INTECRO

BUTTERFLY EFFECT IN

WELDING TECHNOLOGIES

ROBOTIC REFLEX

INTECRO ROBOTICS

Selahattin DÜZBASAN - Chairman of the board

Our acquaintance with INTECRO, which started as a customer, brought us to this day by combining this young, dynamic and creative formation with the vision of room for improvement in manufacturing tehnologies. The synergy created by our financial resources, infrastructure, capabilities and human resources are the proof of future success.

A. Ali ŞEN - General Manager

INTECRO is a global value embodying that the development of robotic welding technologies is not limited to automotive and can be applied with high added value for other industries. We aim to further broaden our global customer portfolio by delivering the most efficient solutions for manufacturers worldwide.

INTECRO is based on robotics, mechatronics and industrial automation technologies and works with an understanding that aims to increase the efficiency and profitability of its customers presenting the solutions required by changing global business and competitive conditions.

INTECRO focuses on customer needs and satisfaction when building metalworking solutions such as robotic welding and cutting, robotic factory automation solutions, robotic assembly lines, robotic cells and workstations for use in the manufacture of products from every sector.

Cihan ŞENSOY - Deputy General Manager

INTECRO creates value for industrial production with its emphasis on project management discipline, ever-increasing experience and customer satisfaction.

Cem DEŞEN - Deputy General Manager

INTECRO responds to its customers' requirements by "creating and realizing the most efficient method" rather than "providing solutions within the limits of the existing technology". The understanding that "nothing is impossible" is key in the success of INTECRO's solutions for the most challenging applications.

Our Difference

Qualified Labor Force

A staff of more than 50, over 25 engineers and higher level technical personnel.

Working Areas

4.000 m^2 integration / production area and 1.000 m^2 office space suitable for future expansion.

Strong Financial Structure

Bank guarantees backed up by high credibility. Cash reserves for purchasing

Software infrastructure

3D Design, 3D Simulation / PLM, 3D CAD-CAM and analysis capabilities.

Management Systems

ERP, MRP, CRM and PMS management with cloud distribution, secure local server infrastructure for storage of confidential customer data.

Certificates and Competencies

CE Certificate for all products, ISO 9001, Technological Product Experience Certificate.

Preferred Supplier

Installed base of more than 100 systems and more than 20 repeat orders.

After-Sales Services

Local sales and technical support based in Europe. Future expansion for the Americas, Middle-East and Asia.

Partnership

Global network of technology partners and suppliers.

Pre-Sales Services

For our customers;
Workshop Gantry Robot Line with a length of 25m for welding of workpieces up to 10 tons for real-time robotic welding tests.

Integrated Technologies such as ArcSense, Multi-Pass and Laser Camera Seam Tracker. Test Stations for performing tests in order to quantify quality parameters through PQR, Xray Control, Destructive Testing and Micro Structure Analysis.

Production

Plasma and saw-cutting machines, robotic and manual welding, stress relieving technology, vertical machining center, CNC milling and turning machines, sandblasting and painting chambers, quality control devices, assembly stations and fixture manufacturing capabilities. Robotic external axes welded with robots: Sliders, positioners and gantry system components. Production capacity of 2.000 tons / year for single-shift.

Team

Since 2002 INTECRO has been investing in human resources starting at the internship level. Long-term career planning at INTECRO makes it a preferred employer for new graduates as well as experienced professionals. This talent acquisition strategy enables long employee turnover and maintains a dedicated and growing team highly motivated for INTECRO's success.

75+
TOTAL NUMBER OF EMPLOYEES

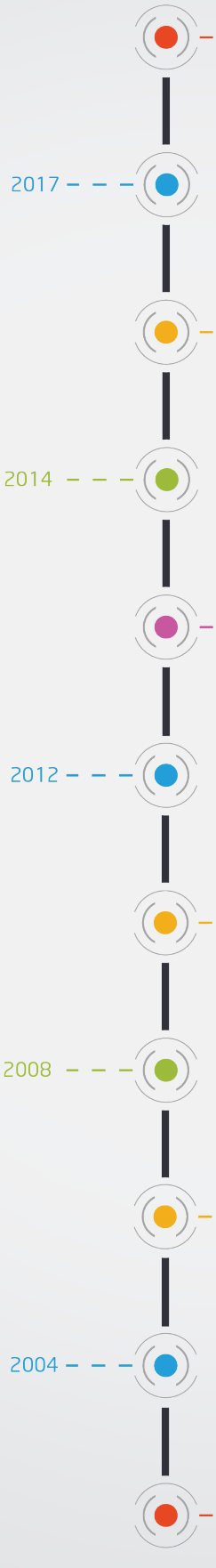
50+
ENGINEER

- MECHANICAL ENGINEER
- MECHATRONICS ENGINEER
- ELECTRICAL ELECTRONICS ENGINEER
- WELDING AND METALLURGICAL ENGINEER
- CONTROL ENGINEER
- AUTOMOTIVE ENGINEER
- COMPUTER ENGINEER
- INDUSTRIAL ENGINEER

"MORE INNOVATION"

We are aware of the strong influence of innovation in our lives. For this reason we are strongly connected to Industrial and Social Innovation. Our motivation is to move forward with more innovation, more curiosity and a sense of research for applying new technologies in the field of robotics."

History



2018
Future goals: Project sales to the Americas and Asian countries. Participation in FabTech and exhibitions in Eastern Europe, Russia, Baltics and the Middle East.

2017
Participation in the world's biggest welding exhibition, Schweissen & Schneiden 2017 in Düsseldorf. First steps in establishing the European branch. The activation of the Gantry Robot Workshop Line and the Metallurgical Testing Station for our customers.

2016
Development of an international dealer network for indirect sales. Establishment of foreign trade department. 4.000 m2 factory investment: INTECRO's Robotics Technology Center. Preparing for entry into global markets with capital increase.

2014
Completion of Turkey's first robotic full penetration heavy welding project for OTOKAR. Completion of Turkey's first Multi-Robot intelligent TIG Welding Plant. First export. Establishment of Robital AS to manufacture standard positioner, sliders gantry modules and other peripherals for the robotics industry.

2013
INTECRO is listed among the first 20 emerging technology companies in Turkey by the Ministry of Industry. Increased production capacity. Projects in heavy welding and railway segments. Intecro develops and integrates the 12 kW "Laser Joining Center" for the National Science Foundation of Turkey, Tübitak-Sage. "Technological Product Award" and "Private Investment Incentive" grants.

2012
Use of robotic welding systems in welding solutions for cranes and construction equipment. Beginning of TUBITAK (The Scientific and Technological Research Council of Turkey) supported Industrial Robot project.

2010
Establishment of "Robotic Diesel Engine Assembly Line" for Deutz diesel tractor engines. Development of inventions and projects in the Medical Robotic segment in NEMS and MEMS fields in cooperation with the Institute of Nanomedicine and Advanced Technologies.

2008
Transition to Ankara. Beginning of R & D projects and welding automation applications.

2006
Business agreements and project activities with various foreign robot producers.

2004
Stewart platform and delta robot kinematics development studies.

2002
Beginning of activities as Reflex Robotics Limited Company in Istanbul. Development of delta robot packing and assembly solutions for industry.

Technologies

+10 YEARS
+150 PROJECTS

INTECRO has delivered more than 150 projects since its establishment.

ASSEMBLY AND HANDLING TECHNOLOGIES

- Dispensing and bonding
- Mechanical assembly
- Handling of finished and semi-finished products

WELDING TECHNOLOGIES

- Pre-welding
  - o Oxy-acetylene flame heating
  - o Inductive heating
- MIG / MAG welding
  - o Single-wire
  - o Tandem-twin
  - o CMT (Cold Metal Transfer)
- TIG welding
  - o Without wire feed
  - o With wire feed
- Laser welding
  - o Laser Stitch (Wobbler) Technologies
  - o Laser Spot Technologies
  - o Laser-hybrid (Coldwire / HotWire) Technologies
- Spot Welding
  - o MFDC medium frequency
  - o Laser Spot Technologies

Since its establishement **INTECRO** has provided a wide range of robotic automation solutions for various segments. INTECRO's strategic business segments are **METAL PROCESSING TECHNOLOGIES** including **AUTOMOTIVE** and **FLEXIBLE ASSEMBLY LINES** through combinations of multiple applications.

- Laser cutting
- Plasma cutting

- Robotic Welding and Metal Processing Technologies
  - o Touch Sense from wire or torch
  - o Contactless touch sense
  - o Arc Sense
  - o Multi Layer
  - o Laser Seam Tracking/Finding
  - o Wint-Gap
  - o Wint-Touch
  - o Arc Voltage
  - o ReflexWeld
  - o Offline Programming
  - o Robot Teaching
  - o Kinetic Teaching
  - o Cleaning Station
  - o Torch Changer
  - o AUTO-Rtherm
  - o AWC QC
  - o RPS COMM
  - o AUTOCAL

- Robot Configurations
  - o Gantry Robot
  - o Pillar Robot
  - o Gantry-Pillar Robot
  - o Portal Gantry Robot
  - o Positioners: 1 to 5 axis workpiece positioners: Sky hook, H type, K type, Drop Centre and others
  - o 3 different types of robotic slider
  - o C type column and additional axes
  - o Synchronous systems up to 64 axes
  - o Single control point for multi-robot (master / slave or master / master)
  - o Integrated fixture and safety automation

INTECRO Business Concentrations and Task Awareness

Analysis

INTECRO engineers review the workpieces and the flow of material on the production floor at the customer site. The optimum system configuration and process solution is developed after a detailed evaluation of the data. The customer is also informed about possible revisions that would increase the workflow efficiency and better adaptation of the workpiece for the robot system.

