UNAB-TRANSAXLE CORPORATION FOR RESEARCH AND INNOVATION IN INDUSTRIAL AUTOMATION

The CORPORATION aims to:

Strengthen scientific and technological capacity and transfer of technology in the field of industrial automation in order to provide innovative solutions to the productive sector to contribute to the development of the sector and country.

In furtherance of its purpose, the Corporation will advance scientific, technological, academic and management activities in the particular field that includes:

A. Scientific research and technological development

- Development of basic and applied research
- Creation and generation of technologies
- Development of new products and processes
- Transfer of expertise
- Participation in research networks
- Interconnection of information networks.

B. Consultancy and scientific and technological services

- Development of research projects, consultancy and services
- Harmonization and standardization
- Technology assessment.

C. Scientific and technological diffusion

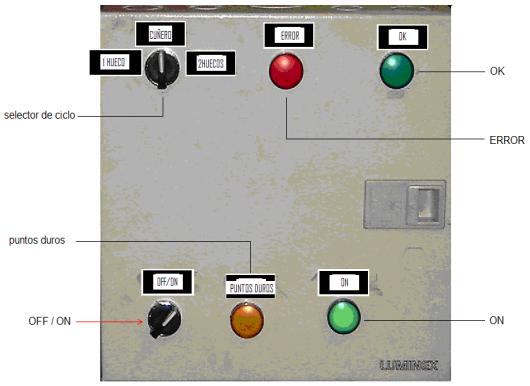
- Researchers and practitioners Update
- Training of professionals and technicians
- Studies, seminars, workshops and conferences
- Awareness of the productive sector
- Production of national and international publications.

D. National and international technology transfer

- Assimilation, adaptation and application of new technologies
- Trading, ownership and unbundling of new technologies
- Advice on technology transfer negotiations

E. National and international scientific and technological cooperation

- Promoting scientific, technological and academic exchanges



PROJECT: **MODERNIZATION PROJECT AND IMPROVEMENT OF THE BARMAG PRESS**	
DESCRIPTION: Create a bypass using a 2/2 valve normally open, whihch allows communication with thte tank the press is not Traction test (axis disassembly). Implementation of an inductive sensor located in the inferior block of the press and Work start position. Implementation of an inductive sector located on the inferior block of the press and	
PARTICIPANTS TRANSJEJES : Objective client UNAB: design, development, and implementation	**TECHNICAL TEAM** Eng. Edgar Mauricio Jaimes Moreno Eng. Jesus Alonso Alvarez Gutierrez **EVALUATING AND SUPPORT TEAM** Esp Eng. Carlos Ivan Patiño Gonzalez Dr. Antonio Faustino Muñoz Moner
KNOWLEDGE AREA Automation, instrumentation, and industrial control	
LENGTH: 6 Months approx (2004-2005)	**VALUE:** $2,674,000
IMPACT Up to a 60% production increase on the machine and up to 90% upon the completion of the project Reduction in the assembly time, from 2 minutes to 1 min 20 seconds for each operation on homocynetic axis Operation manual of the automatic system of axis assembly Opportunity cost: $25.000 USD	

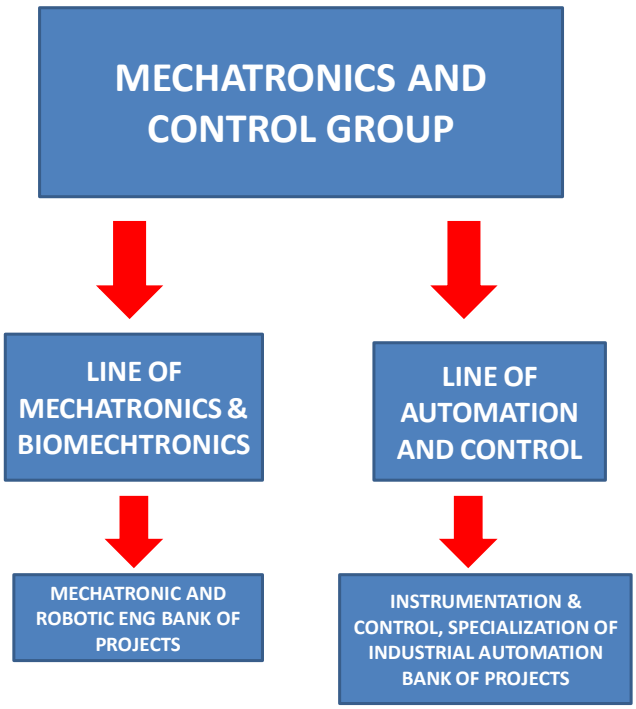
PROJECT: **POKA YOKE FOR THE AUTOMATIC DETECTION AND TESTS OF THE TRIPOD COMPONENTS**	
DESCRIPTION: Implementation of inductive sensors for the automatic detection fo the components. Diminish the test time for each	
PARTICIPANTS TRANSJEJES : Objective client UNAB: design, development, and implementation	**TECHNICAL TEAM** Eng. Edgar Mauricio Jaimes Moreno Eng. Jesus Alonso Alvarez Gutierrez **EVALUATING AND SUPPORT TEAM** Esp Eng. Carlos Ivan Patiño Gonzalez Dr. Antonio Faustino Muñoz Moner
KNOWLEDGE AREA Automation, instrumentation, and industrial control	
LENGTH: 6 Months approx (2004-2005)	**VALUE:** $9,500,000
IMPACT Verification time was significantly reduced up to 27 seconds per each operation Prevention of defective parts assembly during the operation Opportunity cost: $13,000 USD	

