



MECTION
ENGINEERING SOLUTIONS





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MECTION is an engineering company that operates in Europe, Argentina, and the United States. We work on engineering projects meant to give support to technical offices.



Our staff is composed of engineers with expertise in projects of great significance within the Mechanical Engineering field. We generate basic, conceptual, and detailed engineering, including all the steps of the development process, such as planning and management. We provide high-quality services that follow the required standards of each particular company.



Our specialty service is focused on the improvement and optimization of equipment, devices, and processes in order to enhance the quality chain of your products.



We also develop engineering solutions as regards building new equipment and machines based on our clients' needs.





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We distinguish ourselves in:

- Personalized attention
- Understanding of the needs of small and middle-size businesses
- Quick answer and willingness to help
- Agile and versatile solutions
- Quick estimate of project value



Areas and services:

- Basic and detailed engineering of special purpose machines
- Detailed engineering of piping (assembly drawings, detailed drawings, and specifications)
- Detailed engineering of metallic structures
- Detailed engineering of lifting systems (lifting beams, gantries, and others)
- Load movement study
- Reengineering of existing products (assembly drawings and technical specifications)
- Analysis of improvement of mechanical components
- 3D modelling and animations of processes and equipment
- Calculation reports of machines, structures, and equipment
- Finite Elements Analysis (FEA) of machines, structures, and equipment
- Employment of international standards for the design of piping, structures, and machines, based on our clients' needs





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Completed Projects

GRAIN DRYER

Machine designed specifically for the agro-industry. The dryer system was designed to dry grains. When transported from the grower to the silo, grains arrive wet most times; therefore, the manufacturing of this system was required.

The dryer is made up of a bucket elevator used to lift grains from the bottom to the top. These then fall into a hopper through a sheet metal tube. Inside the dryer, there is a cone and a micro-perforated sheet through which air coming from a cyclone located on the outside is injected.

Deliverables:

- Assembly, manufacturing, and installation drawing
- Technical specifications for the structure based on site conditions
- Maintenance and operating manual
- Final 3D model

Design software: SolidWorks, SAP2000





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Completed Projects

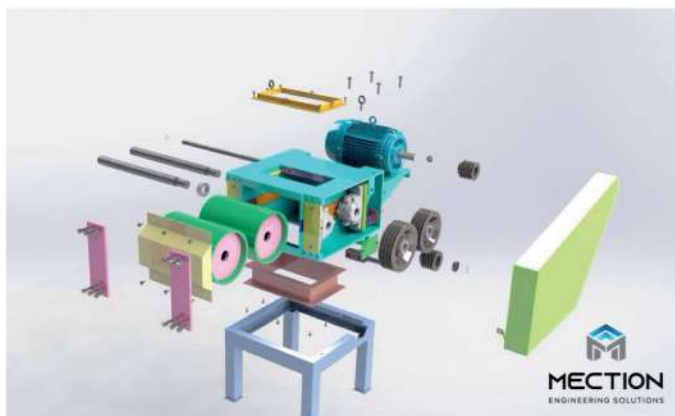
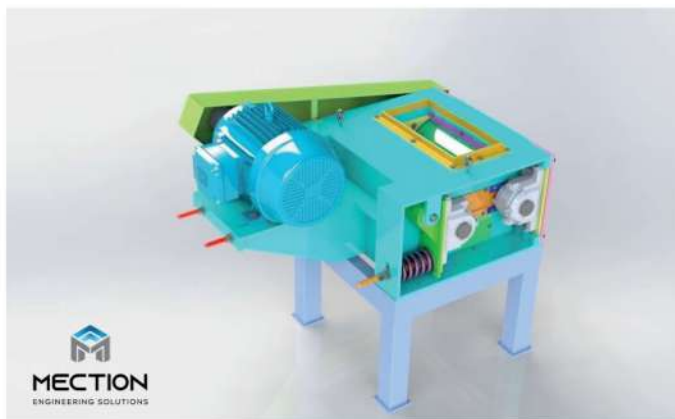
GRAIN CRUSHER

The design of a grain crusher for an agro-industrial company in Argentina is shown.

