Engineering Services to Cantoni Moulds

Sphinx Worldbiz Limited

"Your Partner in Reducing Product Development Time & Cost"

MISSION

To be a world class Engineering service provider in the area of MCAD(CAD/CAM/CAE) by complementing our customer efforts to fulfill their Design & Engineering requirements and to deliver them optimum solutions across the Globe with high Quality, Significant cost savings and fast turnaround Time.

VALUES AND BUSINESS PHILOSOPHY

- Irrefutable integrity and candid communication with our Customers
- Lean, Flexible and Responsive organization
- Innovative solutions that accommodate Local needs and leverage Global marketplace changes
- Delivering value and Long-term growth take precedence over maximizing Short-term profits
- Treatment of employees with respect and dignity

ENGINEERING SERVICES

- Engineering Design
  a. Product design
  b. Design of Tools & Dies
  c. Heavy engineering structure design
  d. Design of Jigs & Fixtures
- FEA
  a. Static and Dynamic
  b. Thermal & Modal
  c. CFD
  d. Electromagnetic
  e. Mold flow
- 3D Modeling and Assembly
- Drafting and Detailing

AREAS OF EXPERIENCE

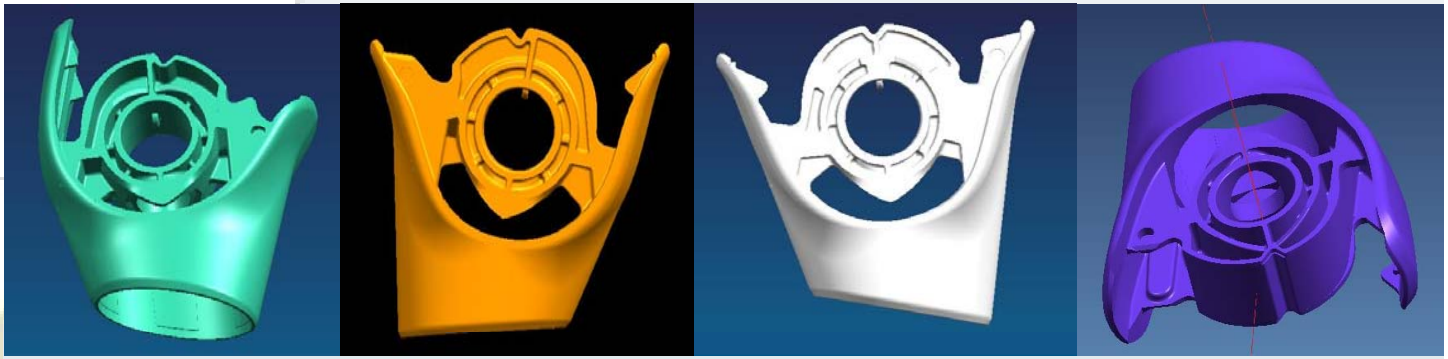
- Injection Moulds
- Pressure Die Casting tools
- Blow Molds
- Heavy fabrications (chassis, boom etc)
- Axles, transmission and steering
- Cab structure and interior
- Hydraulic systems
- Electrical systems
- Work tools
- Jigs and fixtures
- Design of SPM

TOOL DESIGN CAPABILITIES

- Tool Design done for automotive parts as well as white goods
- In house team of 170 engineers working on tool design as well as other design projects.
- Flexibility to increase design capacity at short notice
- Software USED for Tool Design
  - CATIA V5, Pro/E, Unigraphics , Ideas, AutoCAD & Solid Works
- Tool designs are done in 3D as well as 2D, as per the client's requirement.
- Ability to deliver tool design as per the client's tool design standards

DESIGNING OF DIE & MOULD

DESIGN OF PDC TOOL FOR ZINC COMPONENT



Requirement of the Client: The client, a pressure die casting manufacturer wanted to manufacture four different types of zinc components which were similar in shape, from a single tool. The client had a two impression tool for the simultaneous production of two of the four components. To enhance the production of the components, the client wanted to have a single pressure die casting tool designed with four impressions (one for each of the four components). The client wanted the complete tool assembly data along with the manufacturing drawings within 15 working days.

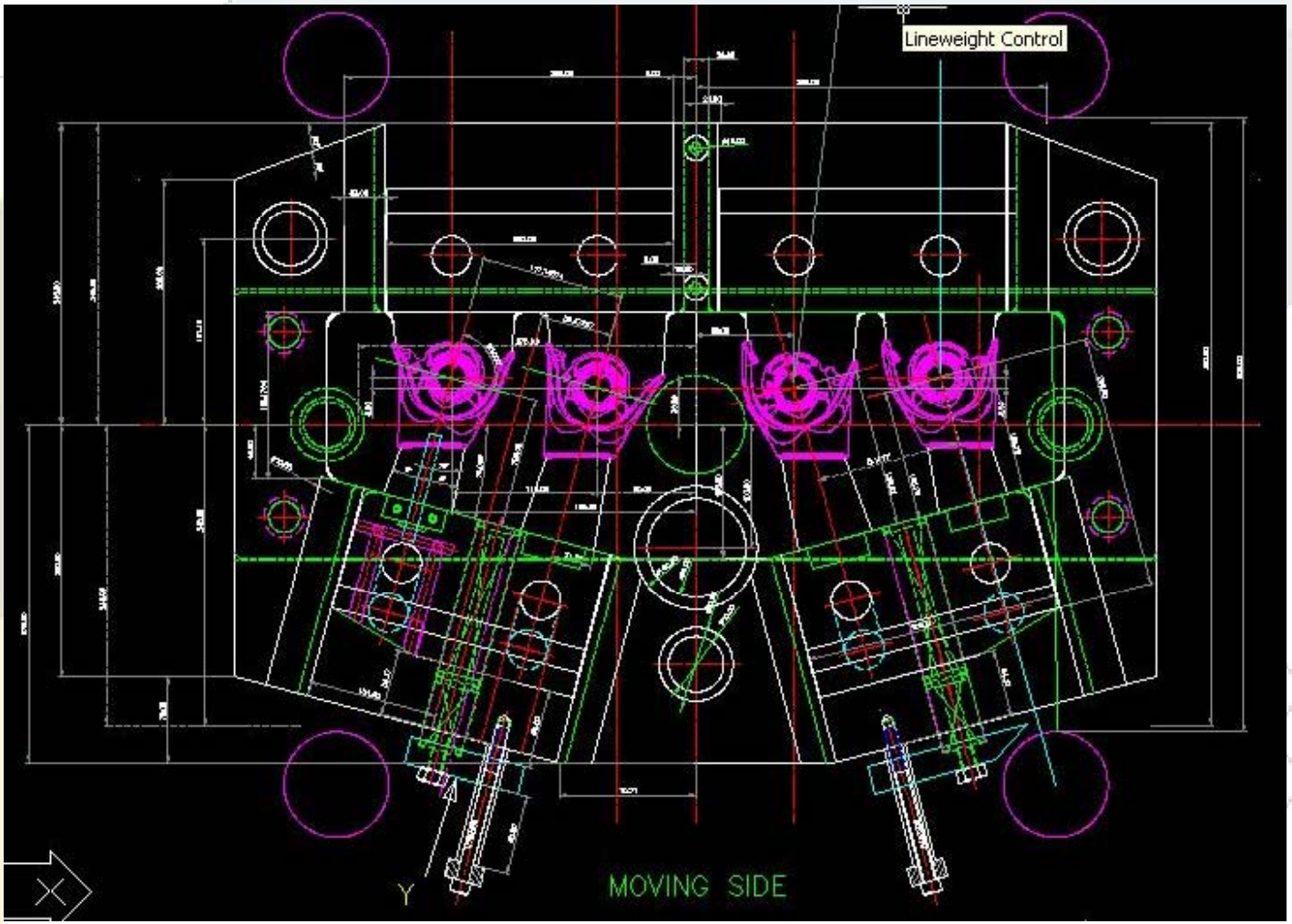
INPUTS FROM THE CLIENT

- CAD models of the four components
- Metrics of the pressure die casting machine
- Images of the existing two-impression pressure die casting tool
- List of all standard hardware items being used by the client
- Details of the tool design standards being followed by the client.

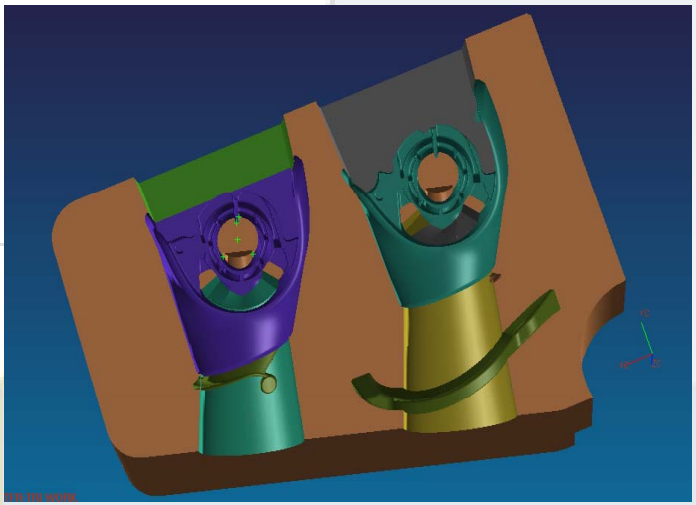
TASK

The tool layout along with the orientation of the four components was proposed to the client for their suggestions and approval. The proposed tool had four sets of sliders – two sets from each side of the tool and the fixed & moving halves.

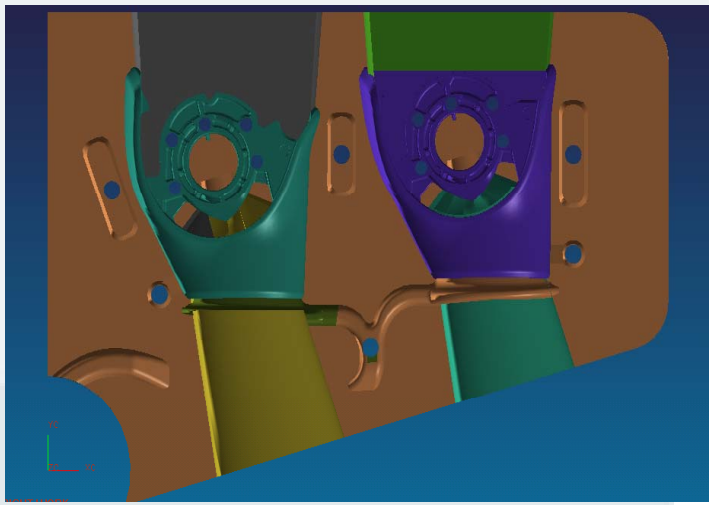
TOOL LAYOUT



TOOL DESIGN – PRESSURE DIE CASTING



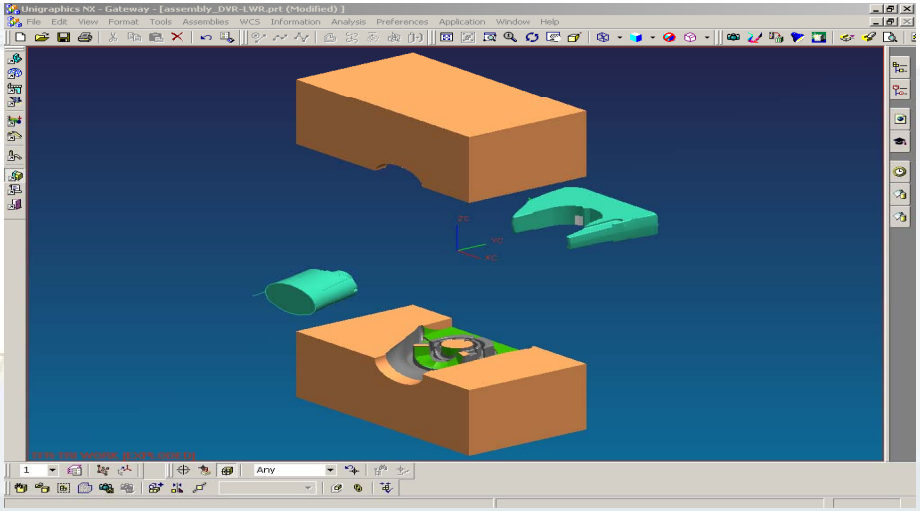
Upper Insert - RH



Lower Insert - RH

Having sought the approval & comments on the proposed layout of the tool from the client, modeling of the core, cavity and sliders was done in Unigraphics. The basic assembly model of the tool comprising of the fixed & moving halves and the sliders was created and sent to the client for design of runner and gates. The design and analysis of the runners, position of gates and analysis of the cooling circuit is quite important for pressure die casting tools. The client had agreed to support us with the design of the runners, location of the gates as well as design of the cooling lines.

INSERTS FOR ZINC PRESSURE DIE CASTING TOOL

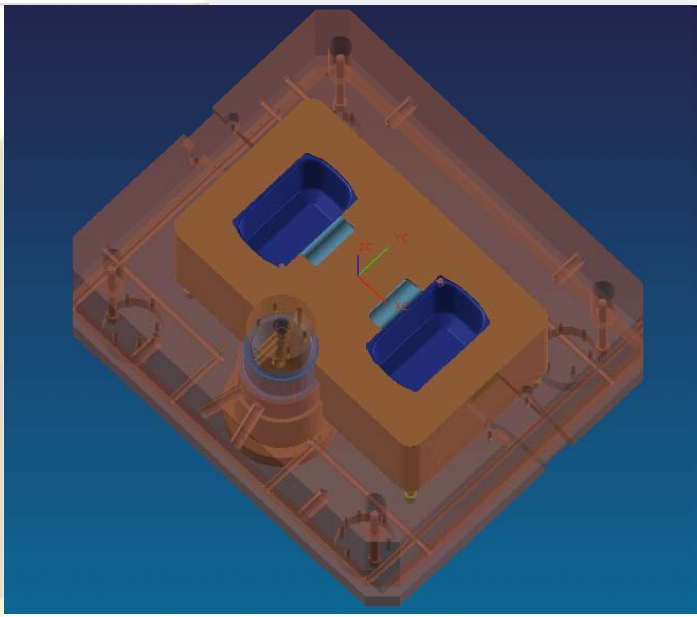


The tool assembly model was created through WAVE concept in which the part models were linked to the assembly model. Whenever a change is being made in the part model and updated, the same will get updated in the drawings too. Complete Mating conditions are specified in the assembly model. The drawings are created through Interpart Expressions in which the feature parameters in the model are linked to the drawing notes..