PROJECT: **POKA YOKE FOR THE ASSEMBLY OF CONTROL SYSTEMS AND VERIFICATION OF SPHERES OF FIXED JOINTS OF DIFFERENT SPECIFICATIONS**	
DESCRIPTION: Development of a new control system and automatic verification for the assembly of the spheres of fixed joints of differens specifications	
PARTICIPANTS TRANSJEJES : Objective client UNAB: design, development, and implementation	**TECHNICAL TEAM** Eng. Edgar Mauricio Jaimes Moreno Eng. Jesus Alonso Alvarez Gutierrez **EVALUATING AND SUPPORT TEAM** Esp Eng. Carlos Ivan Patiño Gonzalez Dr. Antonio Faustino Muñoz Moner
KNOWLEDGE AREA Automation, instrumentation, and industrial control	
LENGTH: 6 Months approx (2004-2005)	**VALUE:** $1,200,000
IMPACT Elimination of the defective assembly operations of spheres through an automatic system of fixed joints of different Prevention of sphere assembly through a system of automatic detection Opportunity cost: $11,000 USD	

GENERAL OBJECTIVE

Conduct research for knowledge generation, technology transfer, high added value in developing new products that incorporate high levels of integration and synergy, for control, automation of industrial plants and the creation of media and mechatronic, agrobusiness, biomechatronic , energy and environmental systems under the framework of innovation and sustainability projects.

RESEARCH LINES



RESEARCH LINES

AUTOMATION & CONTROL LINE:

It is the most consolidated in the Mechatronics Engineering program as a first line of the Research Group CONTROL & MECHATRONICS. It is aimed at the automation of machines, technological lines and installations with the application of advanced instrumentation based on high-precision transducers, industrial controllers and actuators of high technology, which allows for developing industrial modernization and technological upgrading. Also the methods and procedures for innovation and new product development and improvement of modern instrumentation and equipment that incorporate high levels of integration and synergy in control, automation , instrumentation and mechatronic, agribusiness, energy and environmental systems are being

researched projects under the framework of innovation and sustainability projects.

SPECIFIC OBJECTIVES

- Research and develop innovative solutions & development projects for the improvement of industrial efficiency in regional and national companies.
- Create and participate in scientific research projects for the modernization and technological upgrading, the disclosure of its results and the organization of scientific communities in the area of Automation & Control.
- Promote research that will benefit the industrial and economic development of the region and country.
- Promote the integration of scientific results in postgraduate training: Specialization in Industrial Automation, Master of Engineering in Industrial Control and doctorates in the field of Automation & Control.
- Develop research projects in Agricultural Energy And Bioenvironmental Machinery And Instrumentation, that include the synergistic combination of high precision mechanics, electronics, control and computer science
- Investigate new designs in Agricultural Energy And Bioenvironmental Machinery And Instrumentation with a high level of efficiency.
- Develop new products and improvement of modern instrumentation and equipment that incorporate high levels of integration and synergy in control, automation, instrumentation and mechatronic, agribusiness, energy and environmental systems under the framework of innovation and sustainability projects.

LINE OF MECHATRONICS

Corresponds to the new line focused on research methods and procedures for innovation and new product development and modern instrumentation, associated with mechatronic and biomechatronic systems with high level of integration, equipment and facilities, the synergistic combination of high precision mechanics, electronics, control and computer science.

SPECIFIC OBJECTIVES

- Develop research projects in Robotics, Integrated Manufacturing Systems, biomedical instrumentation and biomechatronic Systems, including the synergistic combination of precision mechanics, electronics, control and computer science.
- Research new product designs and integrated manufacturing systems consisting of devices, machines, equipment and processes, smart technology equipped with high efficiency.
- Develop research in new mechatronic and biomechatronic systems for diagnostic functions, security, monitoring and exploration.

4 Contacts

Oliveros Germain Villamizar

Dean Faculty of Physical Mechanical Engineering

Phone: 57-7-6436111 Ext 350-204

Email: golivero@unab.edu.co

Chio Cho Nayibe

Mechatronics Engineering Program Director

Phone: 57-7-6436111 Ext. 343

Email: nchio@unab.edu.co

Antonio Faustino Muñoz Moner

Group Director of Control and Mechatronics

Phone: 57-7-6436111 Ext. 457

Email: amunozm@unab.edu.co