

2023 Congreso Internacional de Innovacion y Tendencias en Ingenieria (CONIITI 2023)

Bogota, Colombia
4 – 6 October 2023



IEEE Catalog Number: CFP23M41-POD
ISBN: 979-8-3503-6947-2

**Copyright © 2023 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP23M41-POD
ISBN (Print-On-Demand):	979-8-3503-6947-2
ISBN (Online):	979-8-3503-6946-5
ISSN:	2768-0630

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

Spatio-Temporal Analysis of the TMI in the Major Cities of Colombia	1
<i>Carlos E. Cepeda-Támaro, David A. Gutierrez-Molano, Carlos J. Slebi-Acevedo</i>	
Knowledge Transfer in Regional Innovation Systems: A Perspective of Measurement.....	7
<i>Jesús David Valencia Salazar; Fredy Becerra Rodríguez</i>	
Seismic Vulnerability of State Educational Infrastructures in Cercado De Lima, Using the FEMA 154 Methodology	16
<i>Valerie Calixto, Carlos Cruz, Guillermo Huaco</i>	
Nonlinear Seismic Behavior of a Masonry Hospital Over 80 Years Old Reinforced with Electro Welded Mesh.....	23
<i>Yuri Huarina Balvin, Romina Tamara Saire Canales, Guillermo Huaco Cardenas</i>	
A Review of the Implementation of Lean Construction Tools During the Covid-19 Pandemic.....	30
<i>Godofredo Barrantes Fernandez, Isaac M. Ccoyllar-Escobar, Anabela E. Huaccha-Uriol, Angelo N. Vilca-Fanola, Andrews A. Erazo-Rondinel</i>	
Wireless Sensor Networks Design Integrated with Emergent Technologies as Solution to Health Problems Due to Strong or Heavy Work.	35
<i>Carlos René Suárez, Luis Carlos Timaná</i>	
Application of a Computer Vision Algorithm for Robot Motion Planning and Obstacle Avoidance	41
<i>Julián Gabriel Martínez, Luis Carlos Timaná, Carlos René Suárez</i>	
Technological Platform for Educational Teaching and Learning in Engineering	47
<i>Daniel Ávila</i>	
Improvement Proposal to Increase the Availability of Machinery in a Food Company by Applying TPM, SMED and RCM Methodologies	53
<i>Sair Castañeda, Sharon Rodriguez, Orkun Yildiz, Duilio Aranda, José C. Alvarez</i>	
Application of Experiential Learning in the Faculty of Engineering: Case Study LCA Subject of the Catholic University of Colombia.....	58
<i>Maria Camila Amaya Marín, Nohra Milena López Sánchez</i>	
Effect of COVID-19 on the Cash Flow of Electrical Equipment Marketing Companies: The Case of Cuenca - Ecuador	64
<i>Jorge Luis García, Daniela Alarcón, Lady Bermeo</i>	
Design of an Assembly Concrete Brick that Facilitates the Laying of Bricks with the KUKA Robot in the Absence of an Automated System in the Construction of Masonry Walls.....	72
<i>Bustíos Calle Diego Víctor, Díaz Asencios Peter Andree, Rodriguez Dionisio Sandra, Lopez Pasapera Karla Lisette</i>	
Feasibility of Using Choosing by Advantages to Improve Multicriteria Decision Making in the Subcontracting of Precast Concrete Slabs in Multifamily Housing	78
<i>Oscar López De La Cruz, Gabriel San Bartolomé Rey, Jorge De La Torre Salazár</i>	
Design and Manufacture of Type I Lightweight Concrete Bricks, Composed of Recycled Aggregates from Concrete Demolition Waste, Banana Trunk Fiber and Rice Husk Ash.....	84
<i>Rodríguez Martínez, Luis Enrique, Tuñoque Silva, Alexander Alberto, Lopez Pasapera, Karla Lisette</i>	