The project consisted in the design and updating of the design of a grain husk crusher. The project culminated with the delivery of manufacturing drawings and 3D models of all the pieces.

Deliverables:

- Assembly drawing
- Detailed drawings for manufacturing
- List of materials
- 3D model in SolidWorks





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Completed Projects

SCREW CONVEYOR

Machine designed specifically to move a product towards a hopper.

It was developed for the pet food industry. Dried materials with pellet shape are transported through the screw conveyor to a mixing system. The installation of such conveyor was required due to the height of the mixing system hopper. The screw was also needed for the product to be poured in batches as the screw goes by and the mixing occurs.

Deliverables:

- Assembly drawing
- Detailed drawing for manufacturing
- Welding details
- Operating manual
- Final 3D model

Design software: SolidWorks





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Completed Projects

LIME SCRAPER

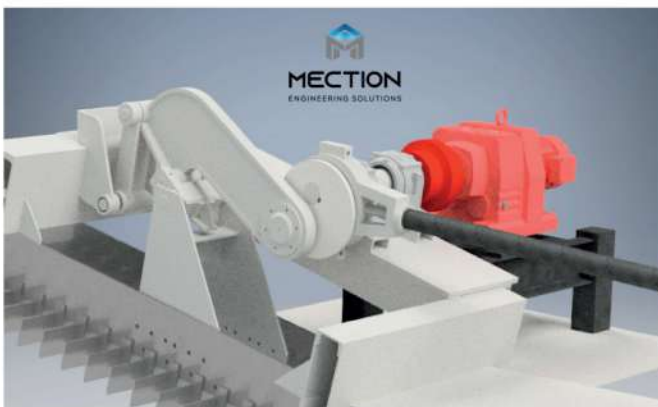
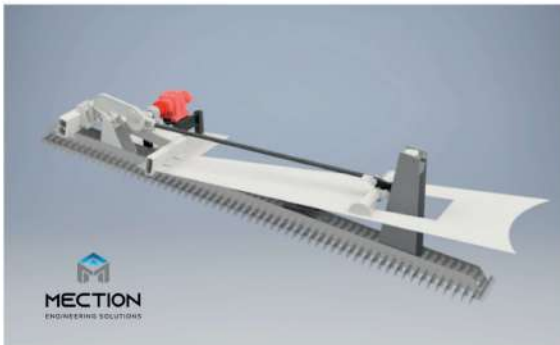
We share our experience in projects of redesign of special purpose machines. At this time, we show the redesign of a lime scraper, used in the process of a paper company.

The project consisted in the redesign of various pieces, Finite Element Analysis, and dynamic simulation of all the components.

Deliverables:

- Assembly drawing
- Detailed drawings for manufacturing
- List of materials
- 3D model in SolidWorks