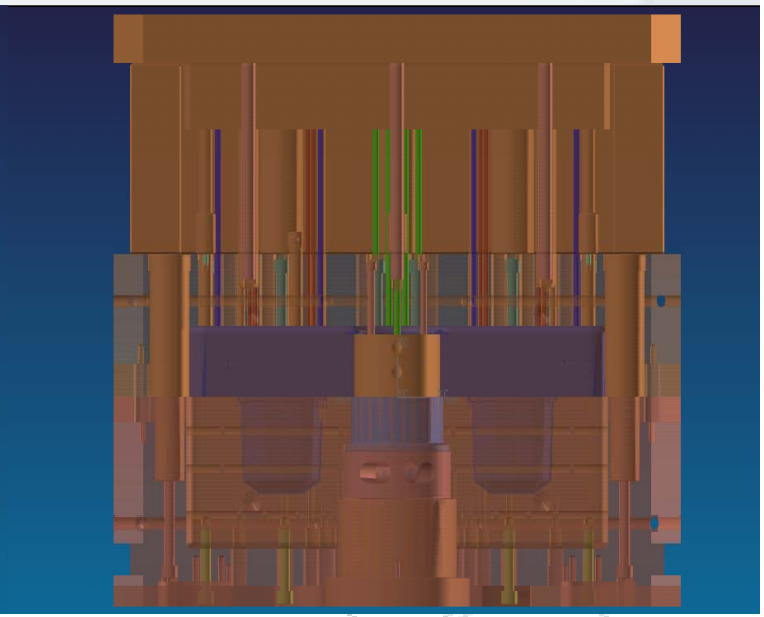
Advantage to the client

- Reduced tool design time
- Savings in the tool design cost
- Sphinx was working as an extended design facility of the client as, the client had the access to the complete design data for review on a daily basis, through the FTP.

TOOL DESIGN – PRESSURE DIE CASTING



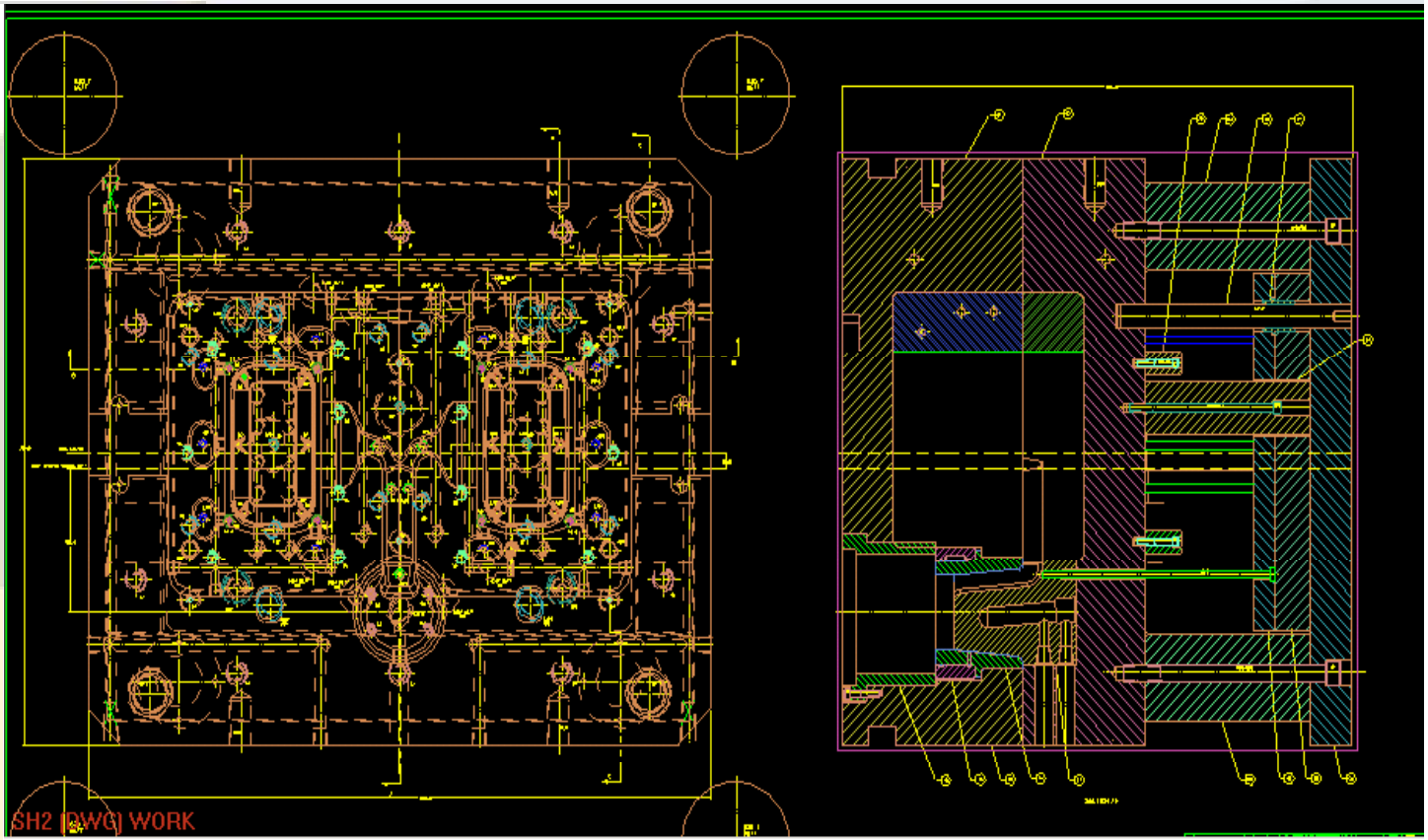
Cavity Block



Tool Assembly

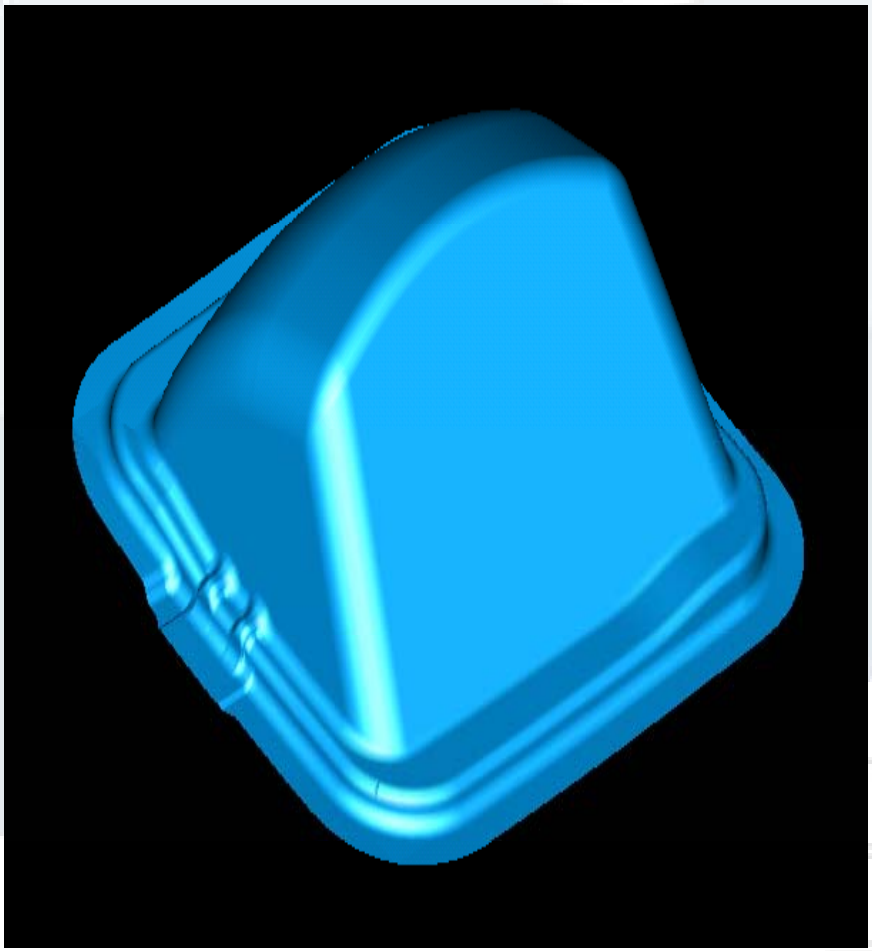
Scope of work: Designing of the complete tool for Oil pan and creation of the manufacturing drawings.

TOOL DESIGN – PRESSURE DIE CASTING



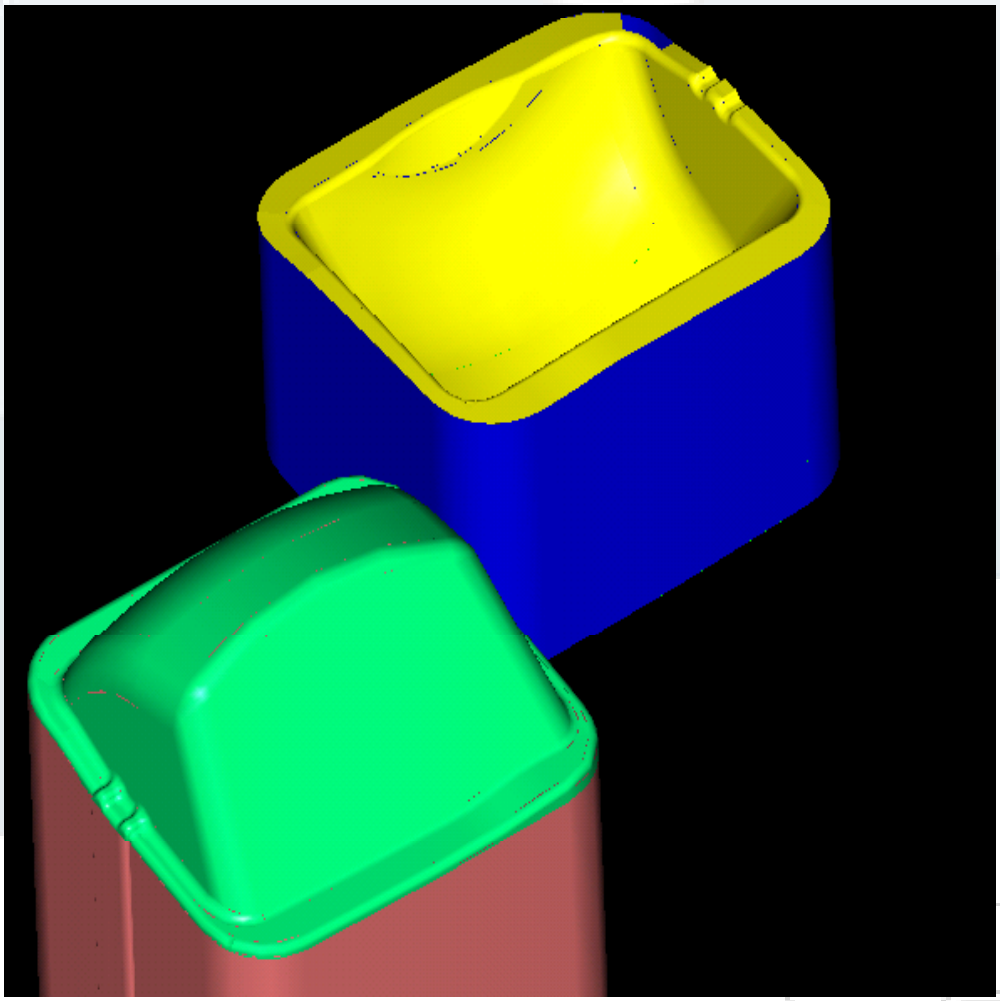
Drawing creation of tool assembly

Fuel Inlet Box



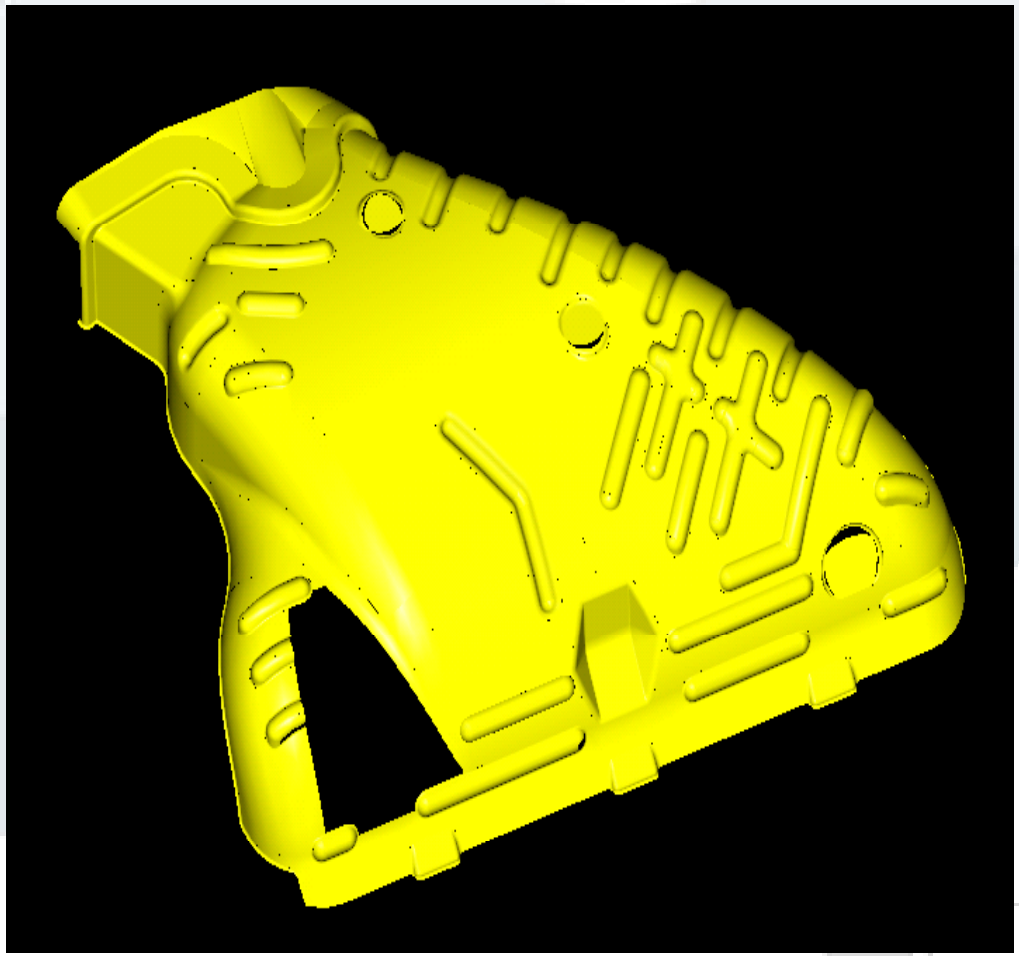
- An example of deep drawn component
- Sheet thickness=1.0mm
- The component was formed in 4 stages completely
- Wrinkles and creases problems in existing parts overcome by properly designed tools