Optimization of Cost Analysis in School Construction: Risk Management.....	90
<i>Wilder Andres, Erazo Palmer, Edgar Sebastian, Alvarez Sotelo, Katia Janice, Melendez Vargas</i>	
Influence of Geometric Configurations of Recycled Plastic Micropiles on the Safety Factor of Coastal Slopes: Case Study of the Slope Adjacent to the Manuel Bonilla-Peru Port Complex.....	95
<i>Sadit Acuña Velita, David Cuevas Contreras, Lydice Salome Estrada Polanco</i>	
Logistic Process Improvement of Applying SLP, 5S, and Slotting in the Main Warehouse of a Hydroelectric Power Plant.....	101
<i>Gilda Nicida Alvarez-Calleja, Rafael Chavez-Ugaz, Joaquín Diez-Canseco Rizo-Patron</i>	
Economic Improvement by Reducing the Execution Time in a Multifamily Project Applying Lean Construction and BIM 4D	107
<i>Kenji Ricardo Higa Yachachin, Noe Christian Tello Hurtado, Jose Alberto Apolinario Roca</i>	
Experimental Study on the Partial Replacement of Cement by Eggshell Powder and Its Possible Use in Construction	112
<i>Camila Capcha, Omar Casusol, Malena Serrano</i>	
Proposal for the Implementation of a Safety Plan Integrating the Deming Cycle to Minimize Scaffolding Accidents at Height in a Multifamily Building	118
<i>Anthony Edwards Arroyo Palomino, Kristhofer Raúl Maldonado Paima, Humberto Ramirez Castañeda</i>	
Modeling with a Regional Approach of Water Quality in Areas of Bajo Cauca: Project Influence of Mining and Hydropower Projects.....	124
<i>Wilfredo Marimón Bolívar, Nathalie Toussaint Jimenez, Juliana Alzate</i>	
Interface Value from Simulated Pile Load Test in Undrained Conditions	130
<i>Santiago Casallas, Camilo Herrera, Juan Carlos Ruge, Juan Gabriel Bastidas</i>	
Continuous Improvement Model Under the Lean Six Sigma and KPIs Approach to Reduce Unproductive Times in the Loading and Hauling Stage in Surface Mining	135
<i>Angelica Alexia Da Silva Vallejo, Francisco Jesús Grados Acosta, Carlos Raymundo Ibañez, Vidal Sixto Aramburú Rojas</i>	
Prediction Model by Probabilistic Methods for the Evaluation of Variables in Underground Mining Pumping Systems of Variables in Pumping Systems in Subway Mining	141
<i>Paul Peralta-Rodriguez, Jhonatan Peña-Cajaleón, Humberto Pehovaz-Alvarez, Carlos Raymundo-Ibañez</i>	
Lean Safety Model to Reduce Accidents in Conventional Subway Mining Haulage Activities	145
<i>Jorge Risco-Carbonel, Nikolas Rodriguez-Diaz, Humberto Pehovaz-Alvarez, Carlos Raymundo</i>	
Model of a Safety Management System Through Continuous Improvement (PDCA) for Artisanal Mining	149
<i>Luis Arteaga-Romani, Valeria Huallanca-Gavilan, Vidal Aramburu-Rojas, Carlos Raymundo</i>	
Performance of an Asphalt Concrete Mixture with Fine Aggregates from the Steel Industry.....	154
<i>Juan Gabriel Bastidas Martínez, Juan Carlos Ruge Cardenas, Camilo Hernandez-Carreño, Hector Godillo</i>	