Design software: SolidWorks





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Completed Projects

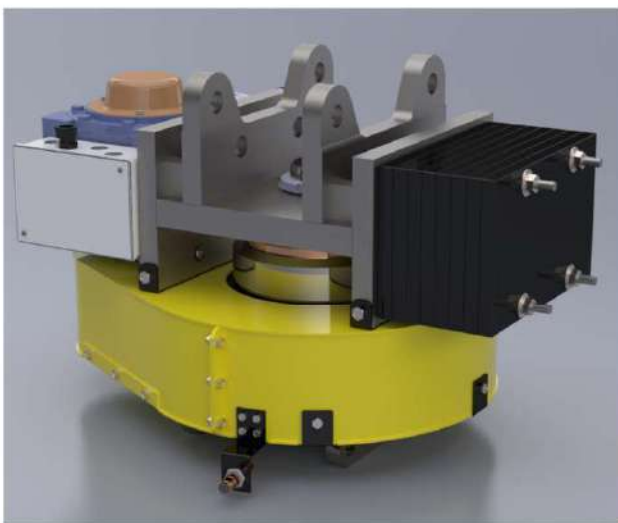
LOAD ROTATOR FOR AN OVERHEAD CRANE

Machine designed specifically to rotate the load in an overhead crane of 10t. The rotator system is located between the transverse moving trolley in the overhead crane and the hoist (lifting mechanism containing a hook). Using this system, the hoist and the hook can rotate 180°. It has two inductive sensors for end detection, a starting torque limiting system, and protections to reinsure safety.

Deliverables:

- Assembly and manufacturing drawing
- Technical specification and Finite Element Analysis of the material strength.
- Technical specification based on AGMA for gear assembly
- Technical specification for commercial items

Design software: SolidWorks





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PALLETIZER

Machine designed specifically to palletize spare parts for the automotive industry. The palletizer height regulation allows the pallet to be positioned at the operator's height. Boxes go through a conveyor belt and are stacked at its end. The operator puts the boxes on the pallet with no need of bending over. Once the palletization is over, the palletizer can be moved down to the ground using two hydraulic cylinders. Then the pallet is pushed to a roller bed to continue with the process.

Deliverables:

- Assembly drawing
- Detailed drawing for manufacturing
- Technical specification of commercial items and the capacity of hydraulic system.

Design software: SolidWorks





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VIBRATING SURFACE

Machine designed specifically for compaction of flour in a big bag through an automated process. When the process is carried out, its upper flaps come upwards through the roller bed lifting the pallet with the big bag full of flour. An eccentric motor allows the machine to move up and down resulting in the compaction of the content inside the big bag. After that, the pallet is positioned on the roller bed to continue with the distribution line.

Deliverables:

- Assembly drawing
- Detailed drawings for manufacturing
- List of materials
- 3D model in SolidWorks

Design software: SolidWorks



Completed Projects

TWO-PHASE SEPARATOR VESSEL

This project consisted in the calculation and design of a horizontal two-phase separator vessel for Hydrocarbon Gas (HC-Gas), with a diameter of two meters and a length between tangents of 7.5 meters. Specialized software measured thickness of heads, supports and nozzles.

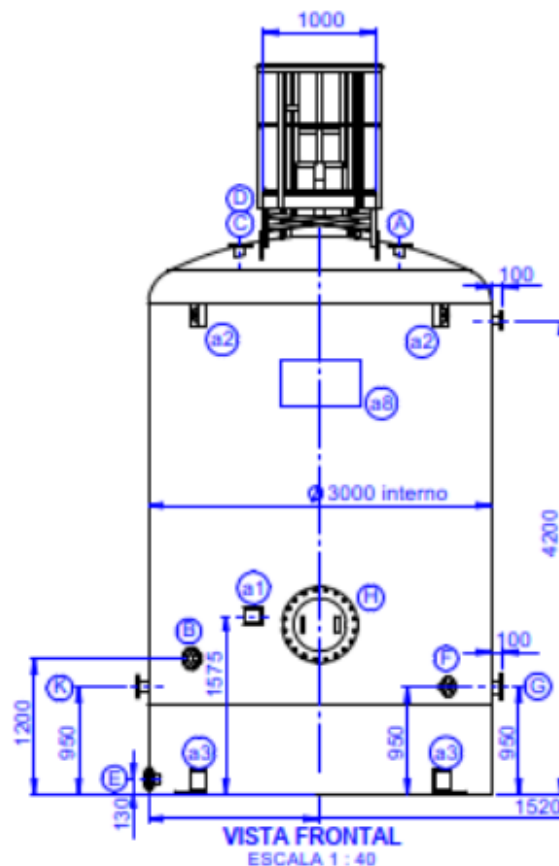
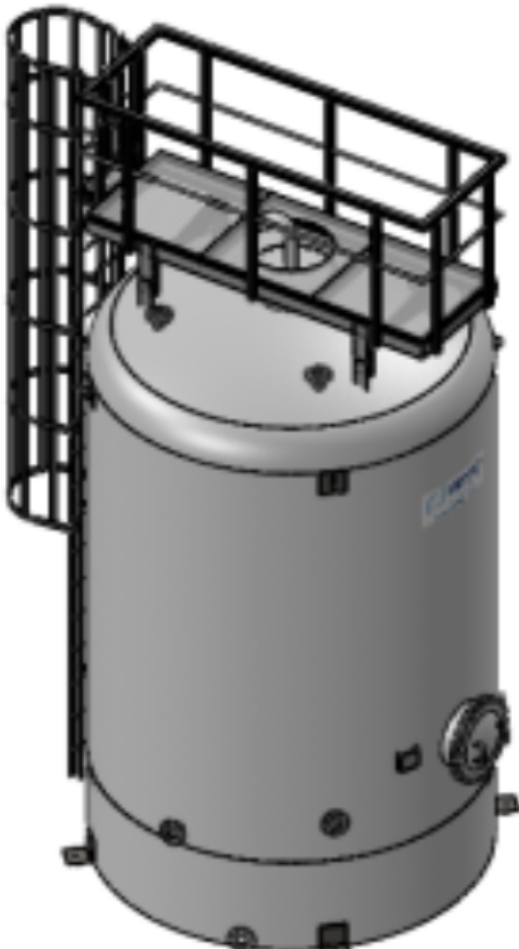
An assembly drawing was made containing all the building details.