Tool Design of Fuel Inlet Box



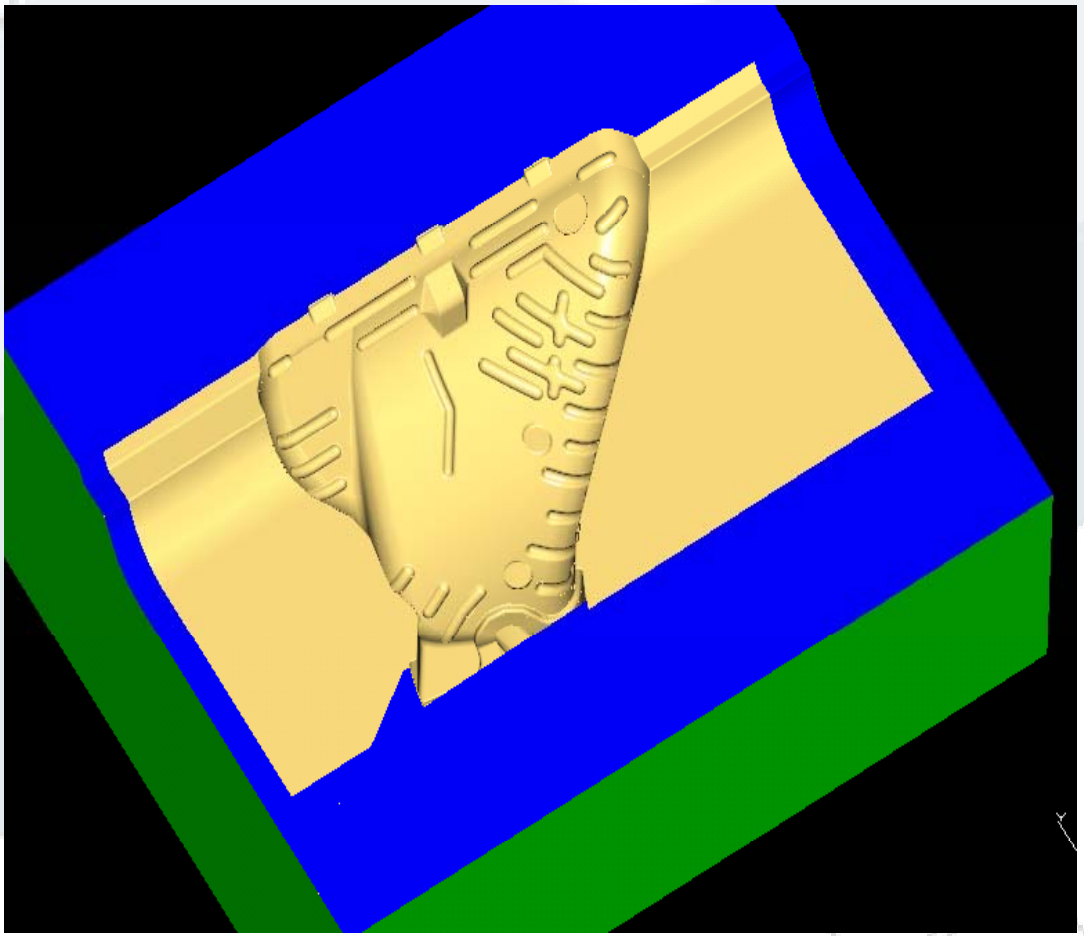
• As referred in the previous slide, shown here are the final stage forming cavity and punch only. (the rest of the tool design is not shown)
• The entire geometry of the component area is CNC milled to achieve the correct forms.

Cover Exhaust Component



- As the name suggests, it is the cover of an exhaust part
- It has a very complex parting line
- Another challenge to develop the component was the multiple embossing in different directions
- Successfully completed in one go.

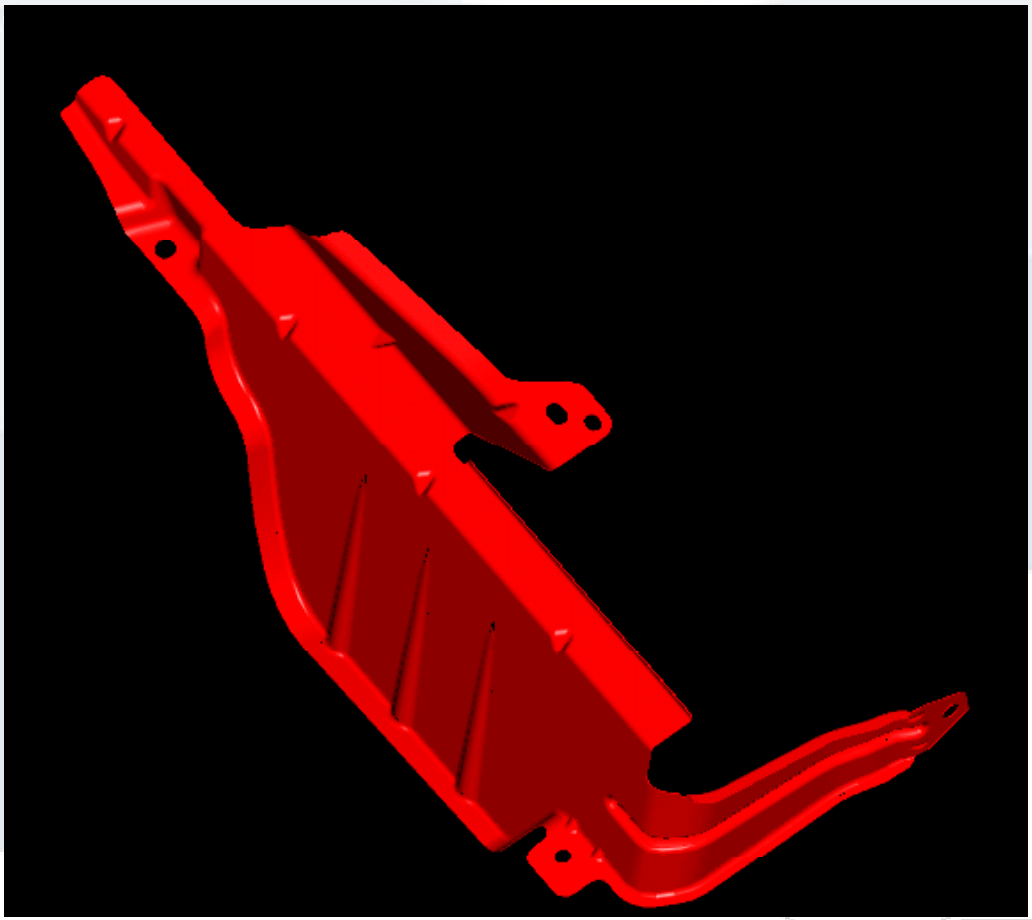
Cover Exhaust Component Tool Design



• As referred in the previous slide , shown adjoining is the cavity of the final forming stage of the cover exhaust component

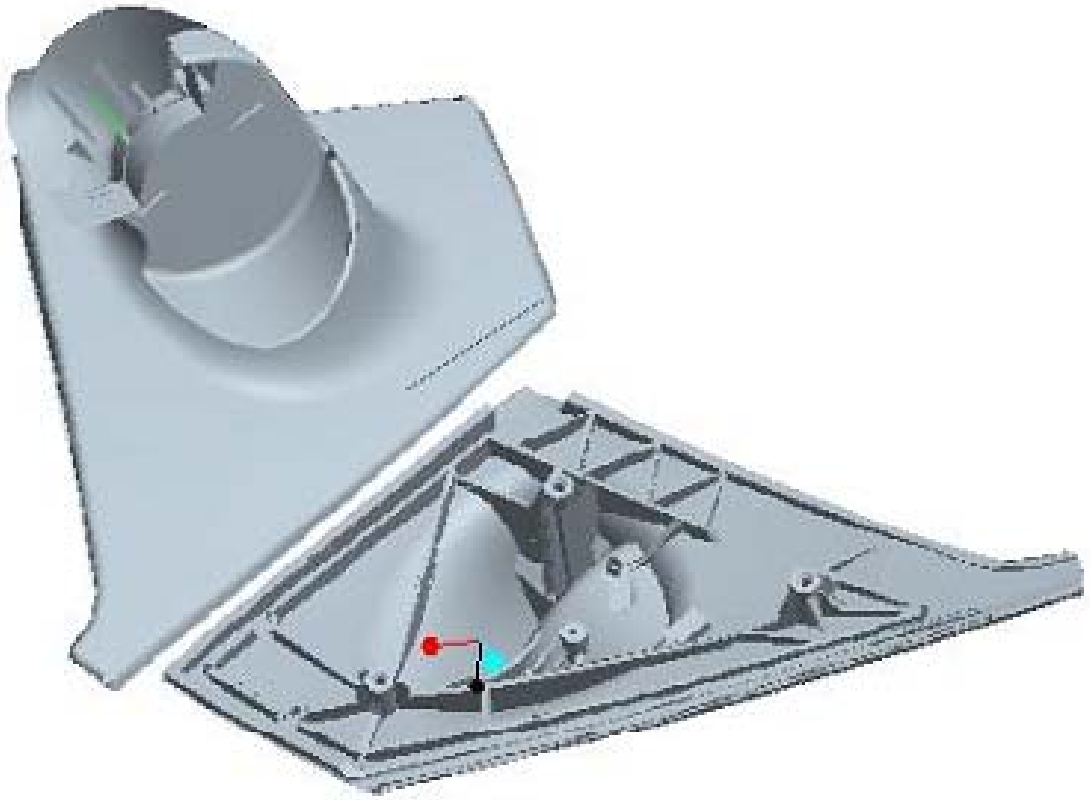
• The tool at this stage ensures restriking of the entire shape of the component to achieve consistency in production

Extension Front Bumper

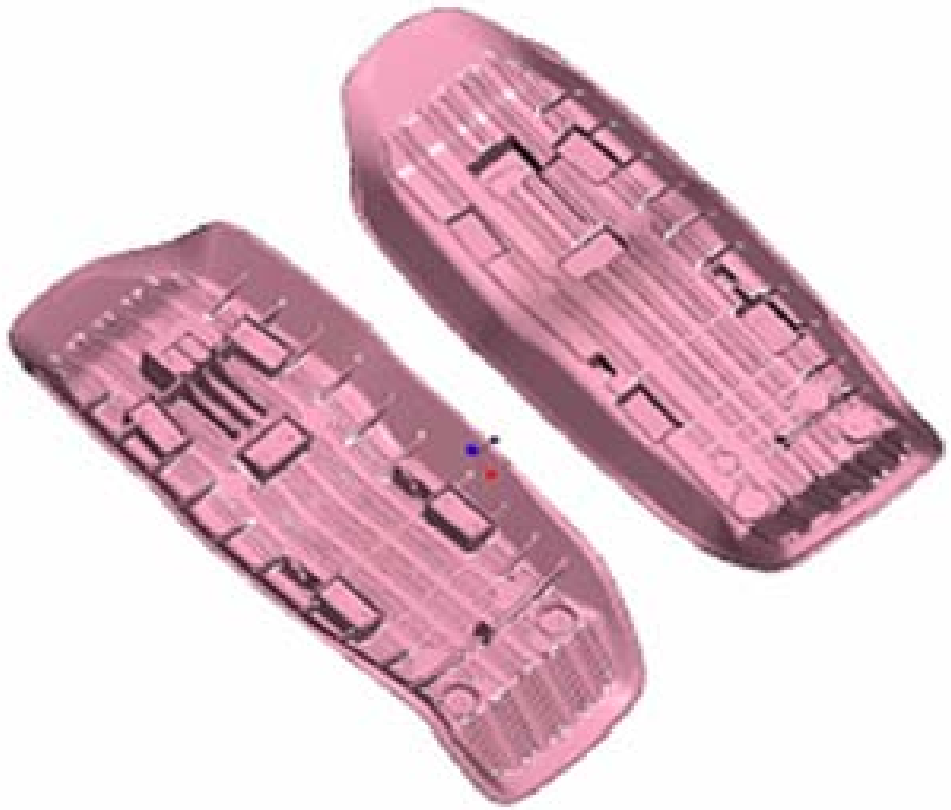


- Shown here is an extension support for the front bumper of the car
- Sheet thickness=2mm
- Notice that the component has a tendency of heavy and inconsistent spring-backs
- Ribs were provided at critical locations to arrest spring-back based on our experience and advise, which was successful

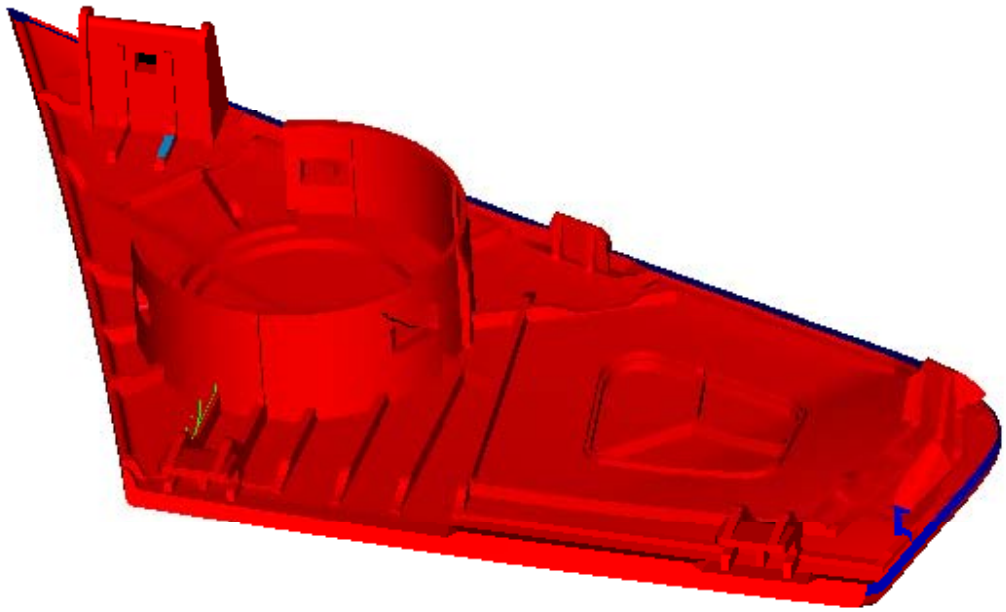
1+1 Cavity injection mold of Side Mirror Base