Engineering Curricula Flexibilization Since International Collaborative with a Medical Program, Trough Software Development Process	159
<i>Juan S. Ramirez Infante, Brayan S. Cortés López, Jorge L. Perez Trujillo, Sergio-Ivan Galvis-Motoa</i>	
Application of Information and Communication Technologies (ICT) to Optimize the Request for Information (RFI) Process in Construction Projects.....	163
<i>Ivan Segundo Maza Sandoval, Jean Pierre Alex Oscco Bernardo, Sandra Rodriguez Dionisio, Alexandra Hinostroza Aquino</i>	
A Development of an Automated System for the Transportation and Cutting of Raw Glass Using a Suction Gripper and a Fletcher Cutter with a KUKA Robot	169
<i>Héctor Salazar, Gonzalo Yoshimoto, Leonardo Vinces, José Oliden</i>	
A Development of a Mechatronic System to Stimulate Cognitive Skills in Children.....	175
<i>Sofia Roncalla, Ten Salinas, Leonardo Vinces, Jose Oliden</i>	
Evaluation of the Influence of Recycled Polypropylene on the Rutting Resistance of Asphalt Layers	180
<i>Karol Alexia Puelles Toro, Estefany Dolly Reyna Aguilar, Manuel Silvera, Fernando Campos</i>	
Analysis of the Influence of the Use of the Right Lane of a Stretch of Road as a Multiple Stop on Vehicle Delays and Capacity of Adjacent Lanes	186
<i>César Soria, Jhon Calcina, Manuel Silvera, Fernando Campos</i>	
Evaluation of the Operational Performance of Unconventional Intersections with High Traffic Flow.....	192
<i>Steve Saavedra, Paola Comingez, Manuel Silvera, Fernando Campos</i>	
Evaluation of the Compressive and Flexural Strength of Permeable Concrete with Substitution of Fine Aggregate by Glass Fiber in Urban Roads of the Peruvian Highlands.....	198
<i>Erik Chavéz, Herber Cuba, Manuel Silvera, Fernando Campos</i>	
Assessment of the Mechanical and Durability Properties of Cementing Mortars Reinforced with Different Proportions of PET Fibers (PFRM)	204
<i>Jhon Cárdenas-Pulido, Camilo Higuera-Flórez, Luis Manuel Coral, Juan Pablo Gil</i>	
Analysis of Conflicts and Delays of Cyclists, Vehicles, and Pedestrians at a Busy Intersection in Lima Downtown, Peru.....	209
<i>Jose Silva, Vera Barua, Manuel Silvera, Fernando Campos</i>	
Performance Analysis of a Subgrade with Low Load Capacity Reinforced with Geogrid Using the Finite Element Method.....	215
<i>Damaris Flores, Julio Geldres, Manuel Silvera, Fernando Campos</i>	
A Training System for Taekwondo Players with Impact and Linear Displacement Data Collection	221
<i>Sebastián Vásquez, Jelson Turpo, Leonardo Vinces, Dante Vargas</i>	
Analysis of the Influence of Traffic Signalization Using a Stochastic Algorithm in the Reduction of Queues and Delays at Intersections with High Traffic Flow	227
<i>Jhonian Urbano, Fernanda Bassini, Manuel Silvera, Fernando Campos</i>	
Hydrogeological Conceptual Analysis with FEFLOW, for the Ccoyahuacho Slope - Andahuaylas - Peru.....	233
<i>Rubén Esaú Mogrovejo Gutiérrez, Efraín Jhiaromir Contreras Gutiérrez, Luis Fernando Miranda Gutiérrez</i>	
Analysis of the Use of User Time Based on Access to Bus Boarding Information at a BRT Station.....	240
<i>Carlos Sapacayo, Enrique Respicio, Manuel Silvera</i>	