Application of ASME Standards, Section VIII. Div. 1.

Deliverables:

- Calculation report
- General drawing
- List of materials
- List of connections

Design software: SolidWorks and AutoCAD





Completed Projects

PIPING

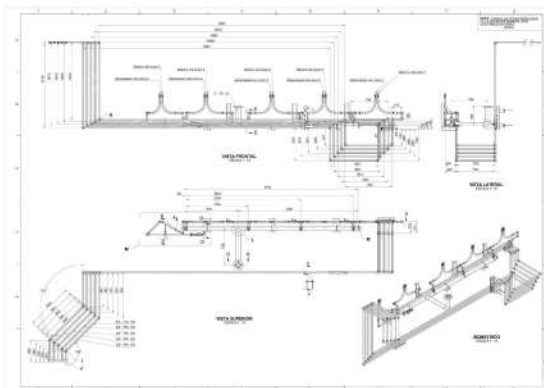
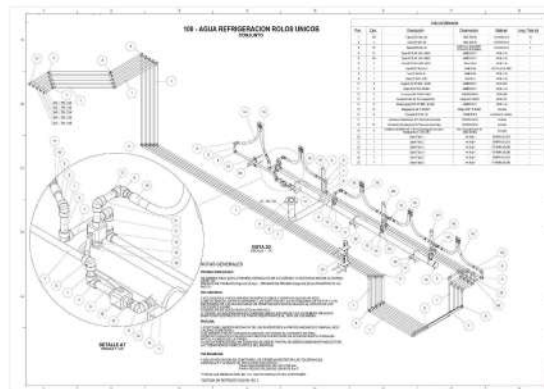
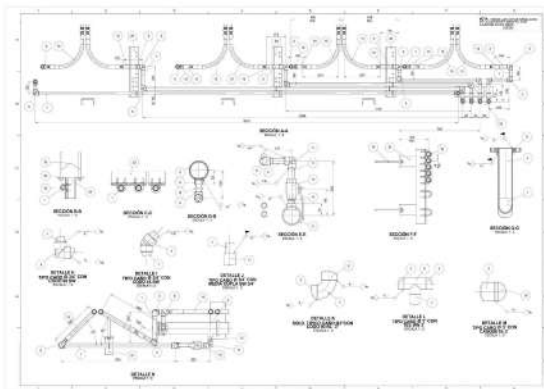
Performance of drawings for cooling piping water system, used for continuous casting cooling. Applied to the steel industry.