One cavity injection mold of Seat of Motor Cycle

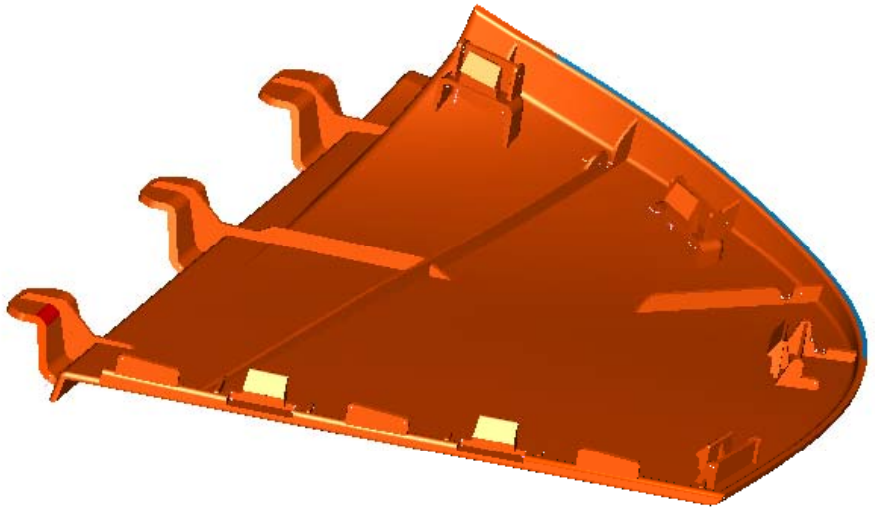


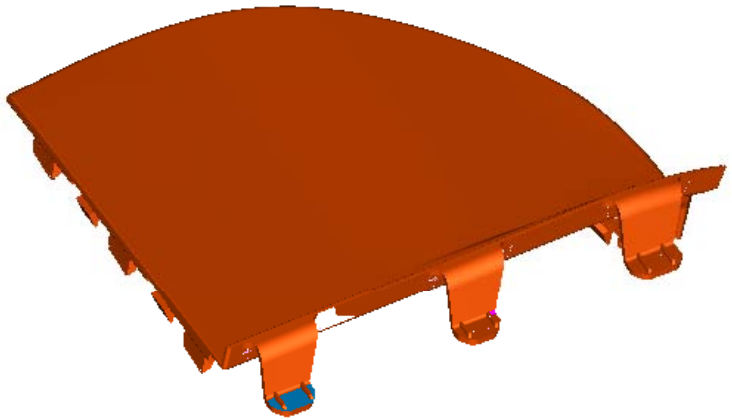
1+1 Cavity Injection mould design for Lid Tweeter



Design Criticalities- Component is having more then 4600 thru holes of Diameter 1.6mm

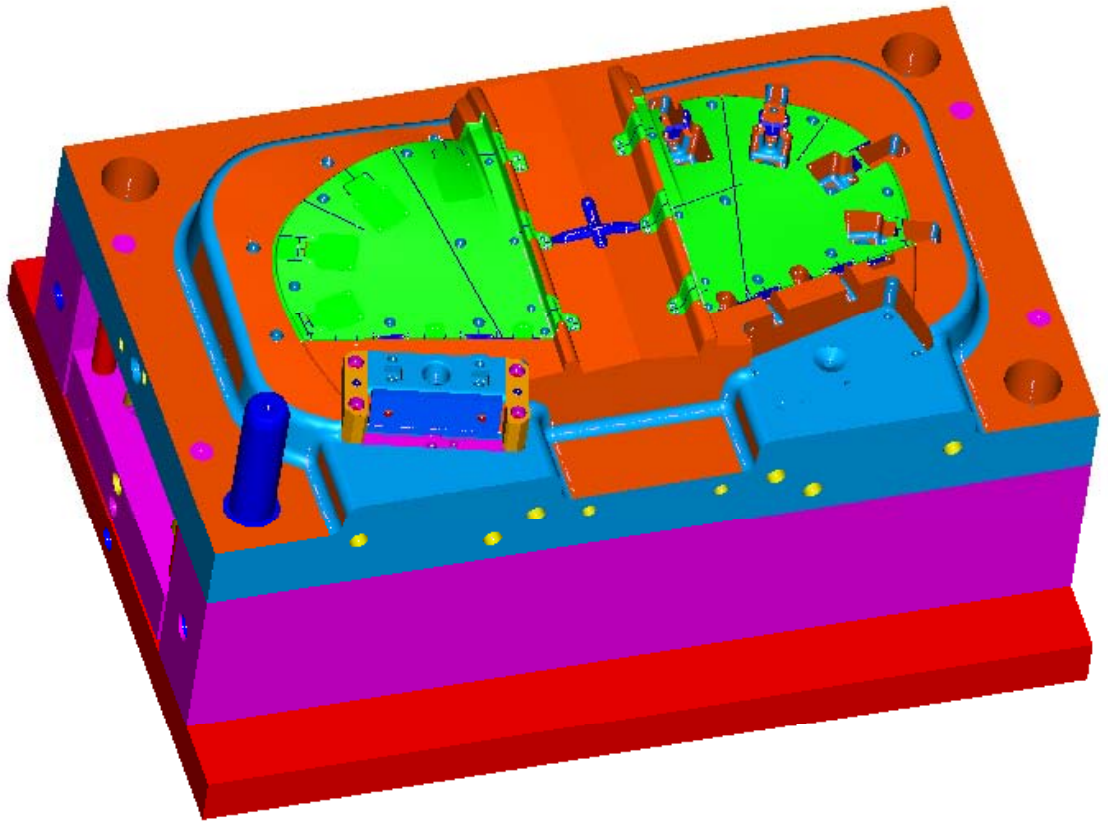
1+1 Cavity Injection mould design for "Inst Lid"



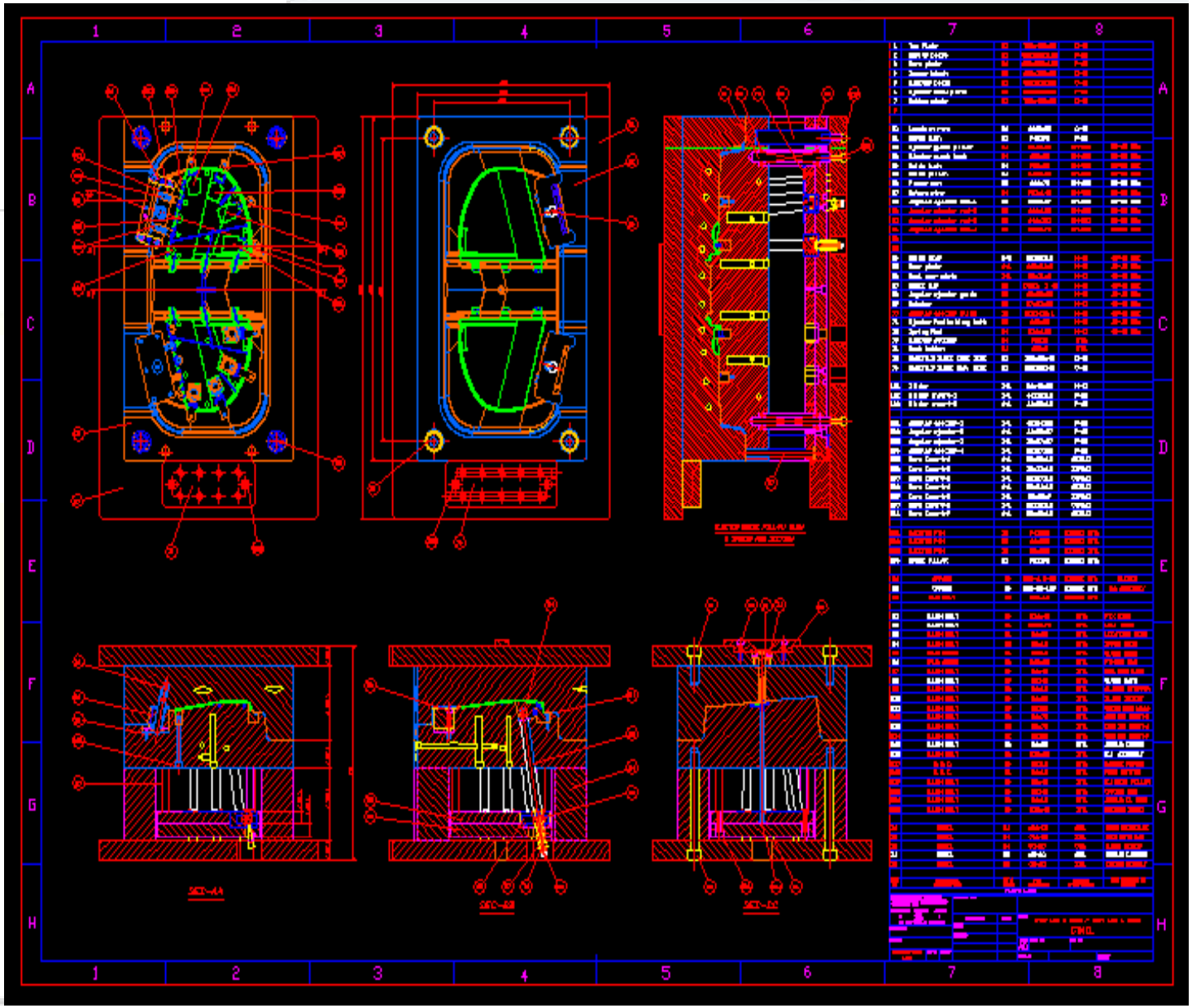


Design Criticalities- 8 Angular lifters, 8 Sub surface inserts, 4 sliders and very critical 3D parting surface

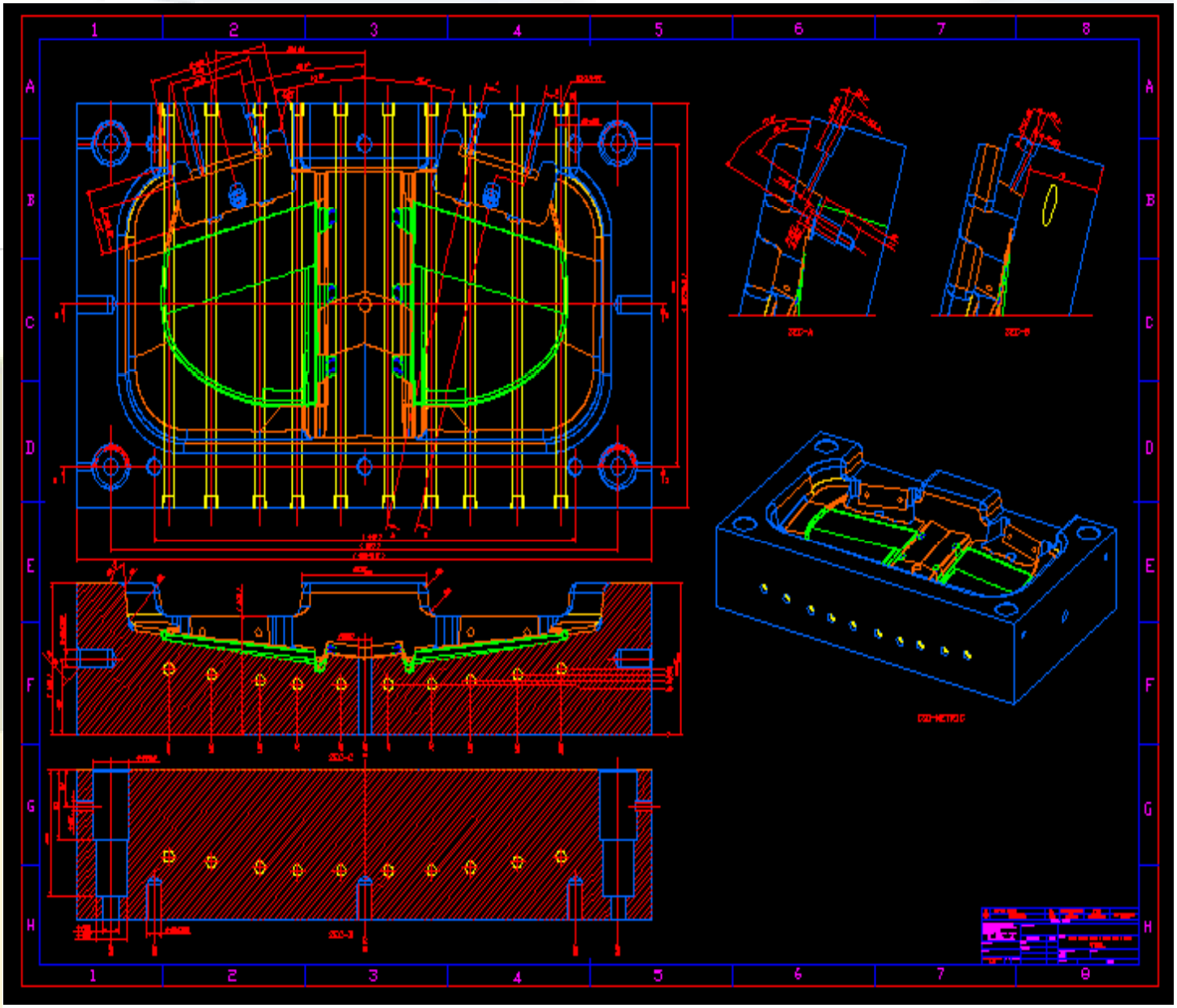
Core Half of 1+1 Cavity Injection mould design for “Inst Lid”



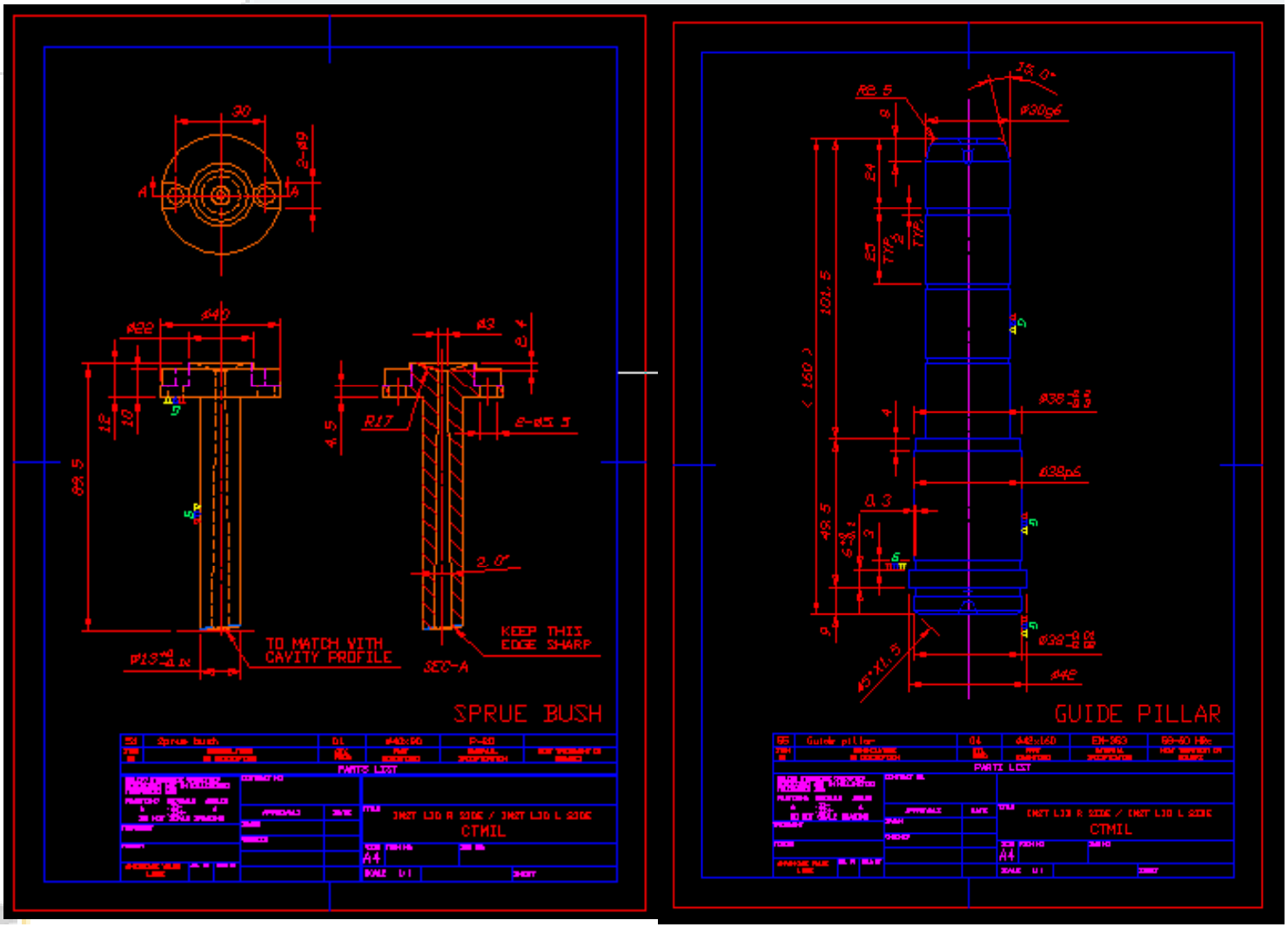
2D Assembly design and BOM for “Inst Lid”