Characterization of Manganese Dioxide Nanoparticles for Reuse as a Partial Replacement of Cement in Concrete	246
<i>Ana Torre, Bruno Dorival, Orfelinda Avalo, Yilmar Herrera</i>	
Evaluation of the Influence of the Turning Radius of Heavy Vehicles Inside a Roundabout in Vehicular Conflicts	252
<i>Cesar Oswaldo Vera Luna, Milagros Yolanda Gavilano Esquivel, Manuel Silvera, Fernando Campos</i>	
Evaluation of the Elastic Properties of an Asphalt Mix with the Addition of Recycled Polypropylene Subjected to a Vertical Load from the Dynamic Modulus Test.	257
<i>Nicole Portocarrero, Fredd Flores, Manuel Silvera, Fernando Campos</i>	
Implementation of the Formation Factor (F) to Evaluate Properties of Cement-Based Materials from Electrochemical Techniques	262
<i>Camilo Higuera-Flórez, Jhon Cárdenas-Pulido, Juan Lizarazo-Marriaga, Julian D. Puerto Suarez, Uribe C. Sandra Liliana</i>	
IT Trends: A Literature Review	268
<i>Abril Ximena Sánchez López, Ian Gerardo Horcasitas Pérez, Juan Carlos Hernández Mora, John Velandia</i>	
A Multi-Purpose Gripper for KUKA KR-60 Welding Robot and Inspection Chamber.....	277
<i>Wilmer Escalante, Elias Ydrogo, Leonardo Vinces</i>	
Conceptual and Numerical Interpretation of the Hypothetical Failure of Tablachaca Dam Using RAMMS Model - Quichuas - Huancavelica - Peru.....	283
<i>Yherzi Kenyi Qqueso Rodriguez, Gonzalo Eduardo Flores Zerpa, Ruben Esau Mogrovejo Gutierrez</i>	
Optimization of the Dimensions of the Tablachaca Sand Trap Dam with the Application of HEC-RAS in Peru.....	288
<i>Carlos Baños Guillen, Juan Diego Guerra Del Aguila, Rubén Mogrovejo Gutiérrez</i>	
A Design of a Distillation Column to Produce an Alcoholic Beverage Based on Blueberries	294
<i>Ken Susuki, Andres Ipanaque, Leonardo Vinces</i>	
Evaluation of the Properties in the Fresh and Hardened State of the Self-Compacting Concrete; Influenced by the Use of Recycled Aggregate and Ground Glass	300
<i>Ana Victoria Torre Carrillo, Flavio Alexander Usca Cconislla, Jenry Ccorahua Huacre</i>	
Effects of the Waterproofing Additive on Capillary Absorption and Porosity of the Self-Compacting Concrete	306
<i>Ana Victoria Torre Carrillo, Leandro Rusbel Melgarejo Porras, Diego Javier Flores Figueroa</i>	
Hydraulic Analysis Due to Flooding in the Rimac River, Carapongo Sector.....	311
<i>Eriksson Hipolito Peña Ricaldi, Ruben Esaú Mogrovejo Gutierrez</i>	
Evaluation of the Influence of Atypical Vehicles on Vehicle Delays at a Signalized Intersection.....	316
<i>Brenda Capia, Manuel Silvera, Fernando Campos</i>	
Operations Management Model Based on 5S, TPM, and SMED to Increase the Effectiveness of Equipment in a Plastics Company	322
<i>Joe Calderon Osco, Mirco Cuellar Ricce, Orkun Yildiz, Duilio Aranda Ipince, José C. Alvarez</i>	
Analysis and Design of a Non-Invasive Wood Moisture Sensor.....	328
<i>Mariel Avalos, Jorge Salazar, Guillermo Kemper, Carlos Raymundo, Cesar Cruz</i>	