Feasibility

The system requirements are calculated using welding requirements, metallurgical data, cycle time, and geometric analysis, using offline programming methods where necessary. The calculations and findings are presented to the customer in a "Return on Investment Report".

Quotation

The quotation is prepared upon the approval of the system concept by the customer. As a result of the pre-studies and attention to detail described above, our project proposals are created with a project management discipline, taking into account all related technical and commercial aspects.

Simulation assisted Design

System concept and preliminary designs are used as inputs for 3D simulations, which runs parallel with the design work. Project design is initiated by utilizing the accumulated solution inventory and engineering library, while adding job-specific components as necessary. The design processes is completed after the final simulation run and customer approval. Production drawings are prepared following the design-freeze.

Final Simulation

All project details are determined in the beginning phase of the project with the use of 3D Simulation software. Details such as cycle time, collision tests, workpiece access, kinematic and axial orientation, singularity and programming validation are revealed.

Production

Production drawings are transferred to the work stations using offline-programming and CAM-CAM techniques for cutting, welding and machining processes. Project-specific components such as fixtures and special purpose machinery are manufactured meticulously with the highest quality control standards. Serial production components such as robot peripherals are welded in our robot line.

Purchasing

All standard components are procured from suppliers with international credibility. The ongoing business between and INTECRO and its suppliers has evolved into a "partnership" throughout the years.

Assembly and Pre-Acceptance

The complete system goes through quality control and function tests according to ISO 9001 and CE standards after the assembly of robotic equipment, standard products and semi-finished products. Pre-acceptance procedures and dry-runs are completed with the presence of the customer. Wet-runs and test-production is performed when necessary. A preliminary acceptance protocol is signed prior to system shipment.

Machine and System Commissioning

Upon delivery of the the equipment to the customer site, INTECRO specialists complete their tasks in their respective fields of expertise: Mechanical and electrical technicians complete assembly. The automation unit acts on behalf of the SPS automation and motion control requirements. Robotization unit performs kinematics and robot setups. The activity report is presented to the customer and project management units following assembly and power-up of the system.

Process Implementation and Welding Technique

Integration of the process equipment are performed by welding engineers. Welding / process tests and trial production runs are performed. INTECRO process experts assist the customer during non-destructive and destructive testing in order to fine-tune the parameters and reach optimum results. The final acceptance report is signed by the customer and INTECRO's project management unit.

Training and Documentation

Robot operator, expert user and maintenance trainings for the system and operator and expert level trainings for the process equipment are completed after final acceptance procedures. The system folder is handed over to the customer complete with all manuals, schematics and quality documentation.

After Sales Technical Support

INTECRO's after-sales team carries out remote diagnostics and on-site field support. A local service representative is forwarded to the site upon need for local support, backed-up by a specialist from INTECRO when necessary.

Service and Spare Parts

Our goal is to provide our customers systems with high MTBF intervals by fixing possible faults before they occur. Unexpected costs are avoided and the lifetime of your system is extended through inspection and diagnostics. Service contracts are offered to our customers at different levels: Our standard service and maintenance contract includes an annual periodic maintenance, while the "response-time contract" gives the customer peace of mind by receiving service intervention in the preferred time period. Our customers also have the option to choose spare-parts stock-delivery guarantee dedicated for their systems. The INTECRO service team works around the clock to establish a sustainable investment with high uptime for many years.

Global Presence

INTECRO Robotics Technology Headquarters:
Turkey: Ankara

Sales: Austria: Attnang-Puchheim **Belarus:** Minsk **Croatia:** Zagreb **Finland:** Turku **Germany:** Buseck, Göppingen **India:** Bangalore, New Delhi **Israel:** Haifa **Lithuania:** Vilnius **New Zealand:** Auckland **Poland:** Warsaw **Russia:** Moscow **Thailand:** Bangkok **Turkey:** Ankara, Istanbul **USA:** California, Michigan, New York

Service: Austria: Attnang-Puchheim **Belarus:** Minsk **Croatia:** Zagreb **Finland:** Turku **Germany:** Buseck **India:** New Delhi **Israel:** Haifa **New Zealand:** Auckland **Thailand:** Bangkok **Turkey:** Ankara, Istanbul **USA:** Michigan

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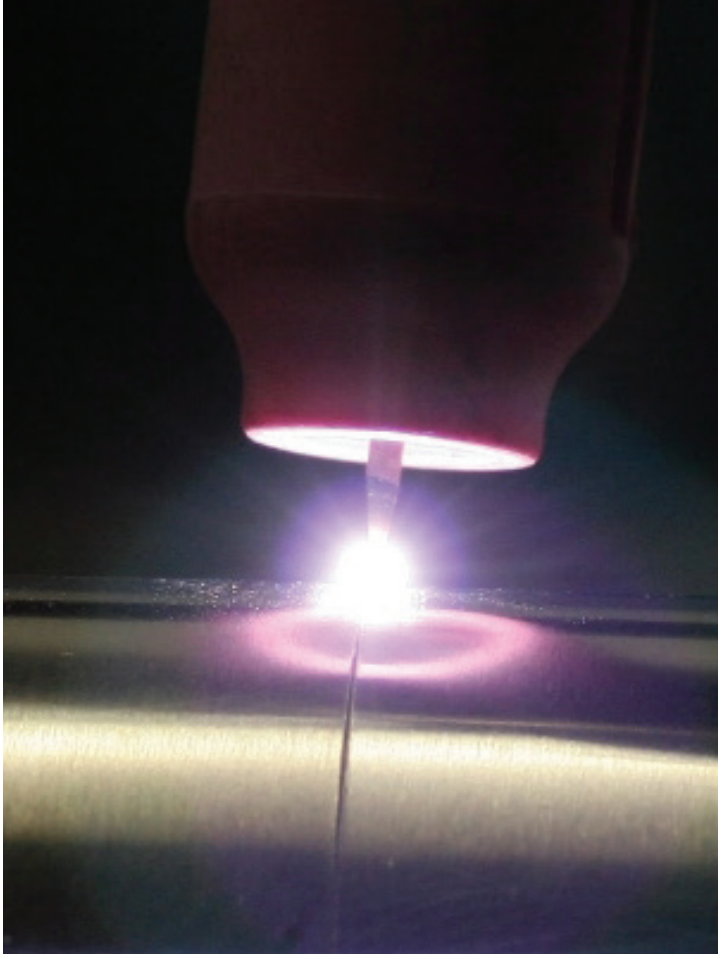
International Headquarters:
INTECRO Robotik A.S. Campus
Ankara-Cankiri 10 km. Industrial Zone
Seyhler Mah. No:80, 06750 Akyurt/Ankara, TURKEY

+5 YEARS
+350 UNIQUE PROJECT DESIGNS

In the last 5 years, we have developed industrial robotic systems with while obtaining patents and utility model protection rights to ensure serial production. INTECRO has developed hundreds of industrial technology products with more than 350 different designs in the systems category. We continue to progress to develop a large number of qualified designs that will be commercialized over time.



Robotik MIG/MAG Welding

Single / Tandem / Twin

Throughout the years INTECRO has become a leading brand in the field of Robotic MIG / MAG processes.

Welding engineering + material science + world wide partners + hundreds of application experience + business intelligence = INTECRO Specialization.

Thanks to excellent welding regulation, we can provide high gap-fill performance and a higher welding speed in our welding applications.

Robotik TIG Welding

With / without additional wire

Robotic TIG technology has been gaining popularity in stainless, aluminum and other alloy groups. The fact that manual TIG welding requires precise workmanship makes it an ideal candidate for robot welding, which enables you to enjoy the advantages of high penetration, high speed and minimum spatter with perfect accuracy. We are ready to offer advanced TIG process solutions for all industries with **Arc Voltage control technology** and robotic integrated **intelligent tuning systems** developed especially for thin and advanced materials.

TECHNOLOGIES

Touch Sense
Touch sense is a sensing technique that works with analytical geometry algorithms that detect the position of the workpiece by receiving a signal from the welding wire, torch nozzle or an add-on probe.

Contactless Touch Sense
With contactless touch sensing, we can use a laser camera to remotely locate an adge or jeoint on the workpiece with no contact.

Arc Sense
Arc sense is a technology based on a sensor and software that follows the welding path in real time. It is used in the zig-zag welding method called "weaving". The basic principle is that it follows the welding path in real time according to the current measurement after the starting point is correctly detected by the robot.

Multi Layer
Sensor and software technology for multi-pass applications.

Laser Seam Tracking/Finding
3D laser seam tracking allows welding on the required path by optically detecting and processing the reflection of a laser line, in cases where arc sensing is not feasible.

Robotic Laser / Laser - Hybrid Welding

Coldwire / Hot Wire / Std.

Nowadays the laser welding technology is becoming more and more important in terms of meeting high expectations such as speed, precision, strength, penetration and gap fill. INTECRO is always one step ahead with its turnkey Laser Welding technology. INTECRO engineers are ready to support you for welding your test samples and investment feasibility analyses.

Robotic Resistance / Laser Spot Welding

MDFC / Fiber Laser

MFDC Timer and Laser Spot Welding applications are gaining popularity in automotive and other industries. In addition to the processes available today, the latest technology Laser-Seam-Stepper (LSS) or long stitch laser spot systems are on the way. These technologies will enable First Class industrial products that will be applicable to robotics with the advantages of safety and not requiring additional hardware or cost. INTECRO process engineers are ready to review your existing resistance welding operations and support you in the transition to the latest manufacturing technologies.