The project consisted in a 3D modelling and design of detailed assembly drawings of all the existing cooling piping. It included supports and auxiliary structures.

Deliverables:

- Assembly drawings of the overall structure
- Detailed drawings of individual pieces
- Calculation report
- Structural verification by Finite Element Analysis
- List of materials

Design software: SolidWorks





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Completed Projects

INDUSTRIAL WAREHOUSE

Structural design of a modular shelter for storing electrical equipment of 50 feet x 24 feet.

The project included, basic engineering, structural studies, Finite Element Analysis, numerical analysis and work coordination.

Deliveries:

- Basic and detailed engineering
- Structural calculation report
- Detailed drawing for manufacturing
- Bill of Materials and Cutting
- On-site site site coordination

Design software: SolidWorks, SAP 2000





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Completed Projects

INDUSTRIAL WAREHOUSE

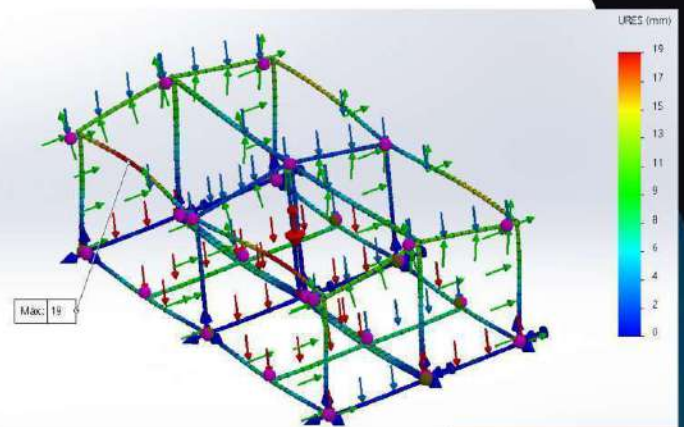
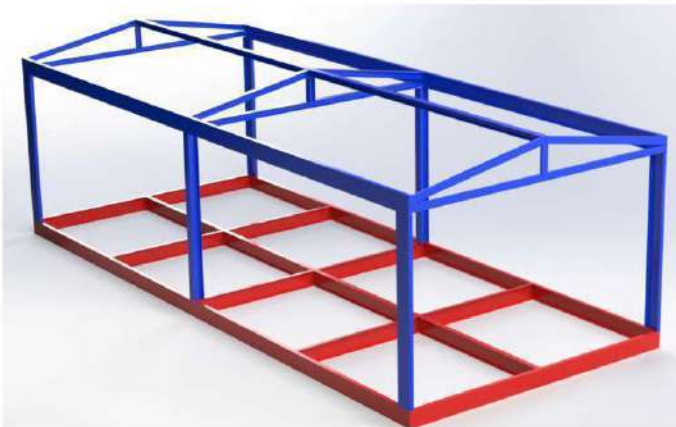
Structural design of a modular shelter for storing electrical equipment of 50m x 15m.

The study was based on the Finite Elements Analysis and the numerical analysis taking into account manufacturing and assembly standards and site conditions.

Deliverables:

- Structural calculation report
- Detailed drawing for manufacturing
- List of materials and cutting

