Hyperspectral Spectroscopy for Phosphate Exploration: a Case Study of Sedimentary Phosphate in Tunisia	Dr MEZNED, Nouha (Faculty of Sciences of Tunis)

Mine Operation and Equipment: S23 - Optimization of operations and products - D20-10-B - 10B (11:00-13:00)

The session covers papers on new methods and techniques related to optimization of mining operations, communications and Big Data analysis of equipment data as well as Big Data and algorithmic aspects of product quality analysis

time	[id] title	presenter
11:00	[144] Optimization of material logistics by using leading edge electronic Information and Communication Technologies (ICT) in underground coalmine	Dr STOETTNER, Max Thomas (RAG Anthrazit Ibbenbueren GmbH)
11:30	[13] Development of a Machine Vision System Based on Deep Learning Algorithm for Automated Quality Monitoring of Iron Ores	Dr GORAI, Amit Kumar (National Institute of Technology, Rourkela)
12:00	[15] Comparison between regression models and neural networks applied to forecast geometallurgical variables	Mrs GONTIJO FERNANDES NIQUINI, Fernanda (UFRGS)

12:30	[132] Development assumptions of a data and service management centre at KGHM S.A.	Mr PYDA, Paweł (KGHM Polska Miedź S.A. o/COPI, Lubin, Poland)
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Enabling Technologies and Synergies from other Industries: S24 - New Equipment Technology - D20-10-D - 10D

(11:00-13:00)

Papers related to new technology in mining transport, machine design in digital transformation, the interaction of Humans and Machines in automated equipment and synergies from the commercial construction industry

time	[id] title	presenter
11:00	[121] Designing Top Layer in Internet of Things for Underground Mines	Dr FENG, Shimin (China University of Mining and Technology)
11:30	[106] Version control system applied to resource modeling projects	Dr SILVA, Camilla (Universidade Federal do Rio Grande do Sul)
12:00	[18] Development of a low-cost proximity warning system for mine equipment using smartphone and Bluetooth beacons	Ms BAEK, Jieun (Pukyong National University)
12:30	[96] The concept of walking robot for mining industry	Mr MURASZKOWSKI, Artur (Faculty of Mechanical Engineering, Wrocław University of Science and Technology)

Lunch - D20-Lobby-1 - Conference Lobby (13:00-14:00)

Enabling Technologies and Synergies from other Industries: S27 - Technology for Coal Mining - D20-10-B - 10B

(14:00-15:30)

Papers related to new technology in mining transport, machine design in digital transformation, the interaction of Humans and Machines in automated equipment and synergies from the commercial construction industry

time	[id] title	presenter
14:00	[48] The Digital Mine eco-system	Mr FOURIE, Willem (Komatsu Mining Corporation)
14:30	[42] Development of an Operational Data based Framework for the Measurement of Longwall Shearer Performance	Mr YILMAZ, Enver (MSc)
15:00	[104] Applications of DEM-FEM coupling simulations to determine loads on belt conveyor idlers	Mr DOROSZUK, Błażej (Wrocław University of Science and Technology)

Mine Operation and Equipment: S26 - Optimization of operations - D20-10-AC - 10AC (14:00-15:30)

The session covers papers on new methods and techniques related to optimization of mining operations, communications and Big Data analysis of equipment data as well as Big Data and algorithmic aspects of product quality analysis

time	[id] title	presenter
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14:00	[138] Mineberry – Remote Monitoring of Abandoned Shaft Openings	Prof. VOM BERG, Bernd (THGA Technical University Georg Agricola)
14:30	[126] Artificial Intelligence Using Real Time Data	Mr DUBOIS, Michel (Newtrax)
15:00	[130] LTE, 4G and 5G - Broadband Mobile Communication in Mining Applications	Mr SANTOS, Wesley (Epiroc Rock Drills AB)

Mine Planning in Digital Transformation: S25 - Modelling in Mine Planning and Operation - D20-10-D - 10D
(14:00-15:30)

The session covers Data Analysis, Modelling, optimization and simulation topics in Mine Planning

time	[id] title	presenter
14:00	[45] Breakline and breakdown surfaces modeling in the design of large-scale blasts	Mr NAGOVITSYN, Oleg (Mining Institute of the Kola Science Centre of the Russian Academy of Sciences)
14:30	[122] Modelling and forecasting geometallurgical recovery at a phosphate mine	Mrs BUARQUE ANDRADE, Laura (Federal University of Ouro Preto)
15:00	[135] Application of a digital model of deposit in Polish hard coal mines on the example of Polish Mining Group Ltd.	Mrs SOKOŁA-SZEWIOŁA, Violetta (Silesian University of Technology)

Coffee Break - D20-Lobby-1 - Conference Lobby (15:30-16:00)

APCOM Conference Summary and Closing - D20-10-ABCD - Plenary Hall (16:00-17:30)

Summarizing and Closing session of the conference

time	[id] title	presenter
16:00	[140] Journalist summary of the APCOM 2019 and panel discussion	LEONIDA, Carly (Mining Media) MOORE, Paul (International Mining)
17:00	[141] Presentation of the APCOM 2021 host city	SURPRISE
17:15	[142] Closing of the conference	Dr MUELLER, Christoph (MT-Silesia)