TECHNOLOGIES

Wint-Gap
Wing-gap a sensor and software developed by INTECRO that monitors the welding path, gap width and gap depth in real time.

Wint-Touch
3D sensor and software developed by INTECRO to detect the gap and welding starting point.

Arc Voltage
In TIG applications the current is stable whilce the voltage is variable. Arv Voltage is used in multi-pass TIG welding in order to adjust the height of the weld seam. This technique is based on real-time sensing, signal processing, sensing and software algorithms.

ReflexWeld
ReflexWeld is a software algorithm that automatically adjusts the welding parameters depending on changes in gap width and depth change to counter-act errors occurring during weld preperation.

Robotik CMT Welding

Single / Tandem / Twin

CMT is a proprietary MIG / MAG welding technology. It is a unique welding method that can weld metal sheets as thin as 0,5. It is designed to generate up to 90% less heat input than conventional systems, better stitching and penetration, faster welding and a unique parameter experience.

Robotic CMT advanced technology was first introduced to the domestic industry by INTECRO in Turkey.

Robotic 3D Metal Forming / 3D Part Generation / Coating

Single / Tandem / Twin

Although cladding technology is relatively new, **it has benn applied for the first time in the domestic market by INTECRO. INTECRO, the fore-runner of innovation in the robotic welding industry, offers a perfect experience for metal part generation and coating operations on CAD-CAM basis.**

This process enables more than 60% savings in unnecessary machining time and workmanship.

TECHNOLOGIES

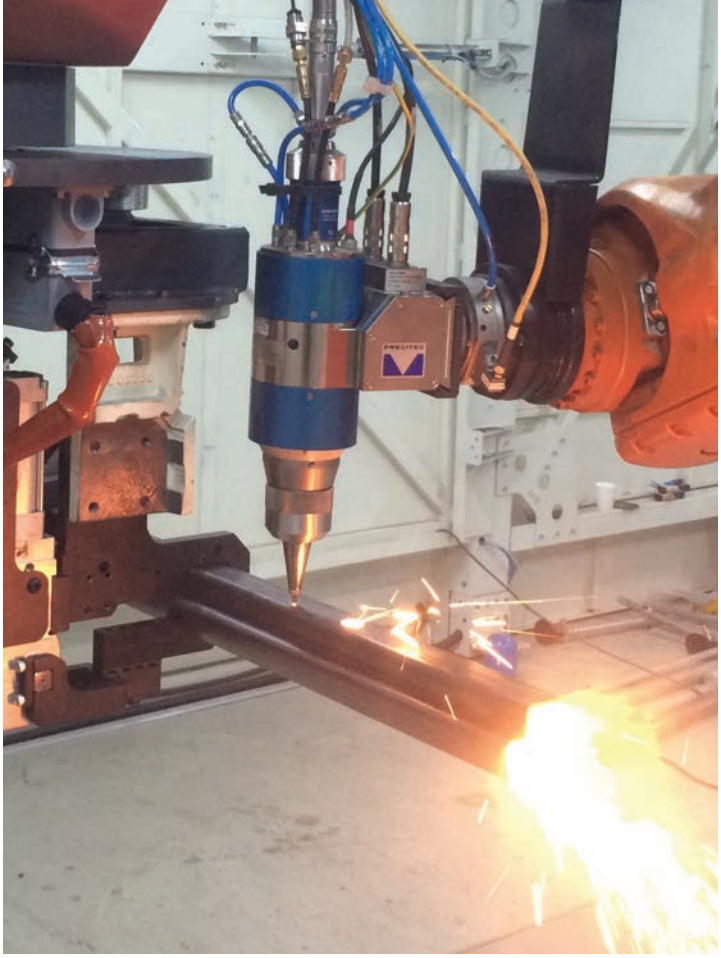
Offline Programming
Robot programming and teaching via Virtual Program Interface (PC based robot teaching via control terminal).

Kinetik Teaching
Kinetic teaching is the technology that makes the point teaching by dragging the process tool by hand.

Torch Service Station
This device performs cutting of the welding wire to a standard length, cleaning the inner and outer surfaces of the nozzle and the welding tip, and spraying an anti-spatter agent inside the nozzle after a set number of workpieces are welded.

Tool Changer
It is the technology that automates the switch-over between different process tools and welding torches during robot operation.

AUTO - Rtherm
Automatic temperature measurement system developed by INTECRO. This technology used during the preheating process measures temperature in a contactless fashion using a laser sensor. The pre-programmed system can automatically direct the heating system and the robot.



Robotic Laser / Plasma Cutting

INTECRO has developed the first-of-a-kind solution in Turkey, where the combination of robot and laser technology with control engineering has created a process that is as efficient and more flexible than standard cutting machines: **Cad / CAM Controlled 3D Robotic Laser Cutting System.**

With this technology, it is possible to obtain excellent path accuracy for holes as low as 5 mm in diameter. This system makes it possible to perform cuts in difficult to reach locations, with much more favorable conditions than standard machines and additional superior features.

Please contact INTECRO engineers for sample tests and investment feasibility.

Robotic Preheating

Materials with higher thickness and thermal conductivity tend to be susceptible to hydrogen brittleness in the case of rapid cooling. Hydrogen brittleness can often occur under and on the sides of the penetration zone and transverse cracks can occur even days after welding. Preheating reduces the cooling rate by preparing the main material against these events, thus revealing a ductile structure.

Programmable, temperature-controlled and automatic oxy-acetylene (flame) or inductive heating methods can be used prior to robotic welding for this purpose.

Contact our engineers for more information.

TECHNOLOGIES

AWC QC
It is a sensor developed by INTECRO for performing quality control after welding. The sensor checks the presence of the weld seam regardless of the metallurgical properties of the weld.

RPS COMM
The technology combines the operation of the robot, welding machine and all other peripherals into a single control terminal.

AUTOCAL
INTECRO developed sensor and software technology for automatic torch height and torch angle adjustment.

THE INTECRO TECHNICAL TEAM IS CUSTOMER FOCUSED. THE TEAM THAT DEVELOPS AND REALIZES THE IDEAL SOLUTION IN EACH PROJECT KEEPS AN OPTIMISTIC MINDSET IN CUSTOMER RELATIONS AND APPROACH EACH CASE WITH EMPATHY WHEN FACED WITH TECHNICAL CHALLENGES. THE SENSE OF CUSTOMER SATISFACTION THAT HAS COME INTO EXISTENCE SINCE THE ESTABLISHMENT OF THE COMPANY HAS EVEOLVED INTO A COMPANY CULTURE THAT FORMS THE BACKBONE OF INTECRO.

CİHAN ŞENSOY
ASSISTANT GENERAL MANAGER / PROJECT AND TECHNICAL SERVİCES


YASKAWA

5 YEARS 17 R&D PROJECTS

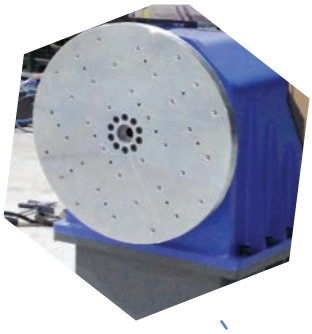
INTECRO is an R & D center which has completed numerous projects over a period of 5 years. Of these 17 projects, 15 have been engineered into commercialized systems for serial production.