Design software: SolidWorks, SAP 2000





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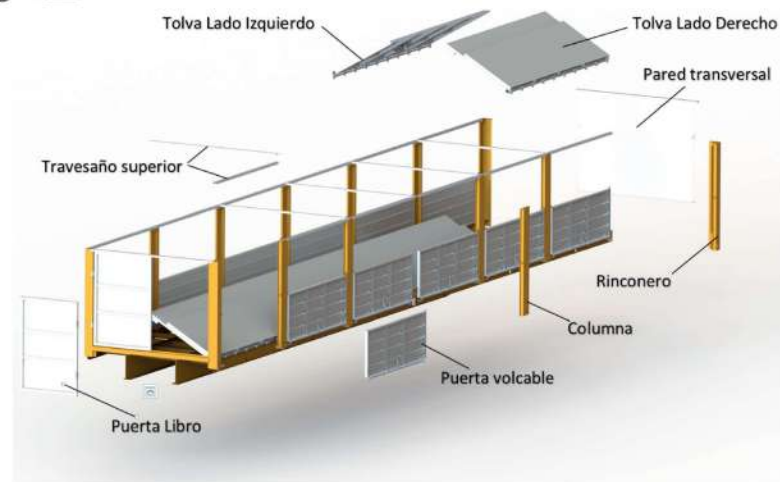
Completed Projects

SEMI-TRILER

Deliverables:

- Assembly drawing of the overall structure
- Detailed drawing of individual pieces
- Structural verification by Finite Element Analysis
- List of materials

Design software: SolidWorks and AutoCAD



Completed Projects

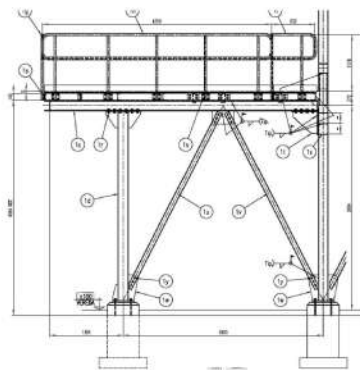
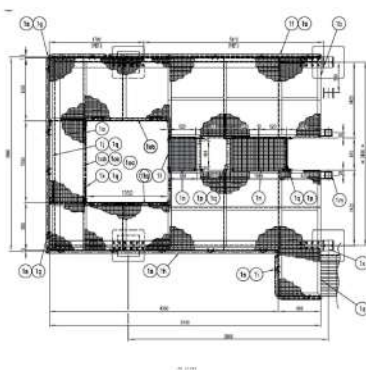
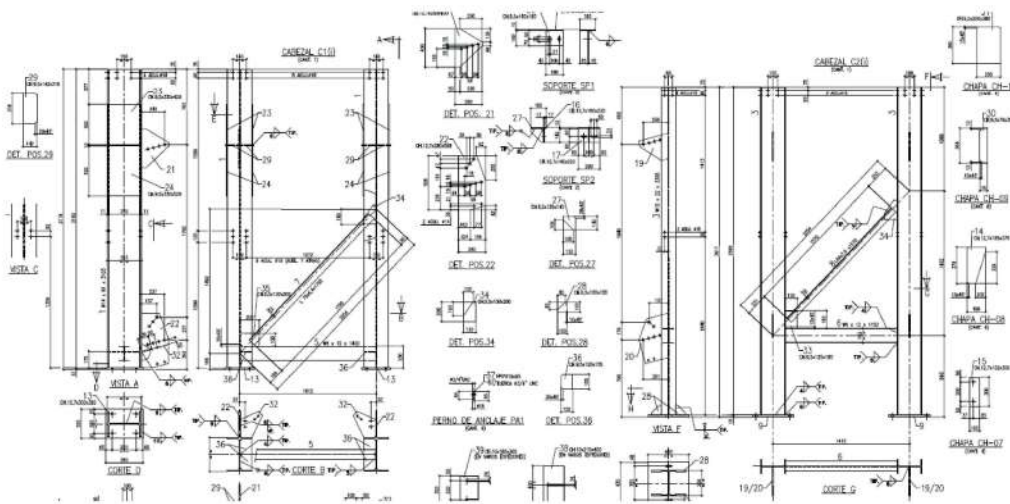
ARTICULATED TOWER

This project consisted in the design and calculation of an articulated tower together with its access platforms.

