CyD
TECNOLOGÍA

GENERAL PRESENTATION

April 2021

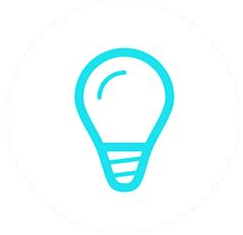
We help you improve your operation

- **CyD Tecnología** was born as an initiative of **CyD Ingeniería** and a chilean hardware and software developer with vast experience in Chile and abroad
- CyD Ingeniería has more than **1.400 staff, 44 years of experience and USD 76 million** in annual sales
- **We have various technologies** that solve important challenges for our clients in industries such as **mining, energy, transportation, among others**

Presence in Chile (Santiago, Antofagasta, Concepción), Bogotá and Asunción

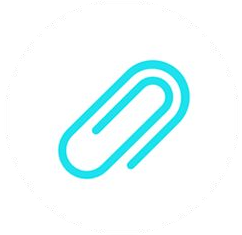
Sister companies

Our value offer



Innovation

We stimulate creativity and are at the forefront of applied technologies



Flexibility

We adapt quickly to the client requirements

Excellence

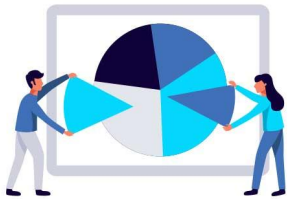
We encourage continuous improvement and collaborative work

Simplicity

We deliver simple solutions to complex problems

Our focus

Productivity



- Optimization of processes
- Cost reduction
- Generation of information for decision making
- Management platforms
- Reportability

Health, Safety and Environment

- On-site personnel reduction
- Risk prevention and mitigation
- Measurement of pollutant gases and particles
- Monitoring of environmental commitments

Supervision and operational control

- Production facilities remote operation
- Monitoring for asset management

Alliances

CyD Ingeniería, perfect partner and ally for project management

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CyD INGENIERIA

With **44 years of experience** in Chile and abroad, in addition to a team of more than 1,300 collaborators, CyD Ingeniería stands out in the delivery of services such as **project management**, **technical inspections of work**, **engineering development**, **advice on claims**, among others. It works with important clients from different industries such as mining, public works, energy and transportation, to name a few.

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CyD Tecnología is an integrator and partner of PcVue Solutions

The **SCADA PcVue** software allows **remote operation of production facilities**, has **more than 30 years in the market** with clients such as: EDF, ISA (Colombia), Alstom, Schneider and many others. In Chile, it has presence in **Minera Los Pelambres, Codelco, BHP - Spence**, among others. The system is capable of delivering real-time alarms, reports, web accesses, etc.

Big Data solutions through DataQu

CyD Tecnología has an alliance with DataQu for Big Data solutions, who develop predictive mathematical models through **digitization, Artificial Intelligence and Machine Learning**. In Chile, they are present in **Minera Los Pelambres, Collahuasi, Walmart, Banchile, Telefónica**, among other clients. The system is capable of managing, controlling and optimizing the internal data of the companies

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Services

Services - Software and hardware development

Technological support for operations
Through applications with IIoT

Management of technological projects
The perfect match with our partner CyD Ingeniería

Detection and classification using Artificial Intelligence (AI)
Different classification with AI linked to productivity and security

Remote inspections with augmented reality lenses or drones
For commissioning and monitoring of the work

Remote operation of production facilities
We integrate SCADA PcVue Solutions

Development of predictive and optimization models
We use Big Data for data analysis and reportability

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Technologies

Technologies

SCADA System

Its acronyms come from control, supervision and data acquisition in industrial systems in which tools are used, communication protocols and adequate security to these environments. Our SCADA PcVue is used in various facilities with very high availability, flexibility and efficiency in the processes

Infrared (IR) and thermal cameras

The infrared sensor of these cameras makes it possible to detect and measure the surface temperature of people and objects, which is used for various applications in risk prevention. Thermal cameras make it possible to measure the radiation emitted by a body and have various industrial applications such as asset management

Augmented Reality (AR)

It is the use of information in real time and displayed on electronic devices in the form of texts, graphics, audio or others, superimposed on real objects. Different types of sensors allow generating advanced animations and making it possible to track objects to display information about them. One of the lenses that allows you to create an animated system in 3D is the Hololens 2

Big Data

Big Data is all the information that can be recovered either during the implementation of processes or related actions. A correct administration and management allows to make better decisions both at corporate and commercial level through complex mathematical models

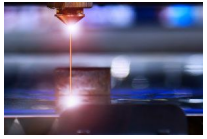
Technologies

Artificial Intelligence (AI)

They are processes carried out by machines with which they are sought to replicate human functions such as analyzing, learning and solving problems. This type of tool allows us to simplify and streamline various processes, in addition to being able to identify potential problems or risks

Industrial Internet of Things (IIoT)

Refers to sensors, instruments and other networked devices along with industrial applications of computers