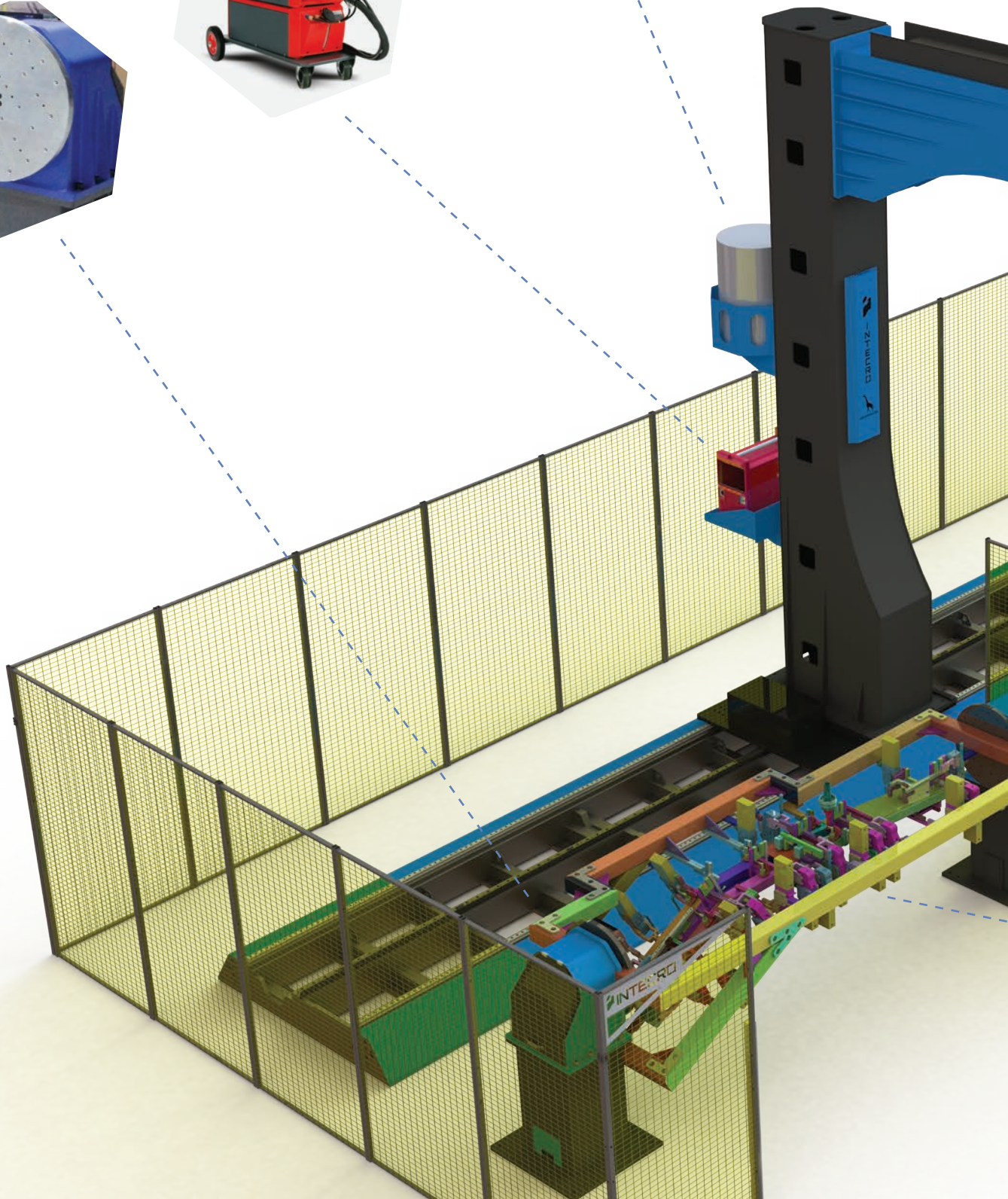
Automatic Torch Changer

Wire Barrel Wire Feeding System

Process Equipment for Welding Machine

Robot Positioner suitable for workpiece

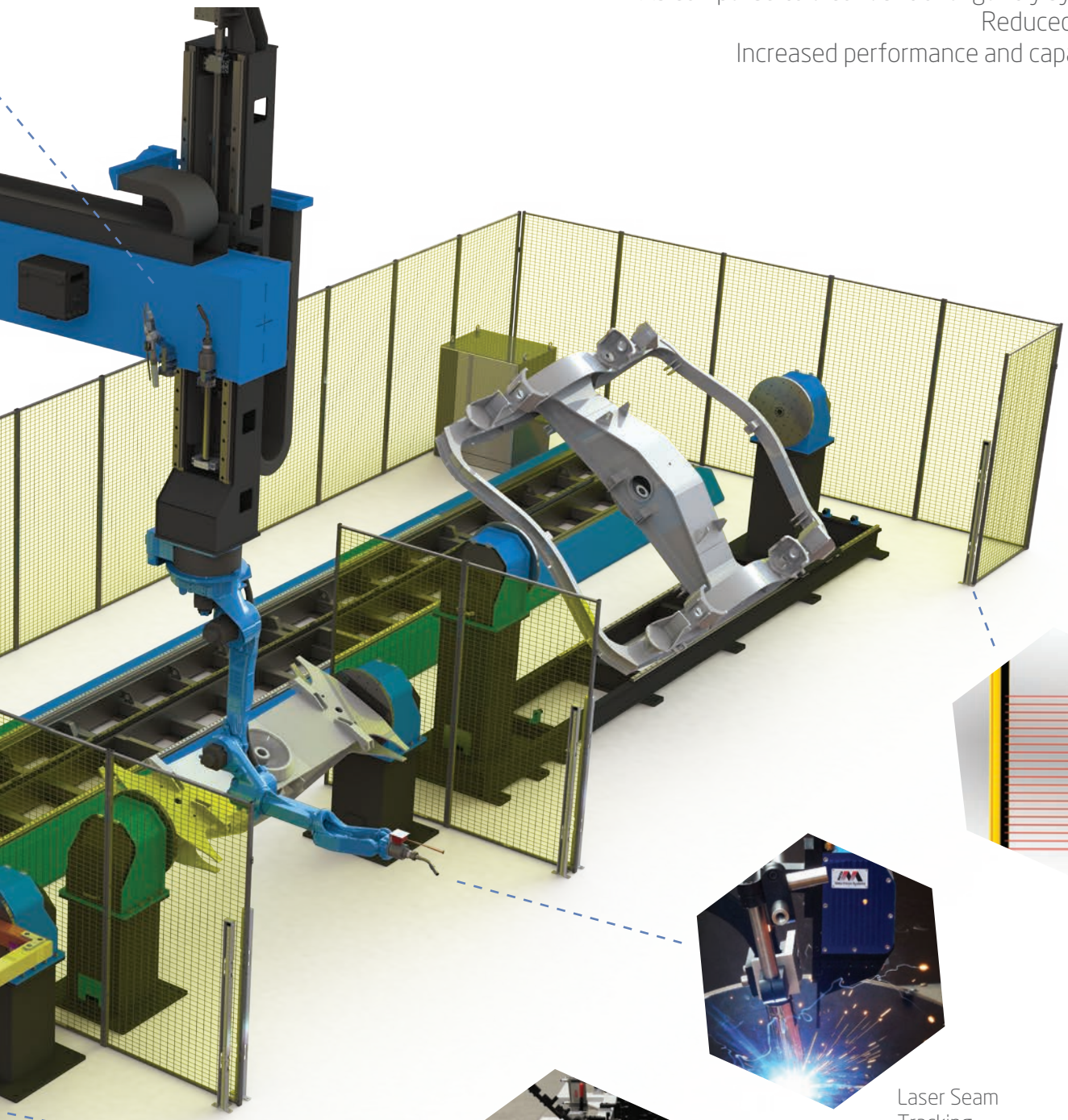


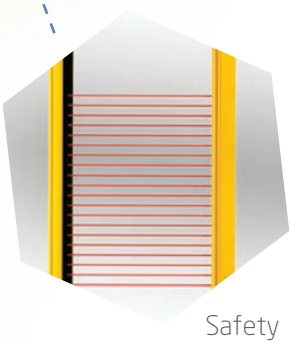


SAMPLE ROBOT CONFIGURATION:

Gantry-Pillar Robot System with 3 stations and 13 axes

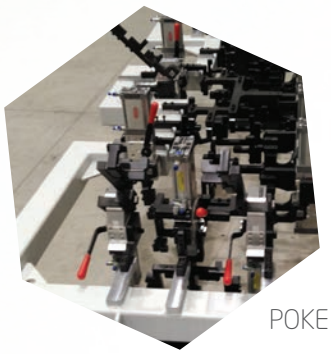
As compared to a conventional gantry system;
Reduced cost,
Increased performance and capability





Safety
Equipment

Laser Seam
Tracking
Sensor



POKE YOKE Fixtures

RAILWAY AND WAGON INDUSTRIES

SAMPLE PROJECTS:

- CARGO WAGON CHASSIS
- BOGIE SIDE AND FRAME WELDING
- BOGIE FINAL WELDING
- RAILWAY CARRIAGE DOORS
- ALUMINUM PASSENGER PANELS AND WALLS
- ALUMINUM PASSENGER CAR BODY

A large number of finished and semi-finished products are manufactured using aluminum extruded and steel sheets, which are two basic materials in the wagon industry. INTECRO uses its expertise in the railway industry with robotic welding and assembling technologies specific for both material groups.

For the first time in Turkey, INTECRO realized the complete welding of a railway car with a 20-axis Gantry Robot. Part dimensions make it impossible to fix singular components precisely during welding preparation and tack welding. For this reason, sensor technologies such as touch-sense, arc-sense, and laser beam seam tracking have been added to give the robot system more autonomy.

Hydraulic and pneumatic fixtures have been designed to deal with part deformations induced by heat input. Welding parameters and material properties are roughly calculated prior to fixture design in order to bring the part to dimensions after welding. INTECRO has developed special solutions with electro-mechanical fixture designs for the fixation of work pieces where dimensional changes will be observed.

CUSTOMER FEEDBACK — VAKO VAGON

The reason we chose INTECRO for our first robot investment was because of the flow of information in the sales process and the solution proposal for our needs and their well equipped team. Thus we have chosen INTECRO for our second gantry robot line investment for bogie manufacturing, thanks to the confidence that we gained in INTECRO for turning our first gantry robot investment into success.

Ahmet DEMİRKOPARAN - General Manager

HEAVY-DUTY COMMERCIAL VEHICLES

SAMPLE PROJECTS:

TRAILER CHASSIS
PICK-UP CHASSIS AND BODY
BUS SIDE AND ROOF FRAMES
FUEL TANK, AXLE PRODUCTION
BRAKE PADS AND DRUMS
SEAT CHASSIS
VEHICLE AND PASSENGER SAFETY COMPONENTS
AIR CONDITIONER BODY
CASES, COVERS AND WHEELS

INTECRO promises perfect joining solutions for all lower and upper body groups, especially with metal content. Imagine personalized production with work-specific fixtures and system design. INTECRO is ready to deliver your turnkey Welding and Metalworking solution.

INTECRO, being its first kind in Europe, has developed and delivered the "Robotic Flexible Production, Assembly and Transfer System" for commercial vehicle diesel engine production.