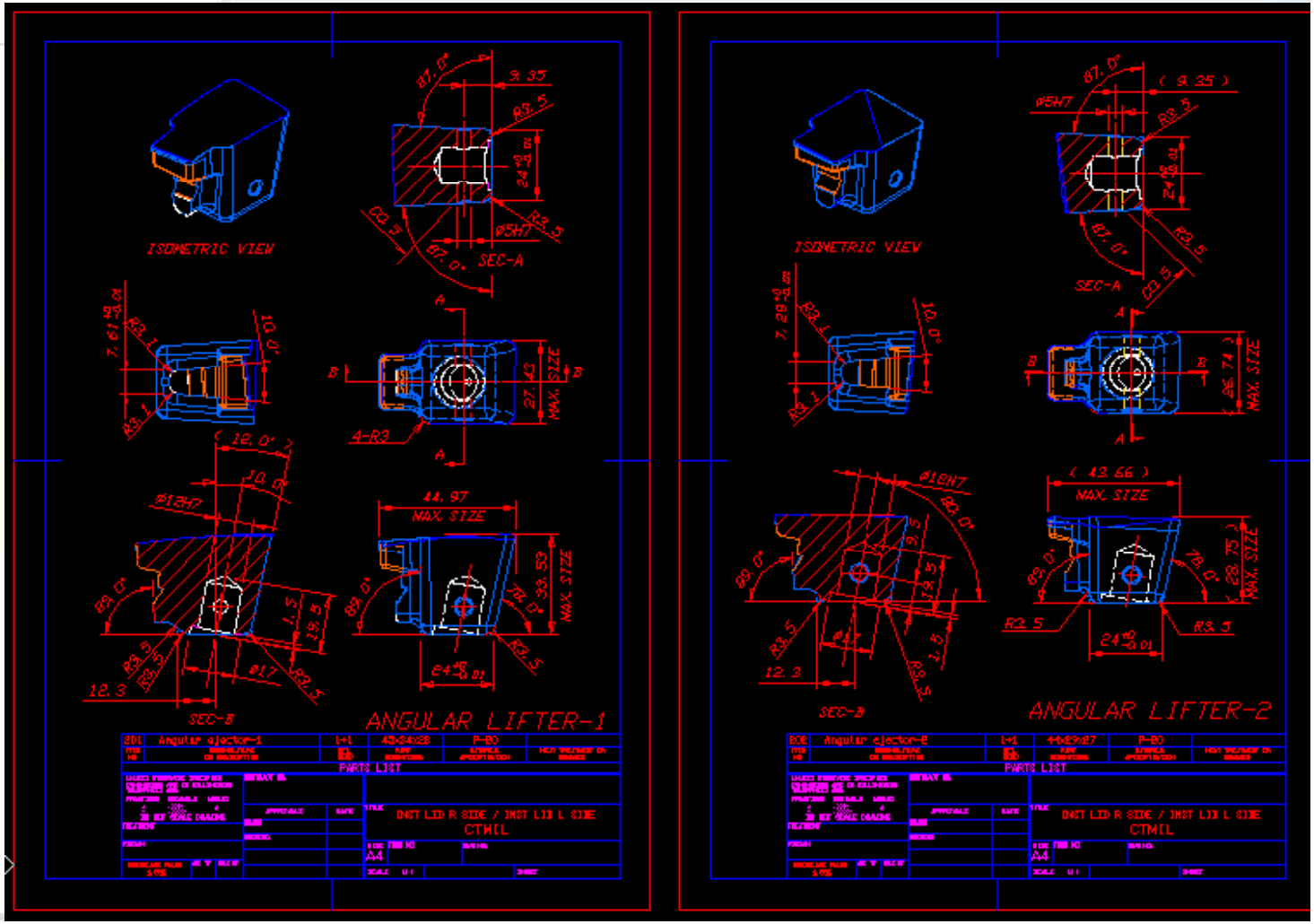
2D Design- Cavity Plate of "Inst Lid"



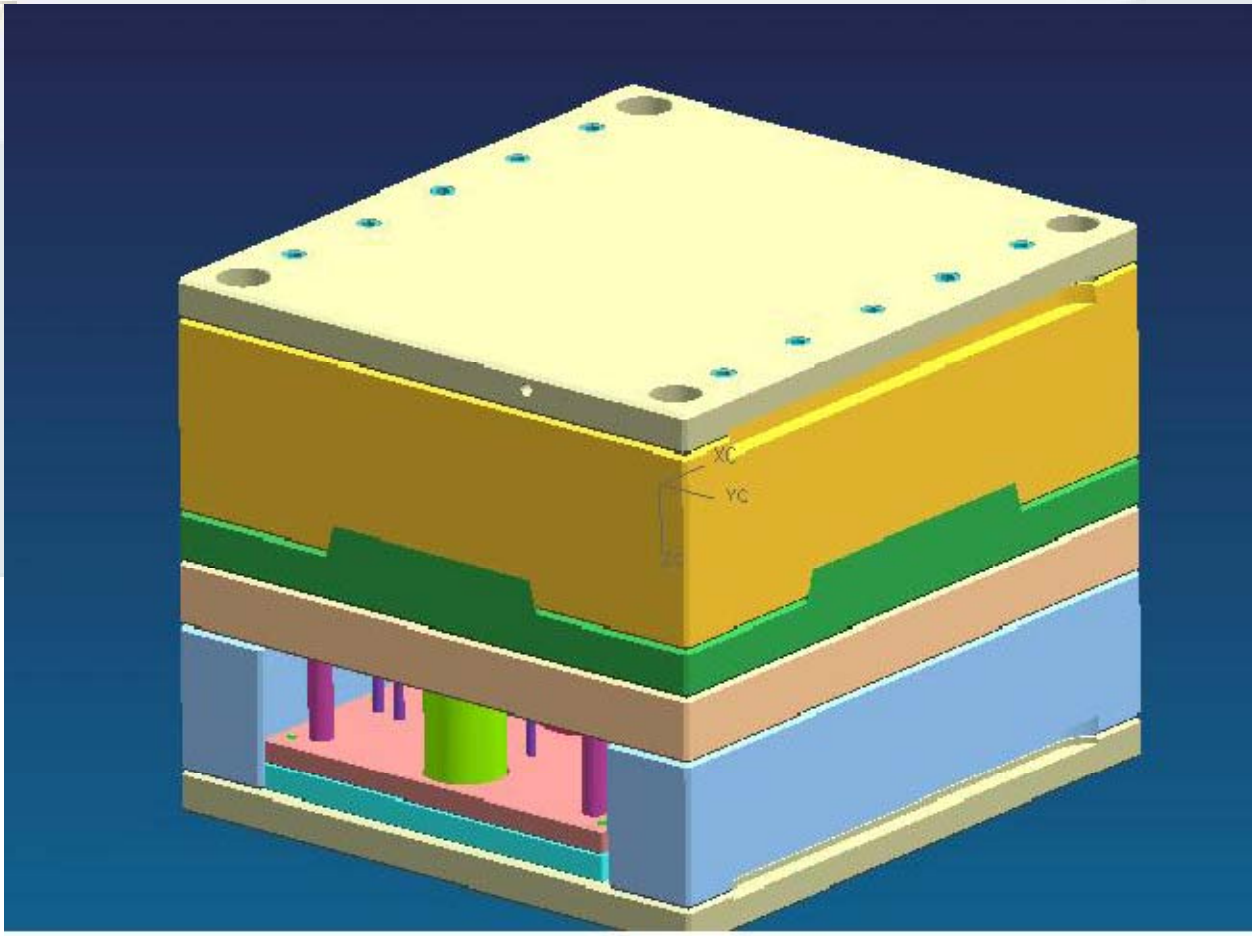
2D Detail Design of "Inst Lid"



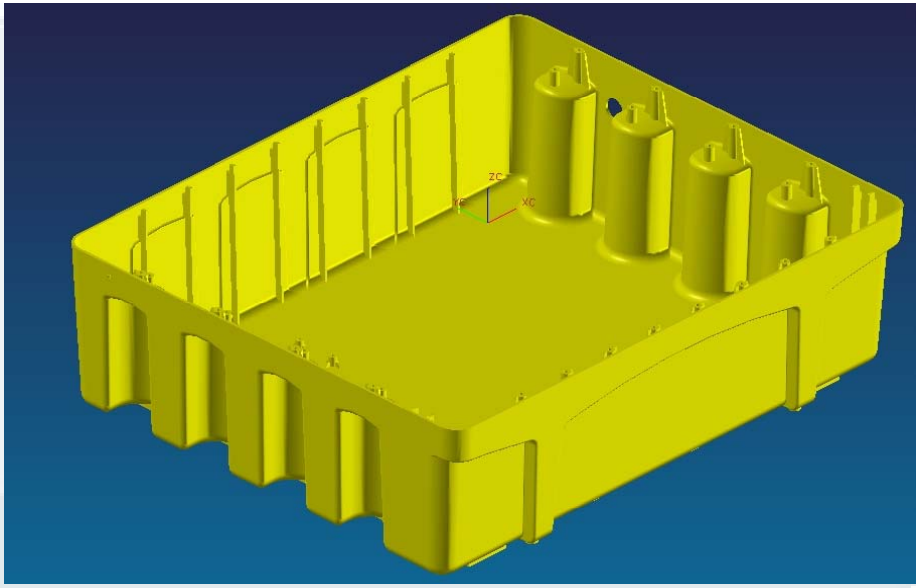
2D Detail Design of "Inst Lid"



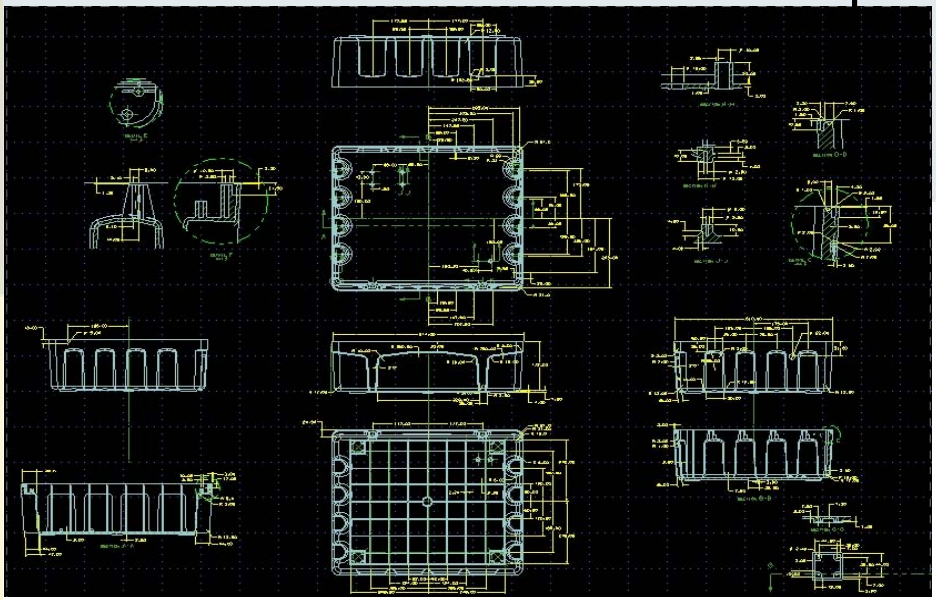
Injection Mould Assembly for Tank of Air Cooler