Deliverables:

- Assembly drawings of the overall structure
- Detailed drawings of individual pieces
- Calculation report
- Structural verification by Finite Element Analysis
- List of materials

Design software: SolidWorks and AutoCAD





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JIB CRANE

The design of a jib crane for an agro-industrial company in Argentina is shown below.

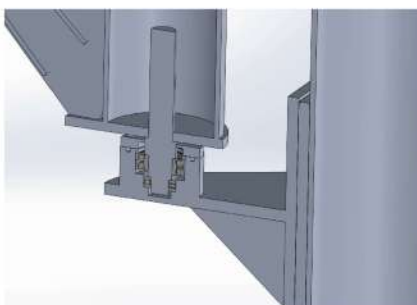
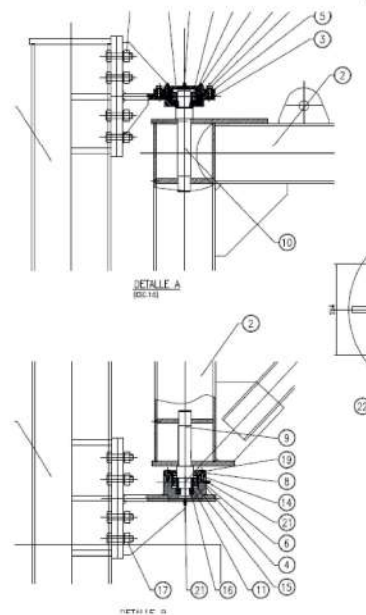
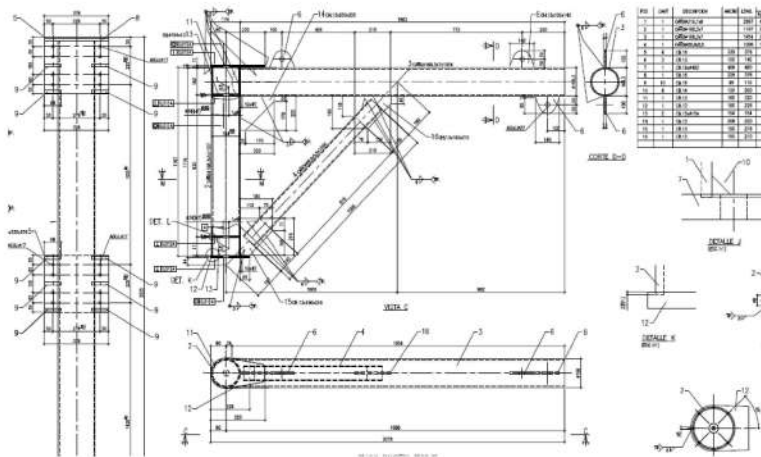
This project consisted in the design and calculation of a jib crane meant to be assembled in a main girder in a grain warehouse.

The project culminated with the delivery of manufacturing drawings and 3D models of all the pieces.

Deliverables:

- Assembly drawing
- Detailed drawings for manufacturing
- List of materials
- 3D model in SolidWorks
- Calculation report

Design software: SolidWorks and AutoCAD





Completed Projects

LIFTING BEAM OF 80 TONS

Suggested design for a Mexican metallurgical company. Lifting beam of 8m long with interchangeable modules that allow length modification.

The interchangeable modules are of 1m, 2m, 3m and 4m long. The ones on the ends, where the shackles and steel wires are placed are of 1m long. This lifting beam has the capacity of lifting up to 80t and 8m long.

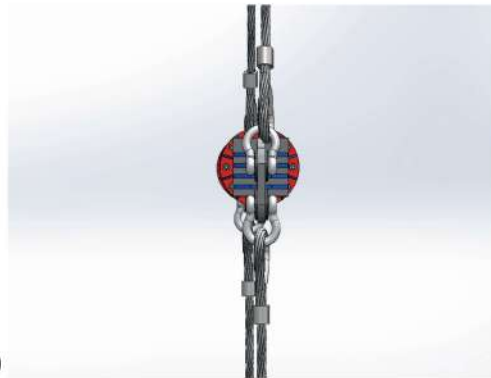
As part of a nondestructive testing, it was advised to perform a penetrant dye inspection and magnetic particle inspection to ensure weld integrity.