Many processes are applied simultaneously in flexible production lines. We can apply image processing, quality control, component verification, assembly, lubrication, sealing, torque-controlled bolt tightening and many other processes in the same or different stations on the line. Production and assembly lines delivered by INTECRO cover all these applications and work autonomously with numerous types of workpieces in the Industry 4.0 concept.

CUSTOMER FEEDBACK

DEUTZ / ERKUNT

As our first robot investment we were considering a machine tending project for our CNC machining line. After discussing our short, mid and long-term goals with INTECRO, this project expanded in content and the idea of a "flexible production line" was born. From assembly to quality control, from handling to surface machining applications, we now have almost all production steps in one integrated line. INTECRO has shown us that we can do much more than we thought with industrial robots. We will be expecting even more in our next investment.

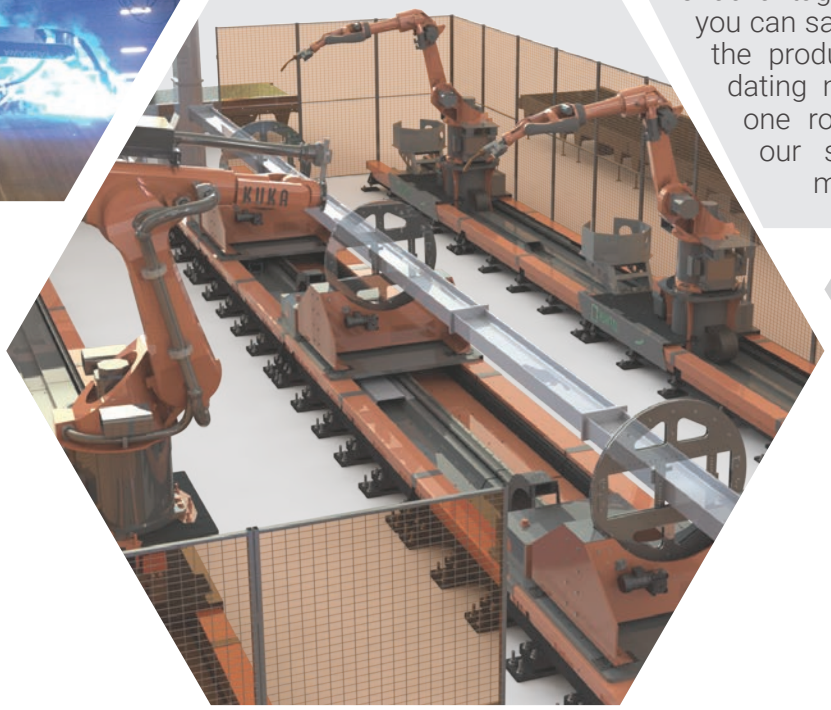
Oktay BAŞARIR - Purchasing Manager

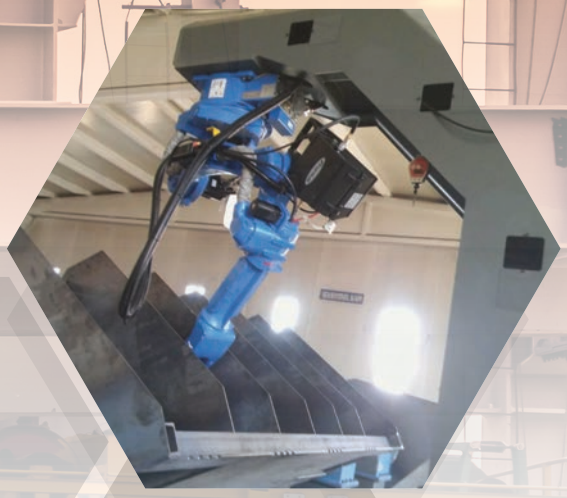
STRUCTURAL STEEL AND CONSTRUCTION

SAMPLE PROJECTS:

- CONSTRUCTION MOLDS
- SCAFFOLDING AND OTHER EQUIPMENTS
- POWER PLANT COMPONENTS
- CONCRETE PLANTS AND MACHINES
- PIPE LINES
- STRUCTURAL STEEL AND CONSTRUCTION
- ASPHALT PLANT EQUIPMENT
- WALKING PLATFORMS AND SAFETY BARRIERS
- OTHER CONSTRUCTION EQUIPMENT

In segments where thick materials are widely used, the conventional oxy-acetylene method or inductive pre-heating are used to control thermal expansion. Plasma cutting, pre-heating and single wire, tandem and twin welding processes can be handled in the same system. Such a system coupled with two or three work stations and positioners increases productivity and enables easier material flow. Another advantage for such a system is that you can save valuable floor space in the production floor by consolidating multiple machines into one robot system. Contact our sales engineers for more information.





INTECRO has implemented the Cold Material Transfer (CMT Advance) application for Aluminum modular scaffolding systems, reducing heat distortion.

In order to prevent part deformations due to thermal expansion in the steel construction welding, the synchronous welding is performed simultaneously with multiple robots to control warping effects. Programming of such a process is made easier with CAD/CAM based data processing followed by offline programming. This reduces programming time for manufacturing steel beams and other construction components where there is a high number of different parts and serial manufacturing is limited.

CUSTOMER FEEDBACK — TOBLER / OKURSOY

Our first robot investment turned out to be a system with low uptime and provided minimal added value to our production. After meeting INTECRO and successfully completing the tests for our challenging process, we placed an order for 3 different systems. INTECRO is a highly reputed company with responsibility for service and after-sales support. For us, INTECRO is the company of choice for robot investments.

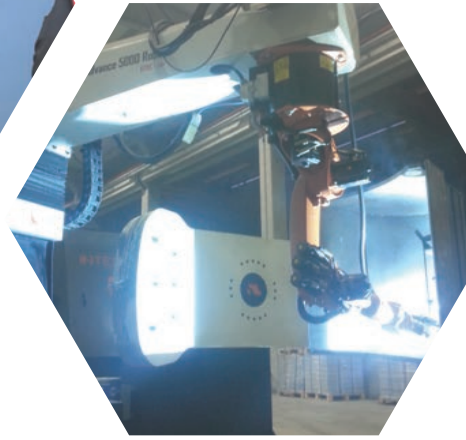
İzzet OKURSOY - OKURSOY TOBLER A.Ş. / Chairman of the Board

CONSTRUCTION MACHINERY

SAMPLE PROJECTS:

- EXCAVATOR BUCKETS
- BOOMS AND ARMS
- FORKLIFT COMPONENTS
- MOBILE CRANES AND PLATFORMS
- TRASH COLLECTION AND COMPACTING SYSTEMS
- TANKERS
- DUMP TRUCKS
- STATIONARY AND TOWER CRANES

INTECRO adds value to numerous construction machine manufacturers' products with their systems equipped with tool changing, pre-heating, single-wire and tandem / twin welding techniques.



INTECRO is one of the leaders in "Heavy Welding Applications."

Accurate positioning of the robot and workpiece in the welding of high volume systems becomes important. For this, one or multi-axis workpiece positioners, sliders (robot positioning mechanisms), pillars (fixed and moving hanging columns for inverted robots) and gantry systems (portal designs supported from a single side or double sides) are used. INTECRO's differentiator in robot welding projects is the use of external-axis products that confirm with CE standards.

Due to the nature of the semi-finished products in the construction machinery segment, arc sensors, touch sensors and laser sensors are simultaneously used to achieve accurate results for a successful result.

CUSTOMER FEEDBACK — MPG Makina

Persuading management may turn out be lengthy task in companies that are in transition to robotic welding. The solution concept is a "tailor-made" system rather than a simple cutting or linear welding machine, making the solutions difficult to compare from a commercial standpoint. We discussed our expectations and goals for this transition with numerous domestic and foreign robot integrators. One of the main reasons why we were convinced to work with INTECRO is that they understood our needs and provided us the concept that would enable a short ROI. On the other hand, INTECRO has a wide range of workpiece and robot positioners that are suitable for high-volume workpieces and heavy welding applications. INTECRO's team of welding engineers proved their expertise in the process. Using the best process equipment available in the market coupled with superior robotic systems, INTECRO is a rare company that participates in the process development in our field.

Veysel ALVER - MPG Makina A.Ş / General Manager

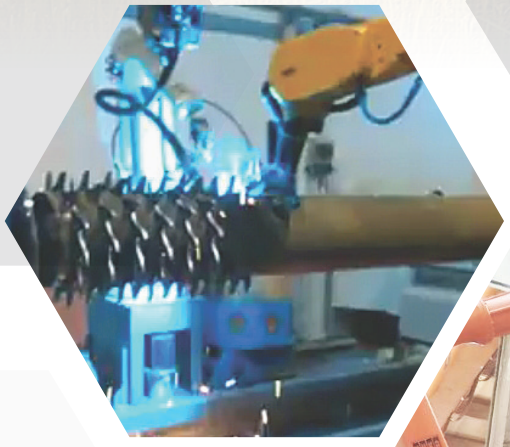
OUR PRIMARY GOAL IS TO CONTRIBUTE TO THE ROBOTIZATION MOVEMENT IN GENERAL INDUSTRY. THE MAIN PRE-REQUISITE FOR THIS STEP IS ADVANCED TEST INFRASTRUCTURES AND PRECISION PRODUCTION TECHNOLOGIES FOR HIGH QUALITY PRODUCTION. WE OFFER SPECIAL SOLUTIONS WITH OUR TEAM OF MECHANICAL, ELECTRICAL, ELECTRONIC, COMPUTER, MECHATRONICS ENGINEERING DISCIPLINES IN ORDER TO SATISFY THESE REQUIREMENTS FOR THE INDUSTRY.