Mould Design for Tank of Air Cooler

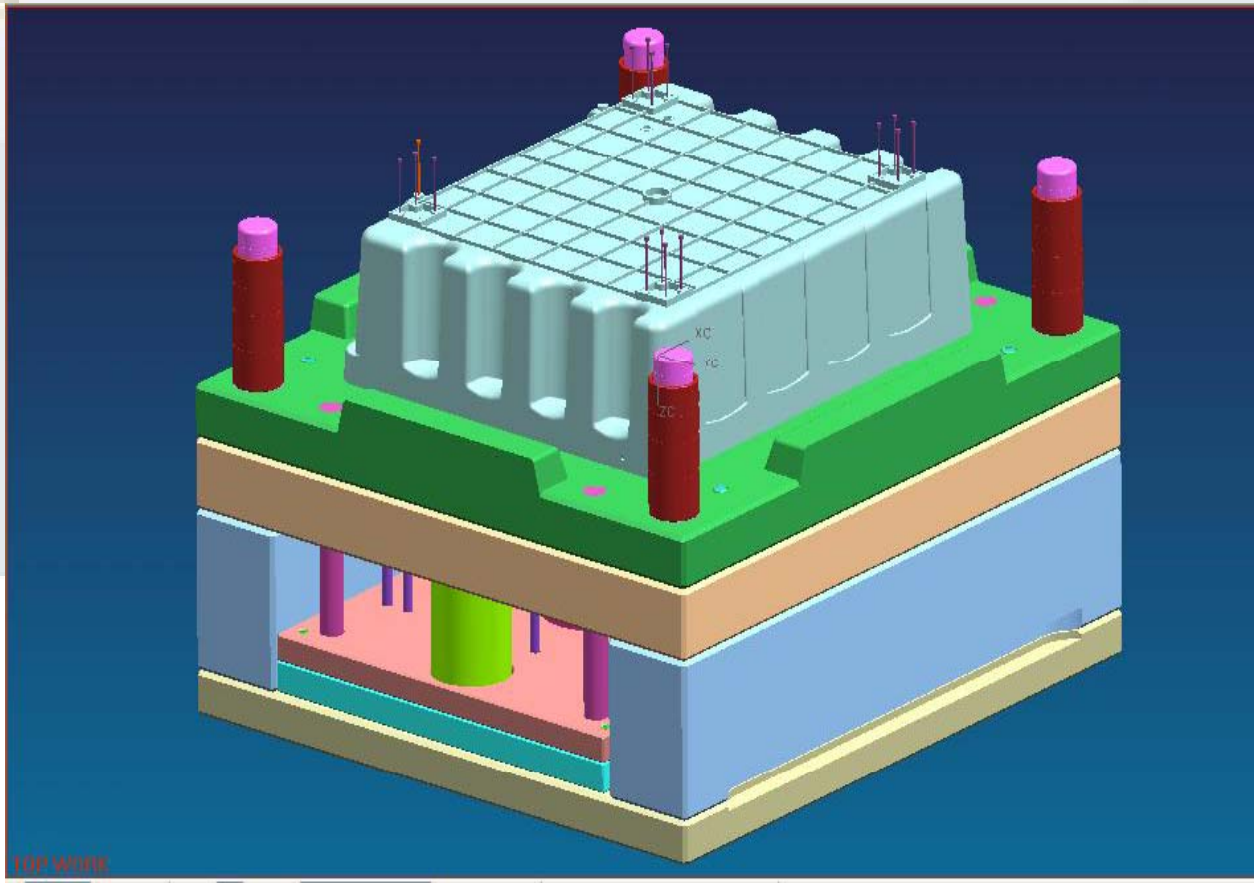


Component – Water Tank

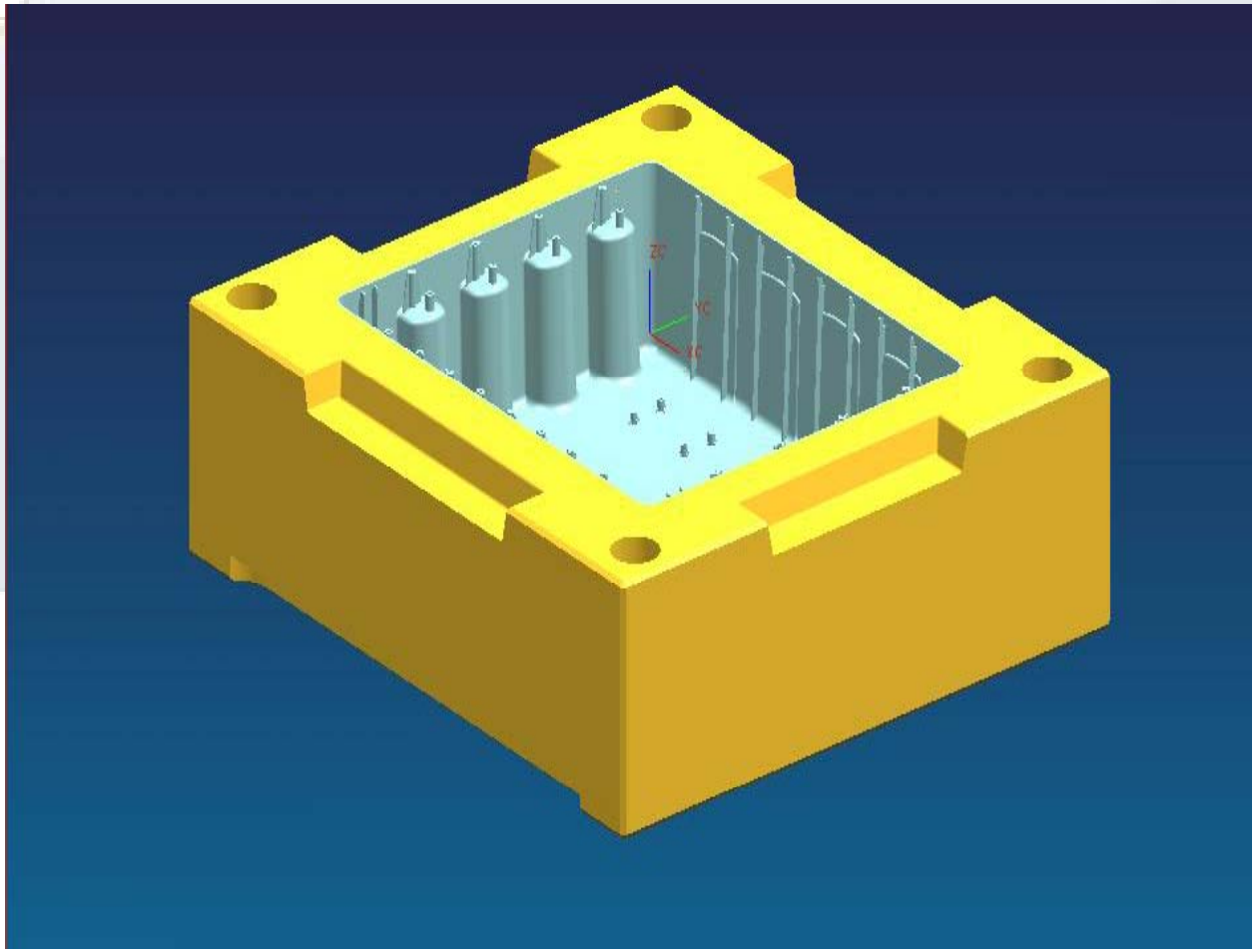


Component Drawing

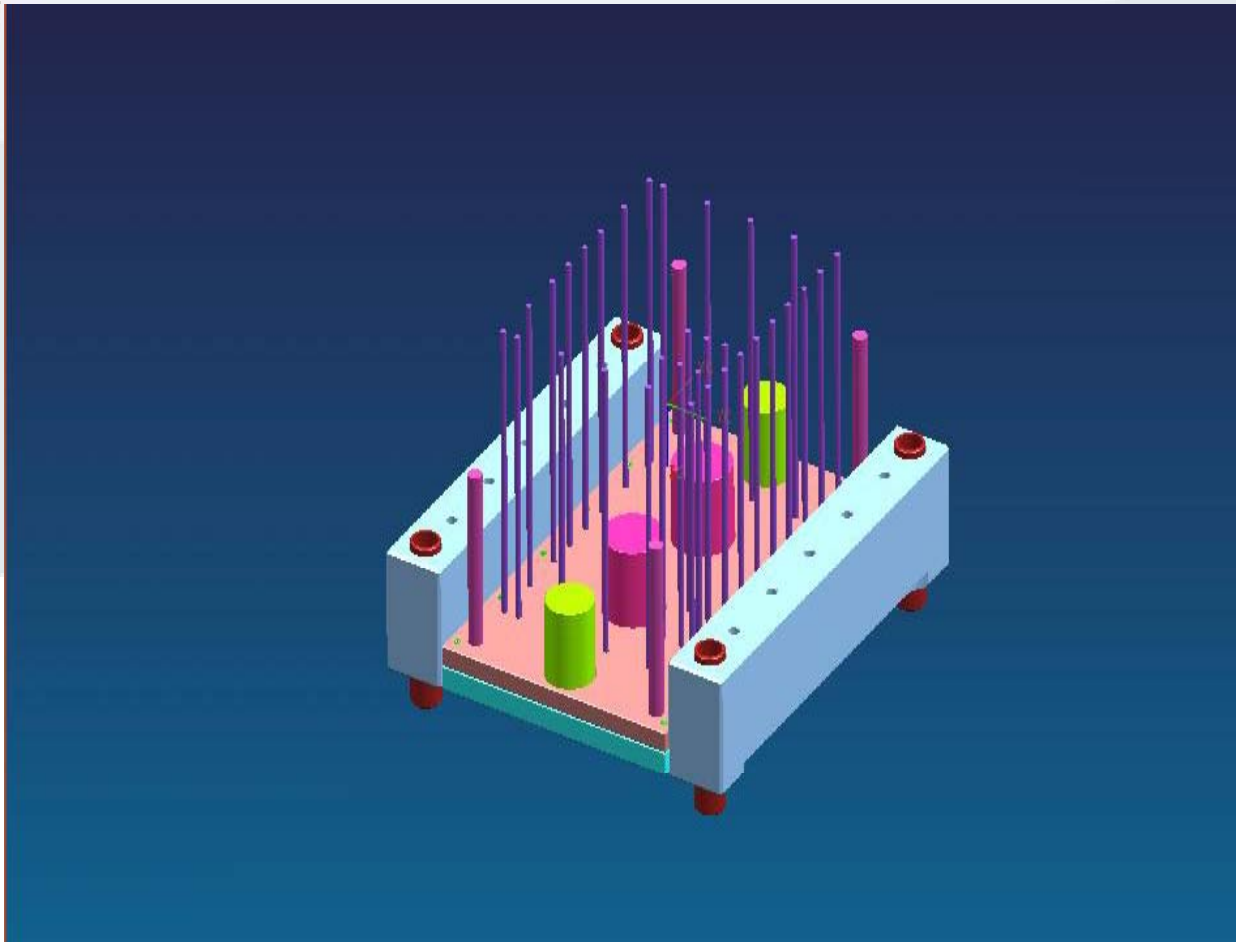
Core View



Cavity plate and Shrinked Component

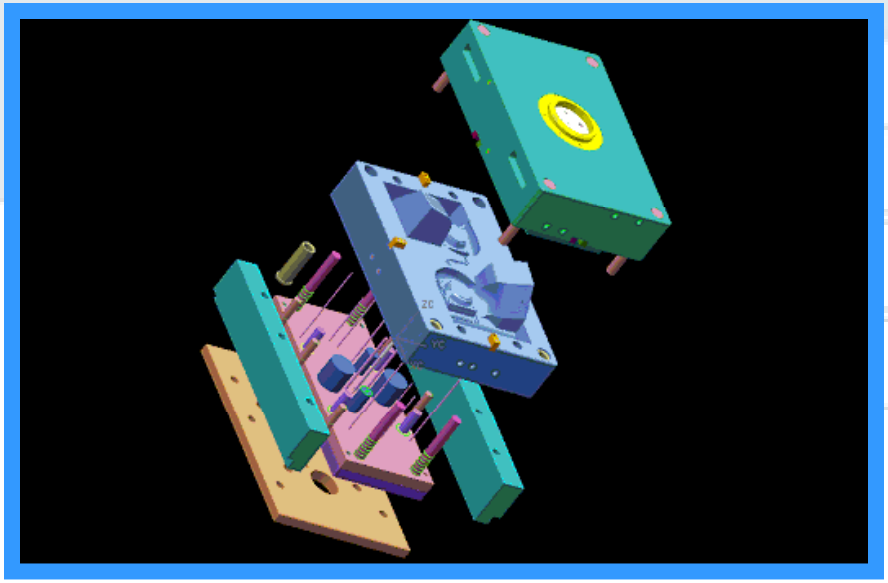


Ejector Assembly



Injection Moulds

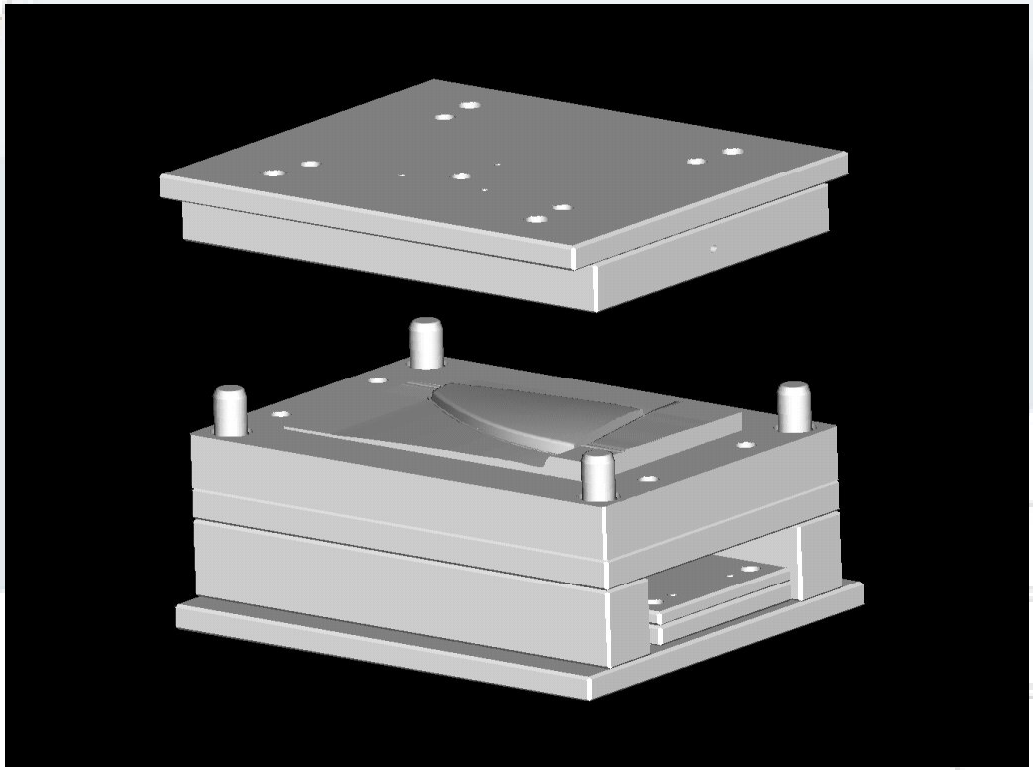
D-Pillar Bracket



Exploded view of Tool for D-Pillar Bracket

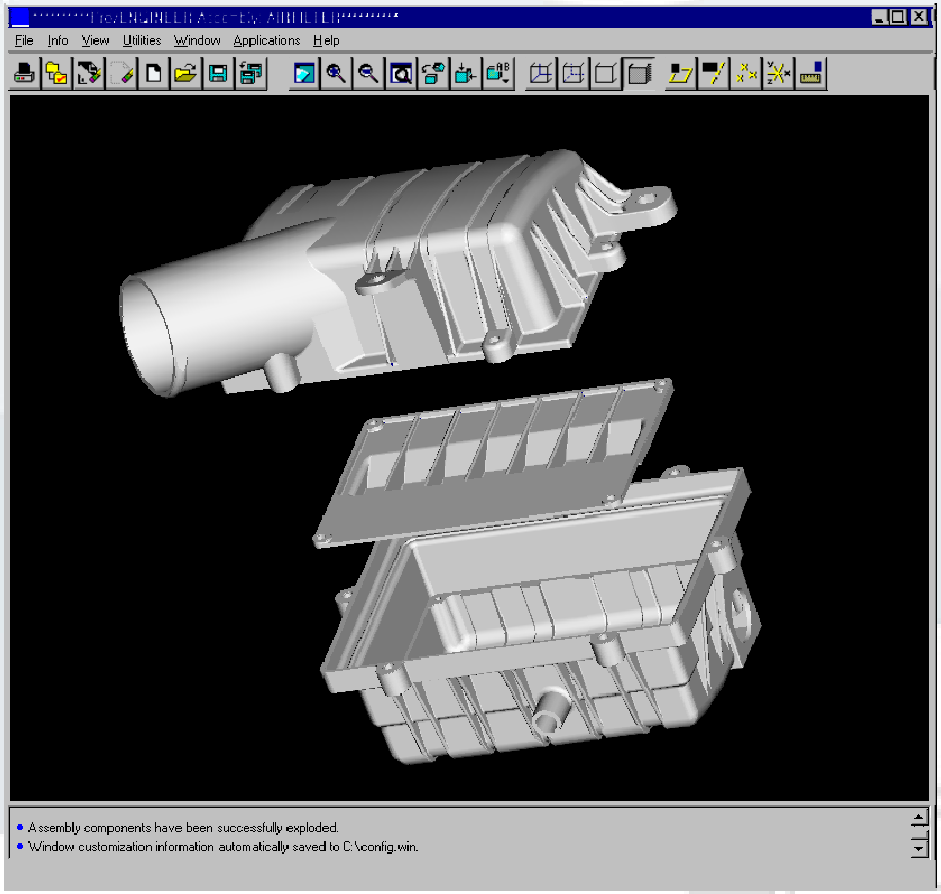
Tool Design – Injection Moulding

Die for Quadrant Cover



Scope of Work: 3D Modeling , Tool Design, Extraction of Core & Cavity, NC code generation for CNC milling of the inserts, creation of Manufacturing drawings.