The project consisted in the design and calculation of the lifting beam meant for lifting several components.

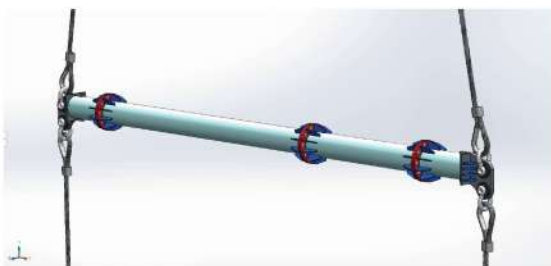
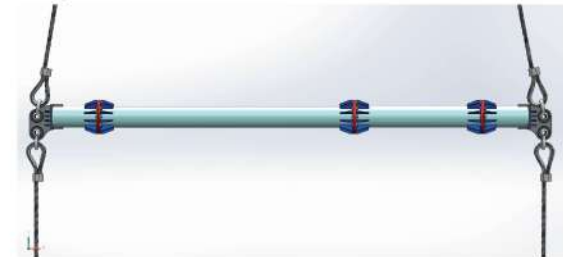
The project culminated with the delivery of manufacturing drawings and 3D models of all the pieces.

Deliverables:

- Assembly drawing
- Detailed drawings for manufacturing
- List of materials
- 3D model in SolidWorks
- Calculation report



Design software: SolidWorks and AutoCAD





Completed Projects

CAR TRANSMISSION SYSTEM

The design of a part of a dune buggy transmission system for an agro-industrial company in Argentina is shown below.

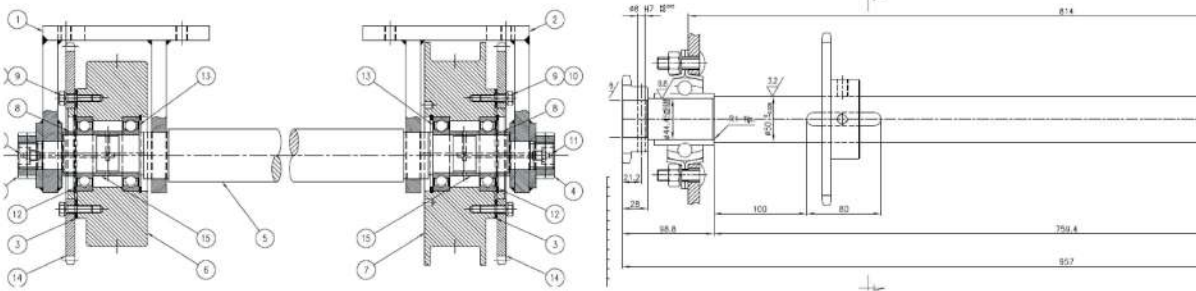
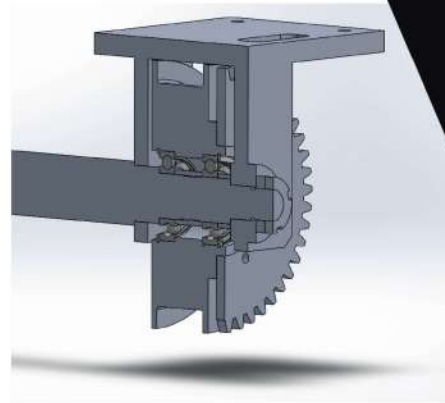
The project consisted in the design and calculation of a special buggy transmission system.

The project culminated with the delivery of manufacturing drawings and 3D models of all the pieces.

Deliverables:

- Assembly drawing
- Detailed drawings for manufacturing
- List of materials
- 3D model in SolidWorks
- Calculation report of mechanical components

Design software: SolidWorks and AutoCAD





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