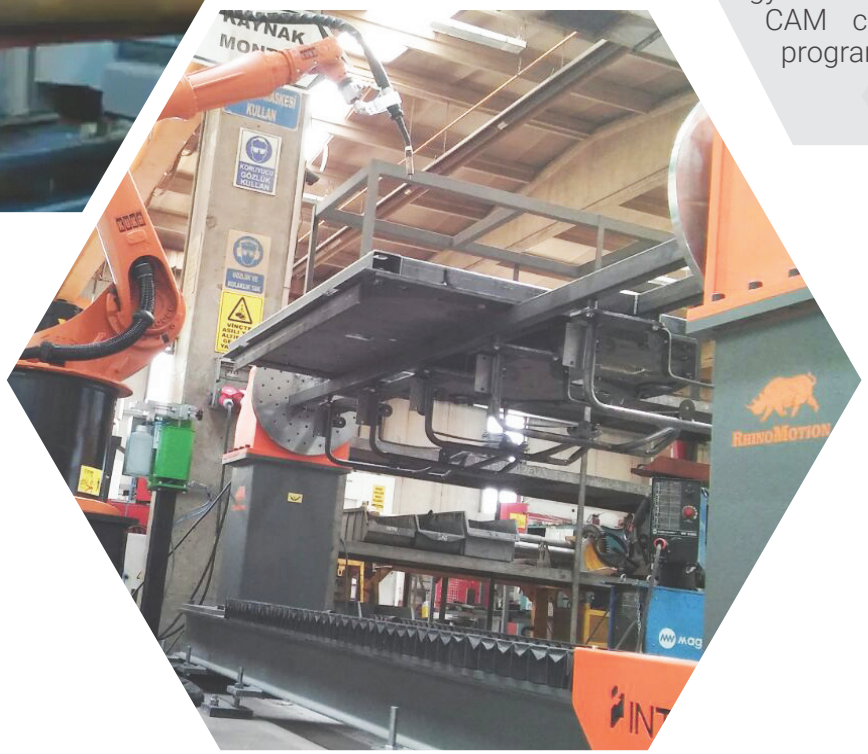
ÖZGE ÖZÜM ARSLAN
DEFENCE INDUSTRY PROJECT SALES ENGINEER

AGRICULTURAL EQUIPMENT

SAMPLE PROJECTS:
AGRICULTURAL MACHINES AND SEMI AUTOMATIC TOOLS
CABINS
TRACTOR ATTACHMENTS AND EQUIPMENT
SILOS
HAND TOOLS AND MECHANICAL SYSTEMS
MILLING AND SCREENING SYSTEMS

Sub-components must be in a certain standard in order to obtain successful results from the robotic welding. At this point, cutting and bending tolerances of thin workpieces, especially those requiring precise fixation, come into play. INTECRO offers turnkey solutions for robotic welding including pre-welding operations, such as Precision Robot Technology for laser cutting with CAD CAM control and offline programming in the 3D workspace.





3D Robotic laser cutting technology assisted by CAD-CAM requires no point-to-point teaching. INTECRO's recent laser cutting system processes steel tubes, pipes and profiles in various shapes and dimensions. Cutting jobs for all 36 different workpieces are carried out in a single flexible manufacturing cell using 24 quick-connect fixture systems.

The precision of the robot trajectory is one of the most important factors in the laser cutting process. The laser beam must have a precise path and positioning accuracy as well as repeatability. CAD-CAM supported programming interfaces is the only alternative in creating robot frames.

CUSTOMER FEEDBACK

EKER-MAK

Due to the number of parts and the need for tack welding, we used to think that it would not be possible to weld our agricultural machinery products by robots. INTECRO proved the opposite. With robotic positioners and robotic slider systems that we use in our welding line, we now enjoy the advantages of flexible production. We strongly recommend other manufacturers to consult with INTECRO before making the move to robotized welding.

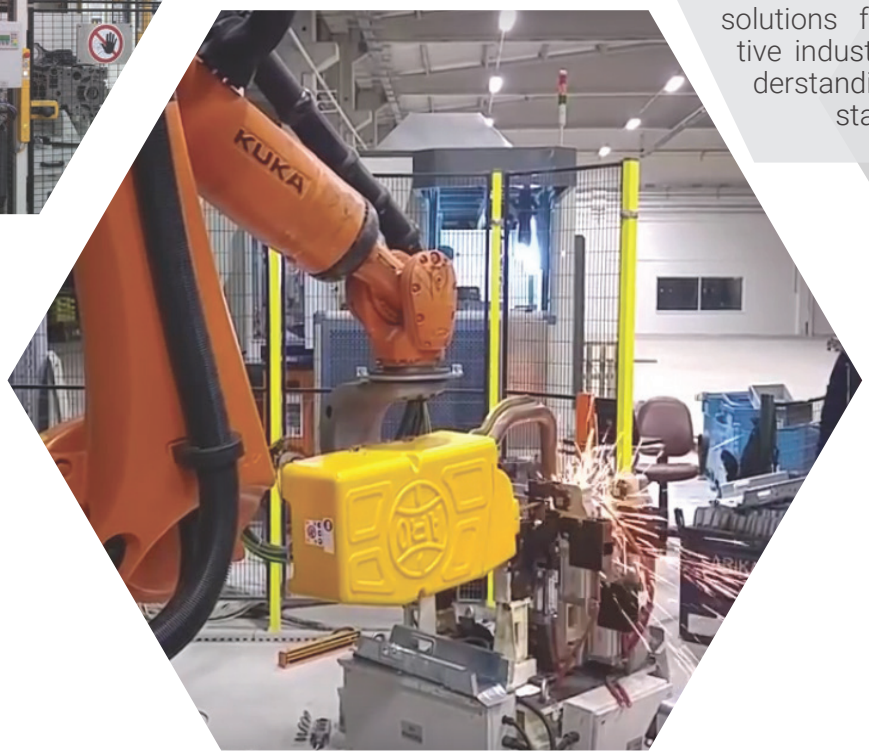
Ahmet TEKBAŞ - EKER-MAK AGRICULTURAL PRODUCTS / Deputy General Manager

TIER-1 AUTOMOTIVE SUB-SUPPLIERS

SAMPLE PROJECTS:

- AXLE COMPONENTS
- ENGINE FRAMES, TRANSVERSAL COMPONENTS
- SEAT PARTS
- CRASHBOX
- ISOFIX CONNECTIONS
- DRAWBAR
- DOOR AND LUGGAGE LOCKS
- BODY AND SUB-CHASSIS GROUP

The functionality of the welding fixture is the main factor for repeatable production in automotive. Part dimensions and part preparation are key features for the automotive industry. While INTECRO uses POKE YOKE and 3S techniques in fixture designs, manufacturing and assembling of fixtures are verified by CMM methods with controlled reference metrics at every stage of production. INTECRO focuses on turnkey solutions for the automotive industry with the understanding of industry standards.



INTECRO's standard plug-and-play arc welding cells and spot welding systems offers flexibility on the manufacture floor as well as saving floor space with its compact design.

INTECRO is a single-source solution provider for all necessary components in a robotic manufacturing cell. For the automotive industry, the process and all peripherals such as fixtures, special machinery and positioners are designed, manufactured and integrated into turnkey solutions.

CUSTOMER FEEDBACK

TOYOTA / T1: ARIKAN AUTOMOTIVE

So far we purchased 2 spot welding systems and 2 arc welding cells from INTECRO. The selection for the first project was based on a combination of criteria: Forecasts on productivity increase, ROI time, the supplier's familiarity to automotive standards, initial cost and customer references regarding overall system uptime and response time to service inquiries. After system final acceptance, we knew we had made the right choice. INTECRO is now in our preferred supplier database, as well as our end-customers'.

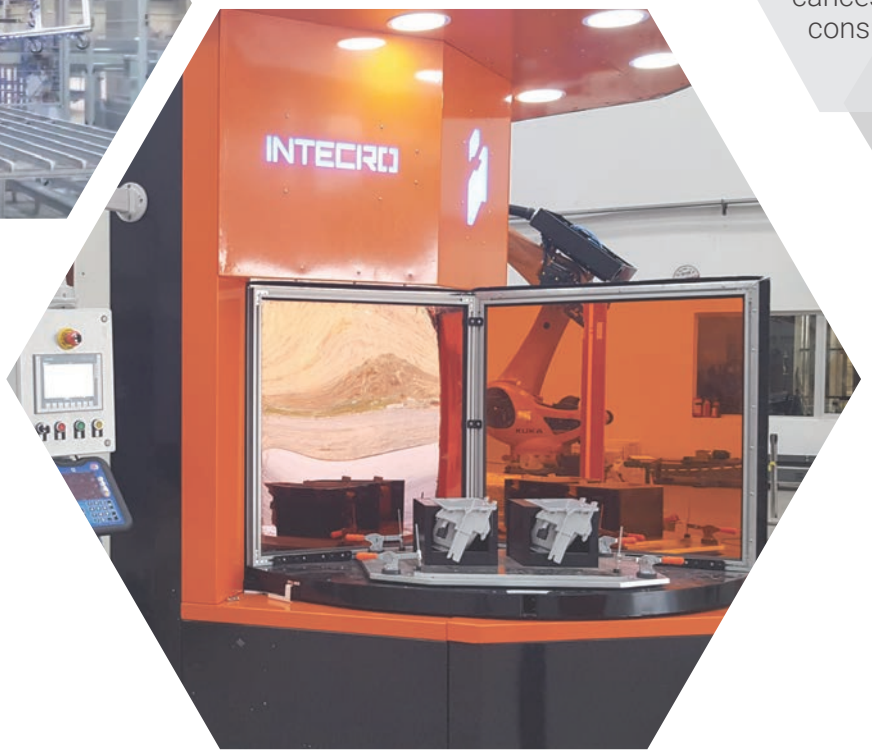
Ahmet ARIKAN - Arıkan Otomotiv A.Ş / Chairman of The Board

GENERAL INDUSTRY

SAMPLE PROJECTS:

ENERGY
CABLE INDUSTRY
HOUSEHOLD APPLIANCES
FURNITURE
CONSUMER ELECTRONICS
MEDICAL

Metal joining and flexible production lines are used in the main industries of INTECRO as well as in the general industry segment such as furniture, energy, household appliances, medicine and consumer electronics.