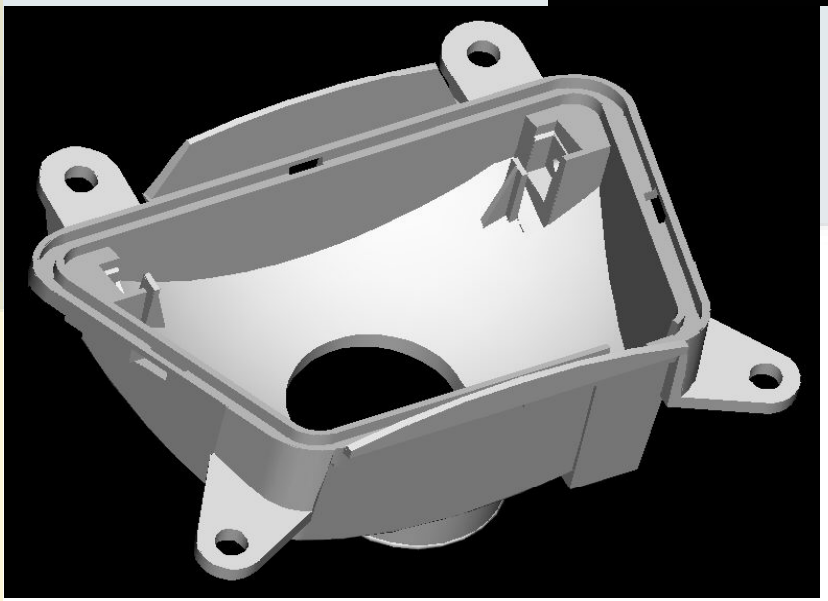
Tool Design – Injection Moulding



Air Filter Assembly of a Car

Scope of Work: Part modeling, extraction of core, cavity, slider & electrodes, generation of NC Tool Path for CNC machining of the inserts.