LiDAR - Laser Imaging Detection and Ranging

It is a method of calculating distances with a laser by measuring its reflection, similar to a radar, but using a laser instead of radio waves. The differences detected in time and wavelengths allow to make a 3-D representation of the target. Commonly used in car displacement applications and high resolution mapping

Wireless technologies

Wi-Fi, system that uses Internet / Ethernet from equipment such as computers or microcontrollers wirelessly. It is mainly used for high data transfer rates and works at high frequencies which limits its range (20 to 150 meters)

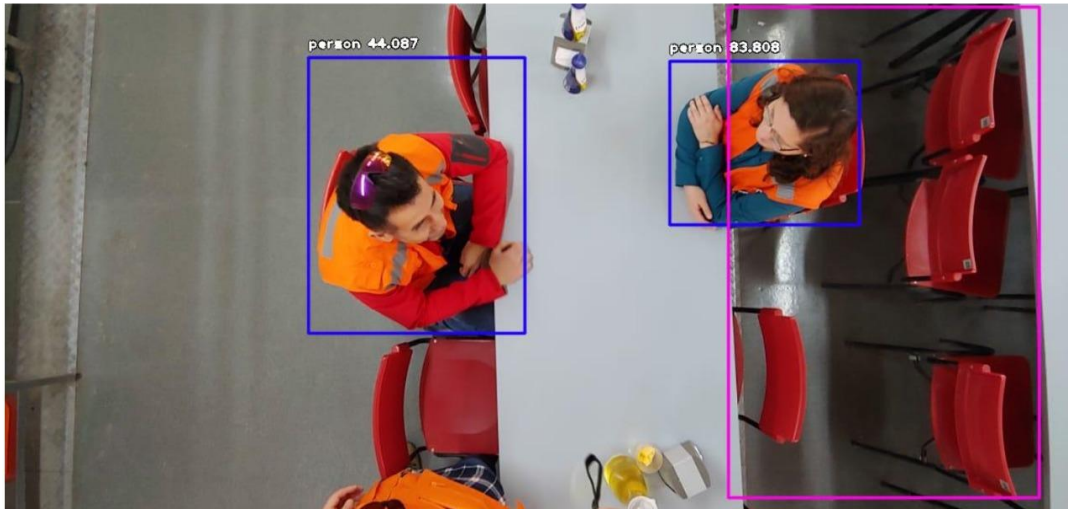
Bluetooth Low Energy, also known as BLE, is a variation of the well-known Bluetooth connection but for low energy consumption and maintaining the range of its predecessor

LoRa, (short for Long Range) is a frequency modulation technique for data transmission over long distances. Unlike the technologies discussed above, LoRa has a low transfer rate, which implies that it is used in measurement devices (such as electrical meters, temperatures, etc.) that must send information every ten minutes or an hour for example. LoRa has a range of around 10 kilometers, which makes it very interesting for industrial and mining applications

Successful projects

Mining - Counting people with AI

- Counting system in casino using Artificial Intelligence and verification of real consumption. Using 150 completely wireless and battery powered (to facilitate installation) sensors (cameras), it is possible to count the number of people in a 300-table casino in real time. The information is also displayed on a web platform and allows the downloading of reports to verify consumption, total and by company. These sensors are capable of verifying if there are casino workers in certain areas, and with this information they are capable of measuring productivity, use of hygiene and safety materials