Gamification as a Function of the Support to the Treatment of Depression – Meta-Analysis.....	333
<i>Deiver Mena, Fredy Pardo</i>	
A Comparative Analysis of the Efficiency Between Different Datasets in the Identification of Dogs and Cats in a CNN.....	339
<i>Sebastian García, Adrian Ponce De León, Leonardo Vinces, José Oliden</i>	
An Automatic System for Defect Detection in Plastic Crates for Glass Bottles.....	345
<i>Matthews Juárez, Anderson De La Cruz, Leonardo Vinces, Dante Vargas</i>	
Robotics in Building Construction: Advantages and Barriers	351
<i>Marck S. Regalado Espinoza, Micaela A. Cardenas Contreras, Karol M. Agreda Estela, Christopher J. Núñez Varillas, Geraldine F. Reynoso Torpoco</i>	
Optimization of the Wastewater Treatment Plant for the Hydraulic Laboratory at the Universidad Católica de Colombia	356
<i>Cesar Augusto Velasquez Orjuela, Camila Jaramillo Monroy, Jorge Salgado</i>	
Virtual Reality for Design and Site Planning in Construction Projects: Advantages and Barriers	361
<i>Marck S. Regalado Espinoza, Christopher J. Núñez Varillas, Oswaldo D. León Crosóstomo, Emily N. Rios Zamora</i>	
Continuous Improvement Model for the Increase in the Conversion Rate of Digital Sales Opportunities of Mortgage Loans.....	366
<i>Juan Carlos Quiroz-Flores, Martín Fidel Collao-Díaz, Ahad Ali</i>	
Maintenance Plan Model to Increase Truck Availability Rate by Applying 5S, TPM and Kanban in the Construction Sector	373
<i>Rodolfo Camacho - Ubillus, Madeleine Hinostroza - Huamani, Alberto Flores-Perez</i>	
Model to Increase Compliance with Deliveries of Metal Structures Using TPM Tools in a Metalworking Company.....	379
<i>Brigitte Cordova-Matias, Manuel Palacios-Molina, Alberto Flores-Perez</i>	
Proposal to Improve the Traceability in the Common Service Process by Applying TPM a Postal Company	385
<i>Juan Carlos Gaspar-Huamani, Joan Raquel Cabanillas-Umeres, Alberto Flores-Perez</i>	
Integration Between HL7/CDA and ISO/IEC 29110 from a Systematic Review.....	390
<i>Holman Bolívar, María-Fernanda Valero, Edward Lopez, Rafael Rozo</i>	
Corporate Social Responsibility and Peruvian Apparel SME Internationalization.....	396
<i>Juan Carlos Quiroz-Flores, Martín Fidel Collao-Díaz, Ahad Ali</i>	
Mechanical Properties Assessment of Mortar Reinforced with Sugar Cane Fibers.	402
<i>Faber Francisco Chaparro Mario</i>	
Application of TPM and Lean Manufacturing Tools to Increase OEE. an Empirical Investigation in the Peruvian Textile Industry.....	407
<i>Henry Avila-Pisco, Diego Armando Chiok-Gonzales, Alberto Enrique Flores-Perez</i>	
Improvement Proposal to Increase the OEE in a Mechanical Press in the Metalworking Sector Through SMED and TPM	413
<i>Joaquín Andrés Zegarra-Silva, Mauricio Aníbal Cáceres-Larco, Alberto Flores-Perez</i>	

Application of Theory of Constraints TOC, TPM and MPS to Increase OEE in a Latin American Aquafeed Company	419
<i>Andrea Lizet Muñoz-Briceño, Heidi Angie Riveros-Sánchez, Alberto Flores-Pérez</i>	
Exploring the Interplay Between Digital Transformation and Organizational Structures in Construction Companies	425
<i>Cristian Camilo Osorio-Gómez, Rodrigo F. Herrera, Eugenio Pellicer</i>	
Improvement Model Applying Time Series, TPM and SMED to Reduce Waste in a Timber Company in the Peruvian Jungle	430
<i>Valerie Travi-Magener, Christian Abel Vilcapoma-Moya, Alberto Flores-Pérez</i>	
Proposal to Increase Perfect Deliveries in a Sanitary Distribution Company Applying a Warehouse Management System and SCOR Model	436
<i>Alexander Colca, Jorge Duran, Ernesto Altamirano, José C. Alvarez, Orkun Yıldız</i>	
Enhancement of On-Time Delivery of Orders by Lean Service and Planning Tools in a Commercial Company in the Mining Sector.....	441
<i>Alvaro Javier Zapata-Cerna, Luis Alexander Guzman-Carrillo, Juan Carlos Quiroz-Flores</i>	
Improving Availability by Lean Manufacturing and TPM Tools in an SME in the Plastics Sector.....	447
<i>Andrea Celeste Quispe Cordova, Valeria Belen Acuña Damiano, Juan Carlos Quiroz-Flores</i>	
Productivity Increase by Lean Service, TPM, and Workstation Design in a Call Center.....	453
<i>Sofia Ruiz-Estacio, Marialicia Huamani-Hidalgo, Juan Carlos Quiroz-Flores</i>	
Improvement of Inventory Turnover by Lean and TQM Tools in a Toy Trader Company SME	459
<i>Alejandro Jesus Agüero-Barreto, Andrea Claudia Huaynalaya-Aguilar, Juan Carlos Quiroz-Flores</i>	
Design Thinking to Develop a Digital Solution to Improve Communication in Construction Site.....	465
<i>Jhon Cruz-Calcina, Andre Ramirez-Valenzuela, Andrews A. Erazo-Rondinel, Raul Trujillo-Lucano, Isaac M. Ccoyllar Escobar</i>	

Author Index