The future is now: INTECRO developed a flexible packaging line that could handle multiple product types simultaneously. The system delivered in 2012 was the first robotic engineering project in Turkey that was fully integrated into the customer's ERP system. Little did we know that in the coming years what we did would be named as "Industry 4.0".

MIG/MAG welding is the main process used in robotic applications in the general industry, such as TIG welding, riveting, bonding, screwing, image processing, dispensing and quality control.

CUSTOMER FEEDBACK — HES KABLO

"INTECRO's packaging line turned out to be quite reliable and has now been working for 5 years without any problem. The system is autonomous. It can make decisions, automatically create recipes, produce the n-barcodes after each operation and direct production in preceeding steps with the help of machine vision. The whole factory is mobilised in line with SAP data, and the results are fed back into SAP. INTECRO did not only engineer and deliver a system with such complex mechanical, electronic and software engineering but also delivered a perfect after-sales experience thanks to the service interventions being handled in a timely manner."

Uğur YILDIZ - Hes Kablo A.Ş / Production Manager

ACCOMPANYING ACCOMMODATION: FULL PENETRATION WELDING

SAMPLE PROJECTS:

PRESSURE VESSEL, STEEL STRUCTURES
THERMODYNAMIC PRODUCTS AND MACHINES
HEATING SYSTEMS
FUEL TANKS
DEFENSE INDUSTRY PRODUCTS
SILOS AND TANKERS

INTECRO, in conjunction with Robotic solutions, assists in the correct application of operations that need to be done prior to welding, taking into account parameters such as material composition, part geometry and weld preparation. Selecting the right filler material enables optimum penetration by applying single and double sided weld deposition on top of the root in V, Y, K and X welded geometries, with or without backing material.

In November of 2016, INTECRO broke new ground in the welding industry by successfully delivering a 30 meter, 20 axis gantry system that can provide full penetration in serial production conditions: 95% X-ray controlled in welding of special alloy materials such as armour steel. We would like to thank all of our team and technology partners for this project. We are proud of bringing this technology to the industry as well as being the only example in our country and having only a few distinguished manufacturers in the world that have reached such standards.

In robotic applications, it is necessary to have a deep process know-how to control variables such as material information, appropriate welding mouth selection according to material, welding current, speed, position, arc length, electrode angle and diameter, and protective gas type to obtain a high strength welding seam.

CUSTOMER FEEDBACK — OTOKAR

At first we thought that INTECRO had signed a project contract which we thought it would be very difficult both in terms of robot mechanics and process. They were able to deliver our biggest ganttry system investment in just 2 months, fully functional, and consisting of a 30 meters gantry with two work stations. The INTECRO team worked day in day out with full dedication as a part of our company in process improvements. It is a company with high engineering ability that analyzes all the variables before welding on a daily basis and achieves the expected sustainable welding penetration success avarege without stopping the production flow and catching the x-ray penetration values in the expected rate.

Ferda TEKİN - Otokar Automotive and Defense Industry Inc. / Production Manager

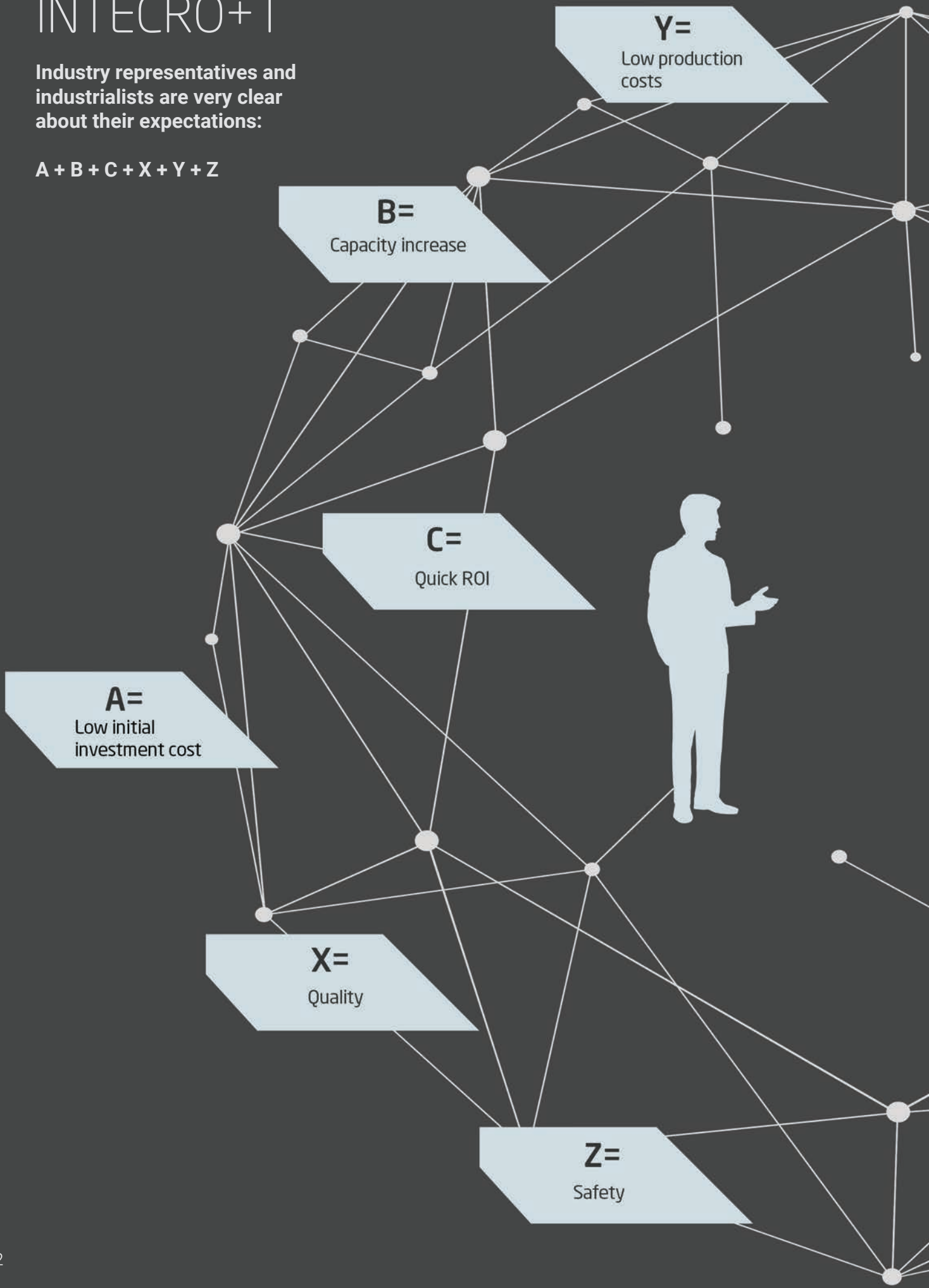
INTECRO AIMS TO CREATE A SUSTAINABLE ENVIRONMENT FOR FUTURE GENERATIONS WİTH ITS CURRENT UNDERSTANDING AND VISION BY USING SCIENCE AND TECHNOLOGY. THIS MENTALITY WHICH COMBINES THE CREATIVITY OF YOUNG ENGINEERS WITH THE IMAGINATİON OF INVESTORS, HAS CREATED A NEW PROJECT CULTURE. INTECRO AND ITS CUSTOMERS HAVE DEVELOPED LONG-LASTING RELATIONS IN EVERY CASE. OUR CLIENT IS THE STAKEHOLDER OF THE PROJECT. AND AS INTECRO, WE ACT AS OUR CLIENTS' PARTNERS FOR PRODUCTION.