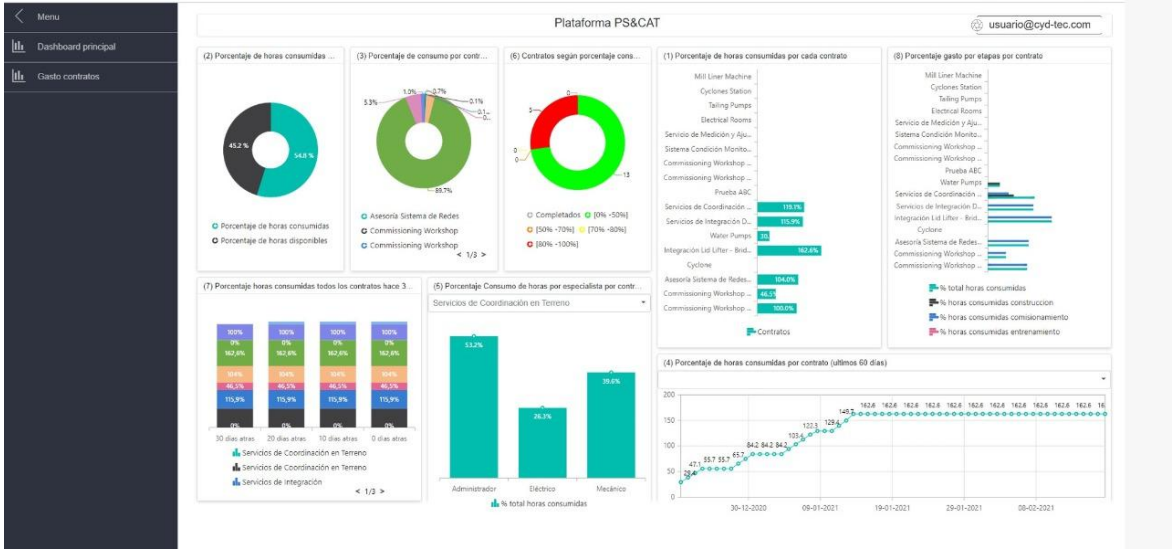


Mining - AR pilot with Hololens 2 and SCADA connection

- System capable of connecting in real time with SCADA through custom-developed communication interfaces. For said pilot and in conjunction with the Scada PcVue Solutions team, it was possible to carry out connectivity, extraction of values and sending of commands in real time to the SCADA system. It was possible to visualize data from said platform in the form of Augmented Reality. Additionally, the application is able to detect information by reading QR codes in the area where the user is. There is also the possibility of accessing the different remote monitoring systems through the buttons that are displayed on the AR platform designed for Hololens 2. This application is currently in the process of being evaluated in major mining companies in Chile

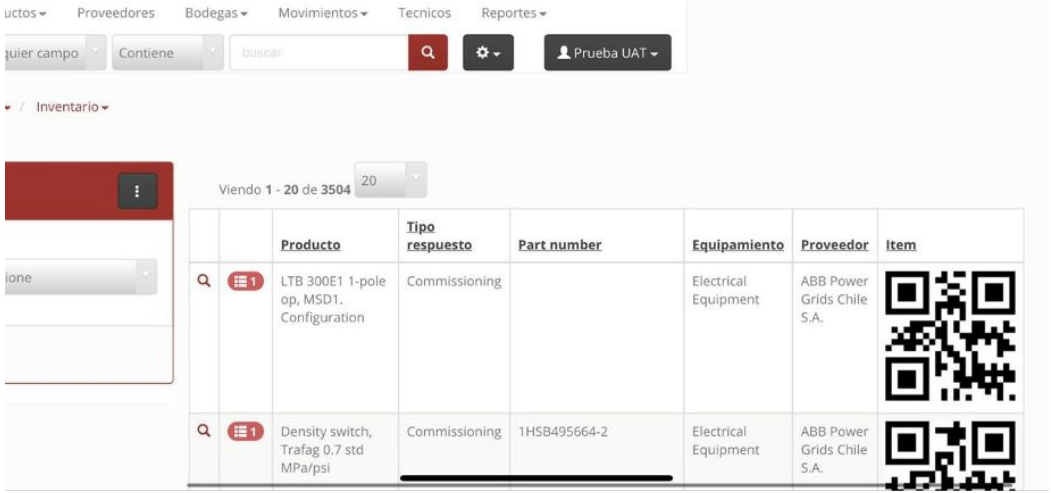
Mining - Vendor management platform

- System for the control of attendance and tasks carried out by vendors in an important mining company in Chile. There is a platform in which field personnel can enter the tasks and activities carried out by vendor personnel, allowing immediate traceability and decision-making. The system has the ability to balance information for billing and report generation



Mining - Equipment warranty management

- Product coding system using QR codes for inventory management and access to contract data and equipment manuals from a web platform and App on mobile devices. The platform is capable of sending alarms when the guarantees of an equipment are about to expire, inform if they have been delivered to operations and record stock movements



Mining - Predictive model using Big Data

- **From our partner DataQu:** for ME Elecmetal, a mathematical model for predicting the wear and tear of the inner liner plate was developed for their SAG mills. This model allows to have real time information on wear and tear and an estimate of the expected time of change of the plates. The result of this service generated a 20% decrease in mill stoppages

Energy - SCADA for electrical substations

- **From our partner PcVue:** SCADA system for electrical substations in an important mining company in Chile. The system has a monitoring station for electrical variables and network deployment, in order to raise alarms, generate reports, control and manage the network

Energy - IIoT application in transmission systems

- **From our partner PcVue:** for ISA (Electrical Interconnection) in Colombia, an IIoT system was developed that obtains analog data measurements (temperatures, oil levels, etc.) and digital (equipment opening or closing states, etc.) and sends the data through LoRa communication to a gateway equipment converter to industrial electrical protocols, allowing data to be obtained on SCADA platforms using electrical standards.

Transport - SCADA for comprehensive monitoring

- **From our partner PcVue:** for **iREAL**, the leading company in the development of railway safety operations systems in China. The Qinghai Tibet Railway runs from Xining City Qinghai Province to Lhasa Tibet. Its total length is 1,956 kilometers, considered an important route to Tibet, being the longest and highest trip in the world over the permafrost. With PcVue's SCADA platform, an integrated monitoring system was implemented to control: management of the control room, the infrared station room, the signal room, internal and external temperature, humidity, battery, contamination, electricity, door magnetism, broken glass; a whole system of security and prevention of railway disasters

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