NECİP ARVAS
WELDING APPLICATIONS SEGMENT MANAGER

INTECRO+1

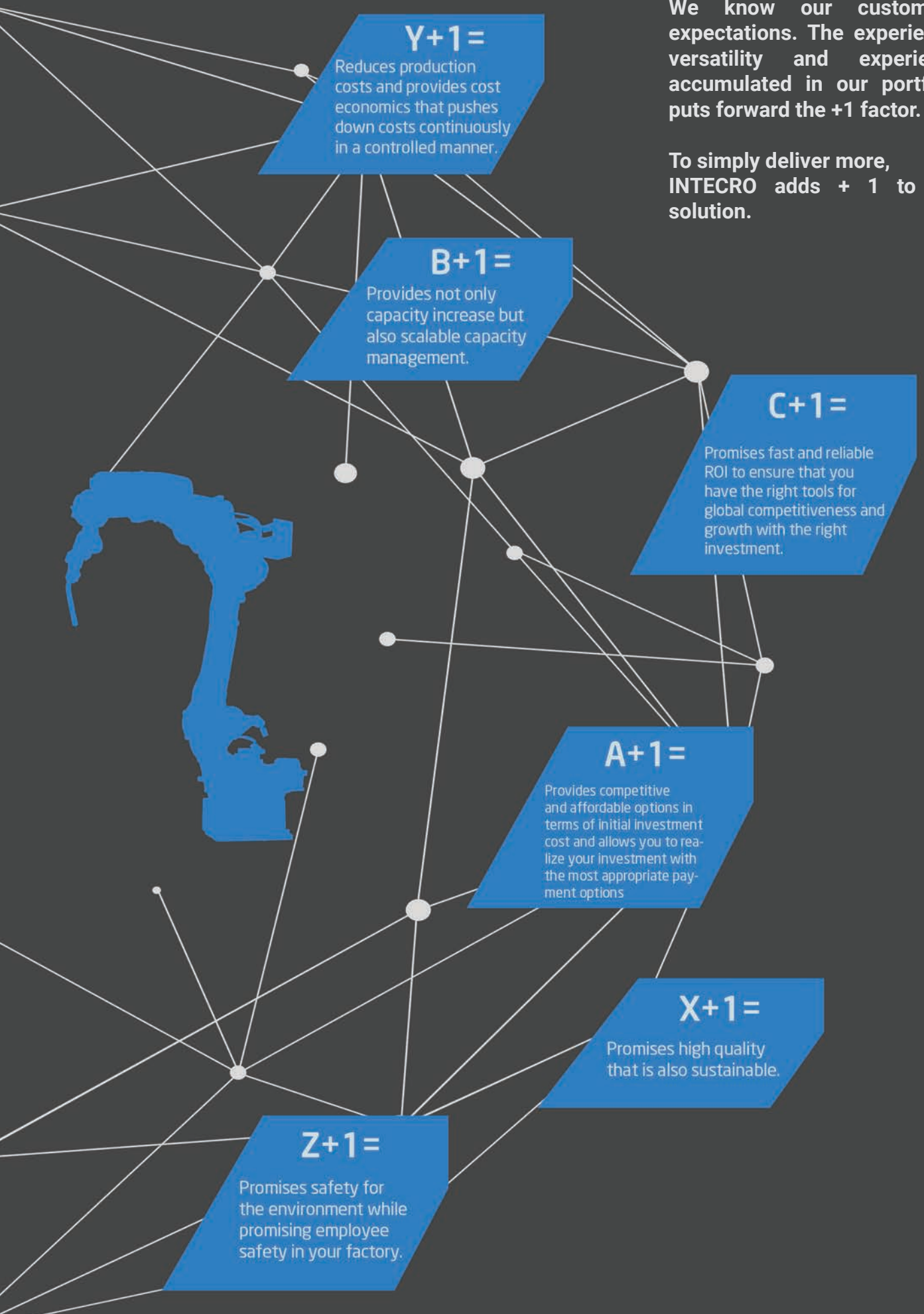
Industry representatives and industrialists are very clear about their expectations:

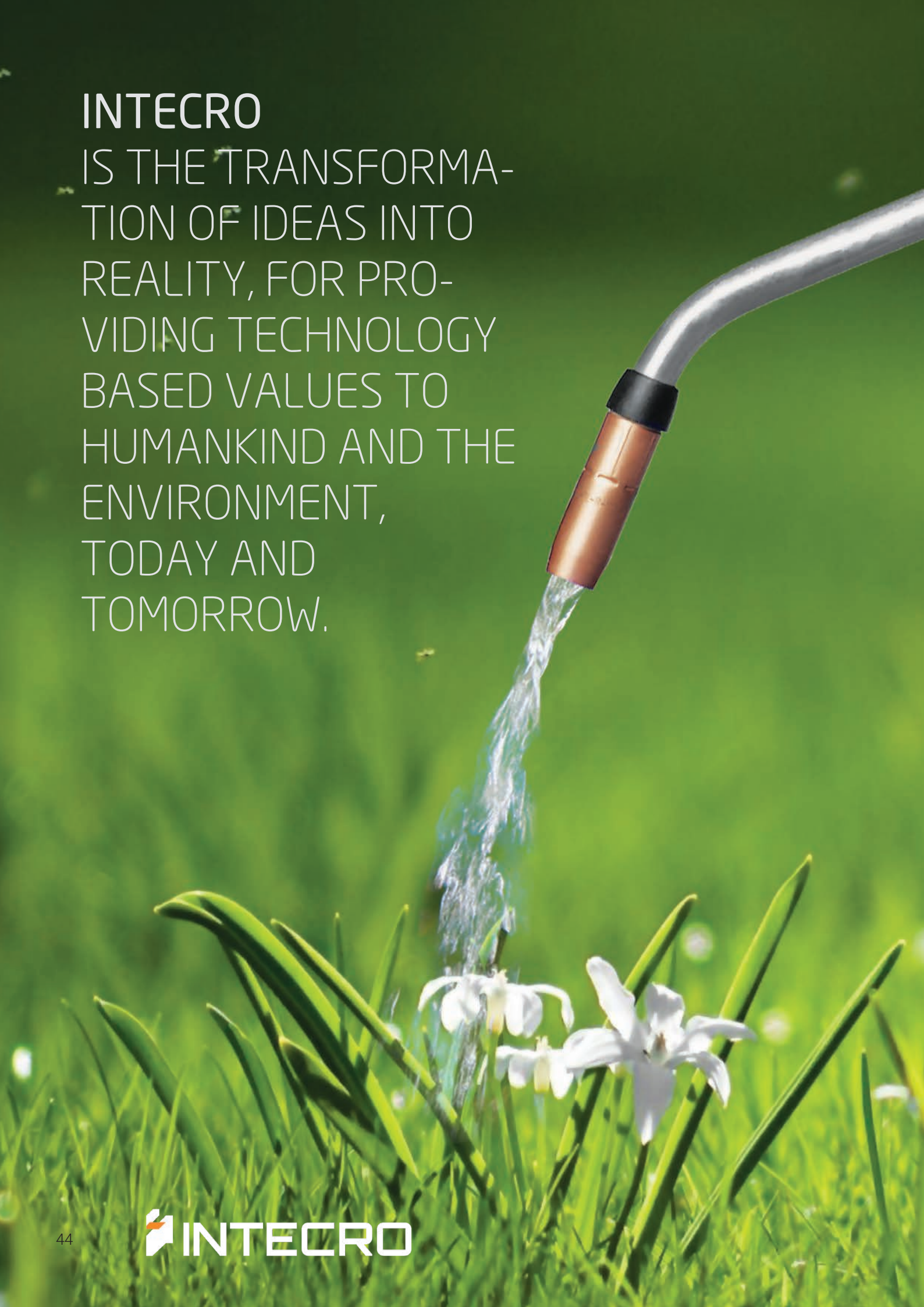
A + B + C + X + Y + Z



We know our customers' expectations. The experience, versatility and experience accumulated in our portfolio puts forward the +1 factor.

To simply deliver more, INTECRO adds + 1 to the solution.




INTECRO
IS THE TRANSFORMA-
TION OF IDEAS INTO
REALITY, FOR PRO-
VIDING TECHNOLOGY
BASED VALUES TO
HUMANKIND AND THE
ENVIRONMENT,
TODAY AND
TOMORROW.

You can see our touch in every moment of our daily life. From the construction machines used to build your house, to the cars you use to go to work. From the lifts you use to get to your office to the agricultural machines that bring food to your table. From the trains that you take to reach your loved ones, to the radar systems that determine the route of your return plane.

INTECRO, is in our lives.

Certificates

ISO 9001 : 2008

ISO 9001 Quality Certificate

CE CERTIFICATE

Our products and systems are CE certified in accordance with the global quality standards.

TECHNOLOGICAL PRODUCT EXPERIENCE CERTIFICATE

Awarded by the Ministry of Science, Industry and Technology that Gantry Robot and other robotic products we produce are in the category of "Advanced Technology Product".

DOMESTIC MANUFACTURING CERTIFICATE

Our robotic peripheries have been registered by the Ministry of Science, Industry and Technology as domestic production, with 71% of the materials and components coming from local suppliers.

TUBITAK SAGE MERIT CERTIFICATE

We were honored by Tubitak Sage with "Tübitak Certificate of Merit " within the scope of our successful projects in laser processes.

MINISTRY OF SCIENCE INDUSTRY TECHNOLOGY PRODUCT AWARD

INTECRO has been deemed worthy of TEKNONOLIGICAL PRODUCT award by the Ministry of Science, Industry and Technology, among the 20 companies within the scope of design, engineering activities and products.

OTOKAR MERIT CERTIFICATE

Within the scope of the project that we have realized in OTOKAR company, the "Merit" Reference Letter has been presented by the distinguished management of OTOKAR company on behalf of our company.

EXPORTATION CERTIFICATES

We have all necessary certificates for exports on a global scale.

References


aselsan
TAI
roketsan
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MKE
BMC
Otokar
MAN
TÜVASAS
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Putzmeister
KATMERCİLER
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MERİH asansör
T-KALIP
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INTECRO and INDUSTRY 4.0

In 2012 we were convinced that we would establish “Robotics Systems” with our first SAP-integrated production line, which would shape our future for industrial production as a “TRANSLATED WORLD” and “PERSONALIZED PRODUCTION”. We are focusing on the future with a high awareness to move the “Industrial Ecosystem” on a global scale into the industrial revolution.

www.intecro.com.tr

/intecrorobotics

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