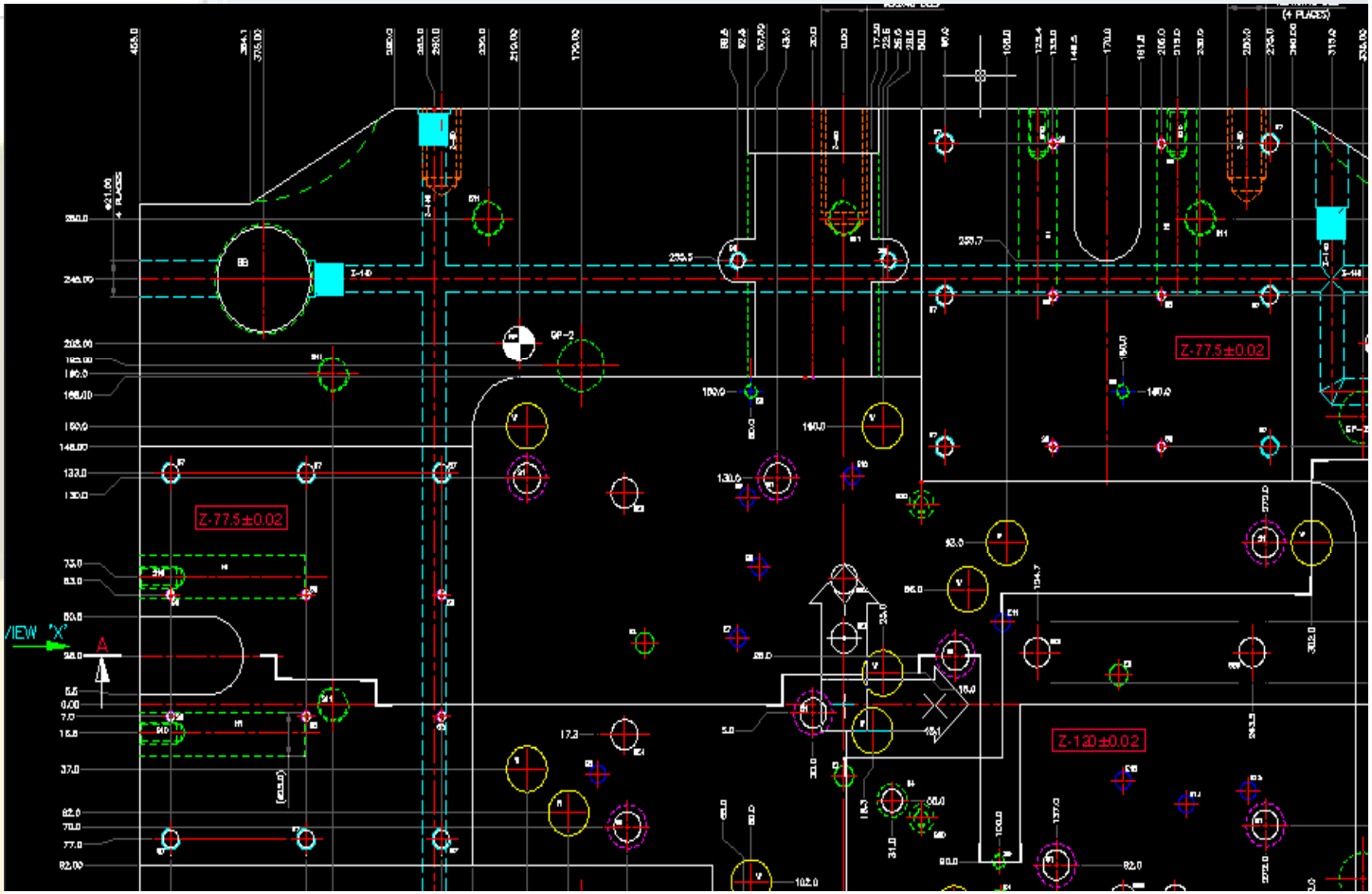
Tool Design – Injection Moulding



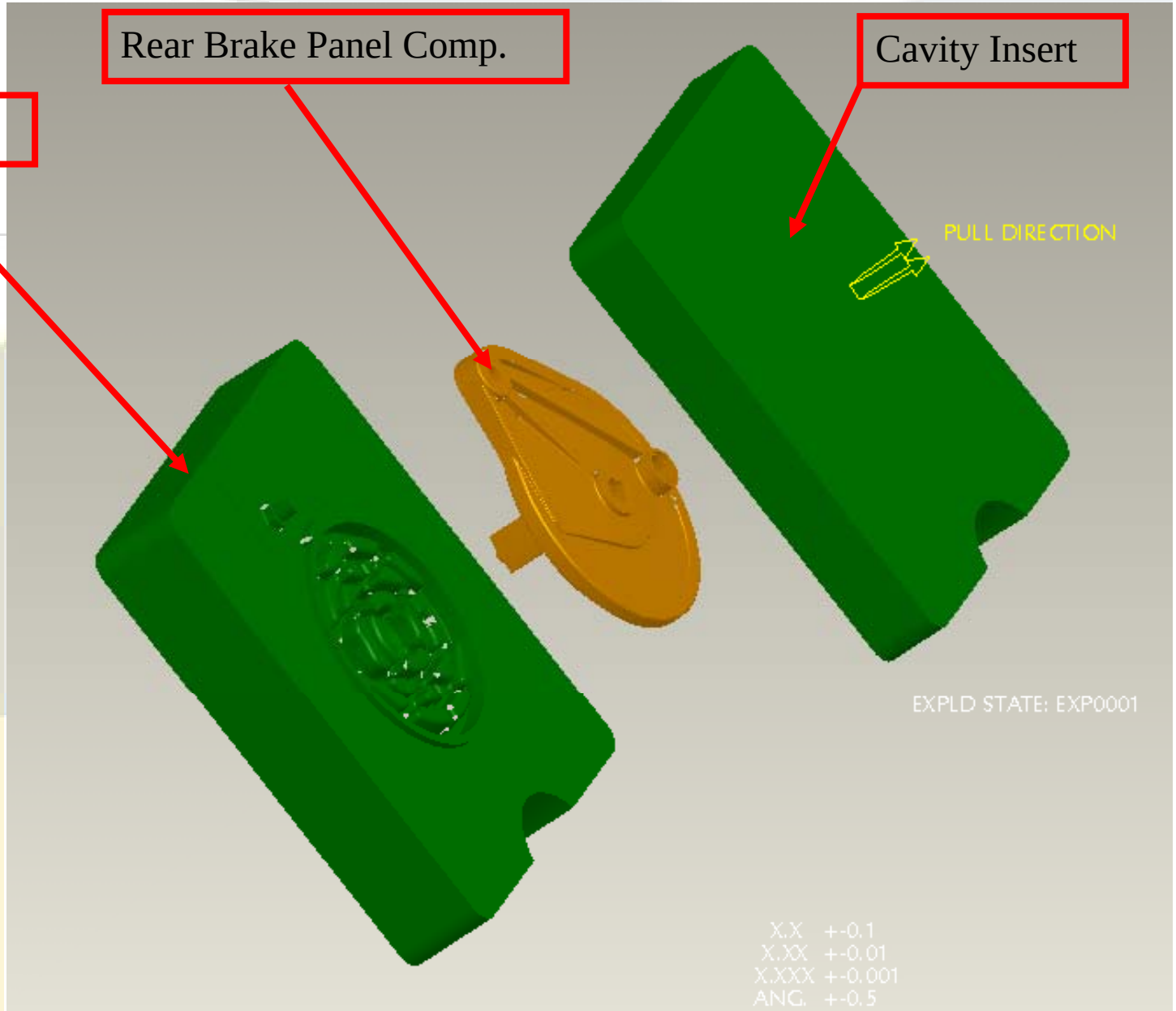
Head Light Assembly

Scope of Work: 3D Modeling , Extraction of Core & Cavity

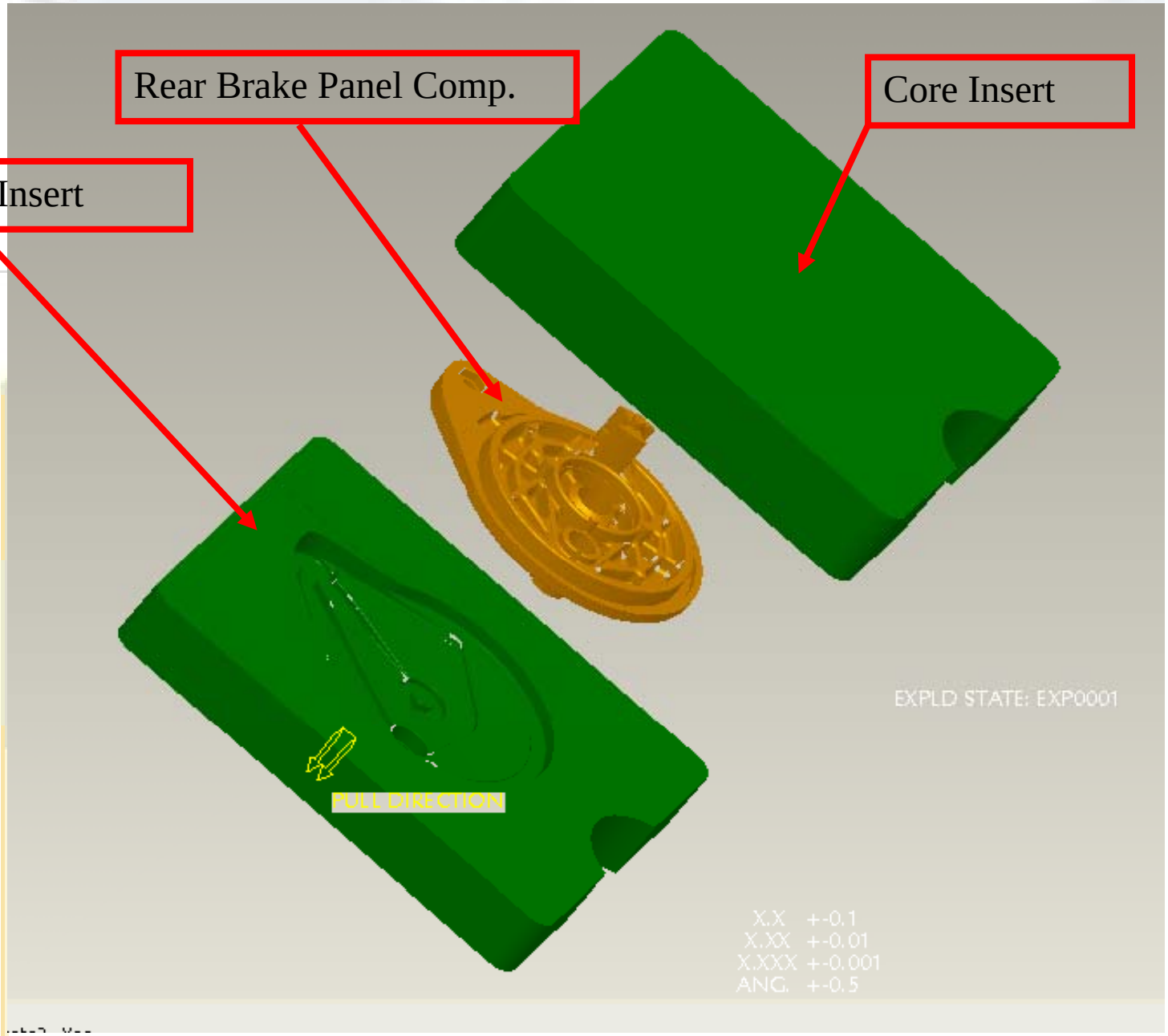
DETAILING OF MOVING BOLSTER OF A PRESSURE DIE CASTING TOOL



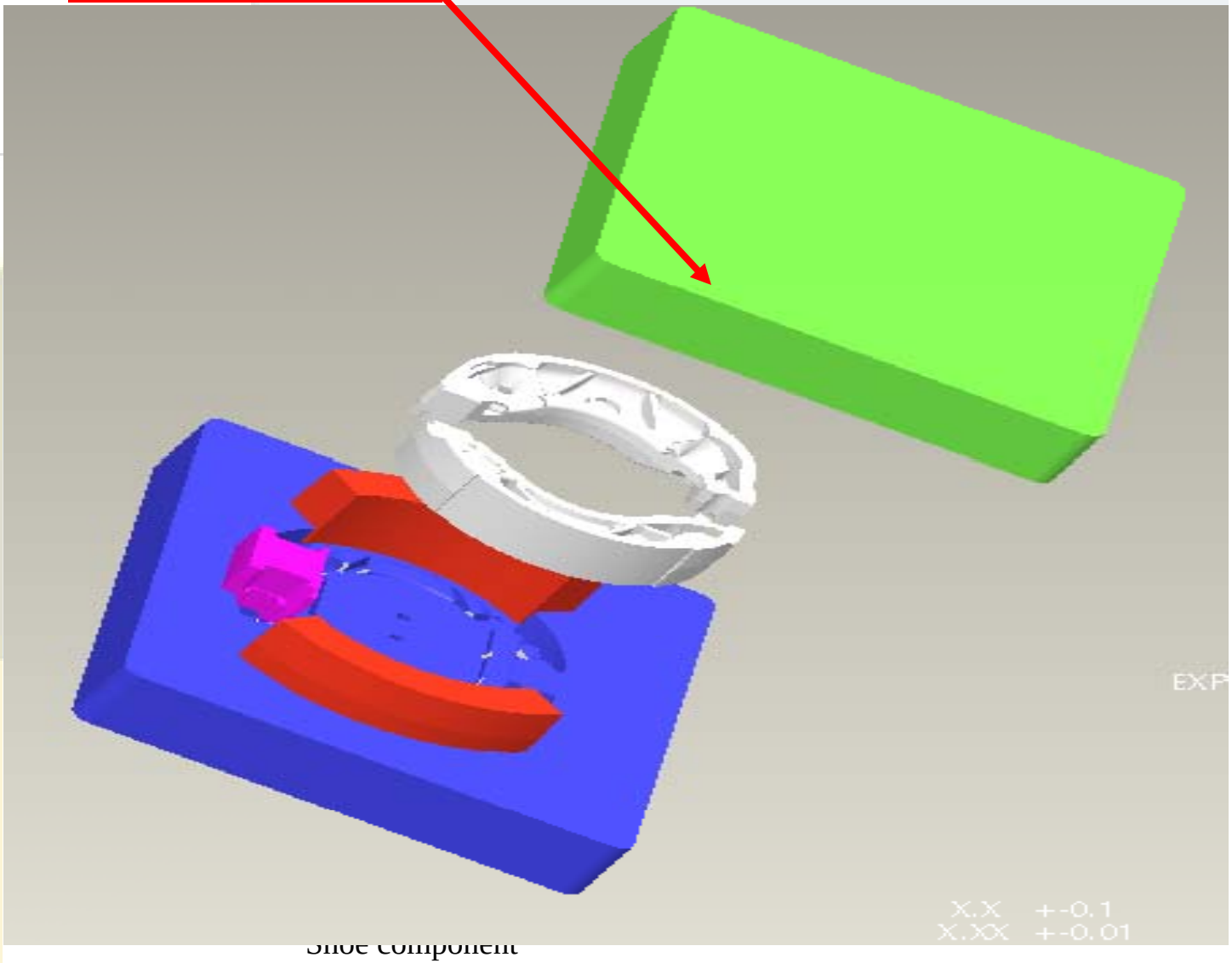
TOOL DESIGN – REAR BRAKE PANEL



TOOL DESIGN – REAR BRAKE PANEL



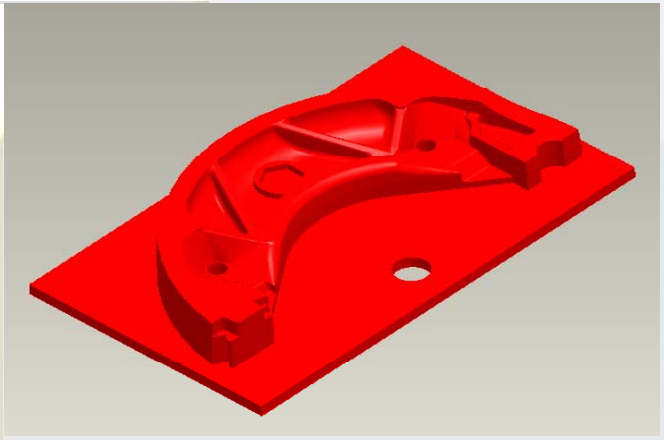
TOOL DESIGN – BRAKE SHOE

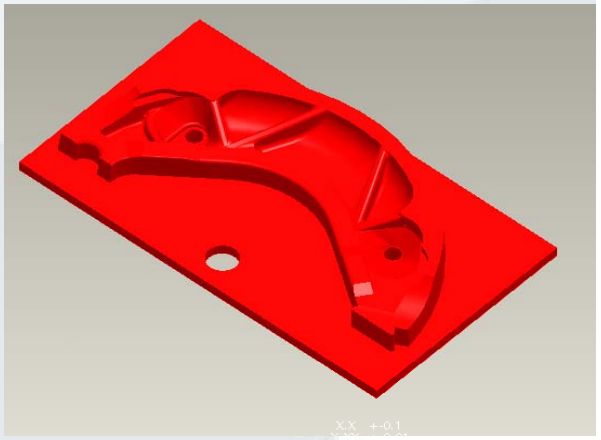


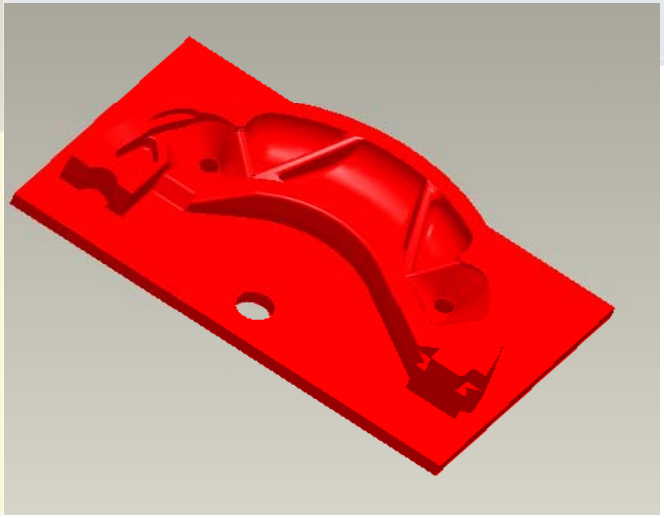
Shoe component

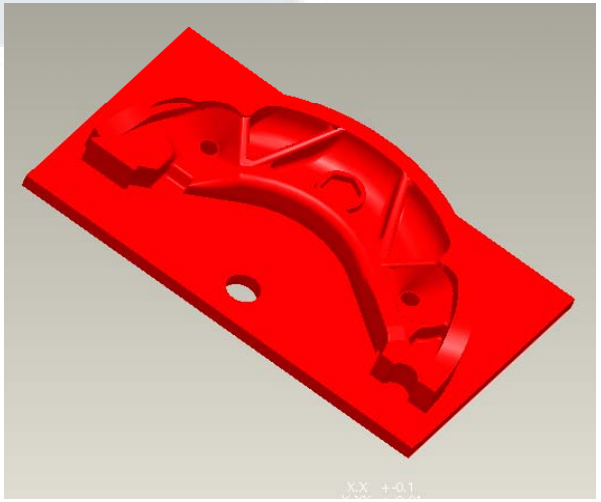
ELECTRODES FOR BRAKE SHOE DIE

Electrode design for Brake Shoe Comp.



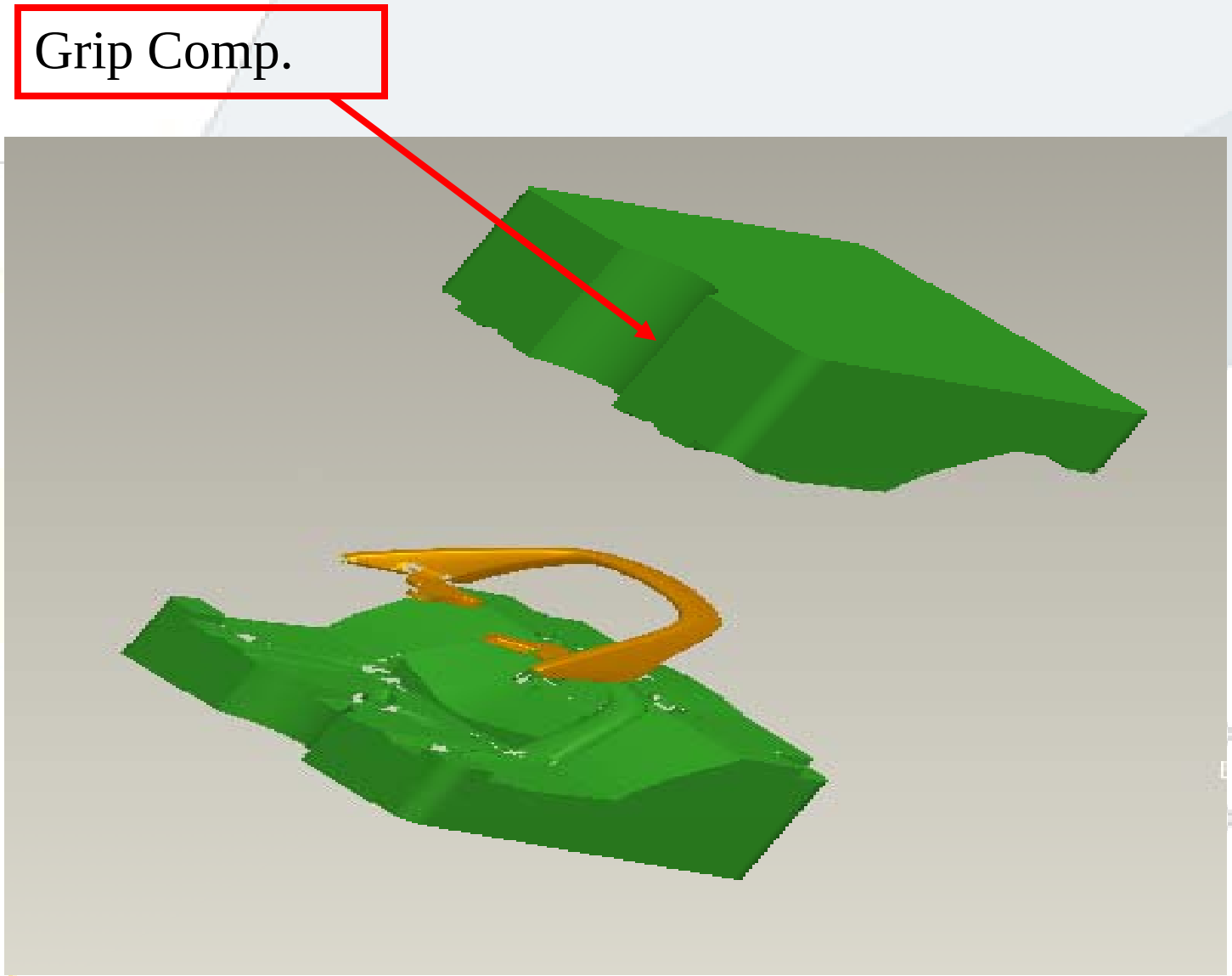






12/8/2008

TOOL DESIGN – GRIP COMPONENT



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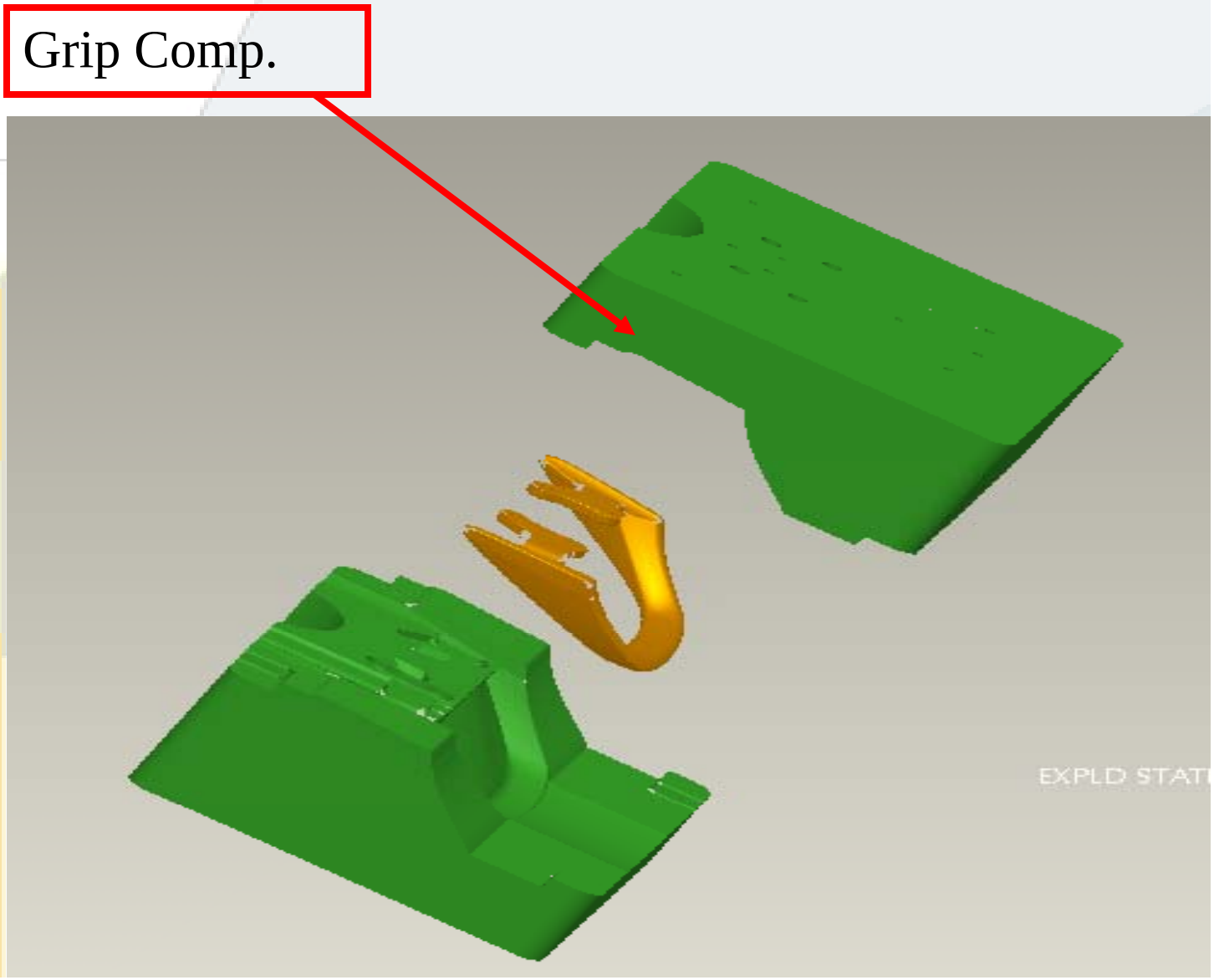
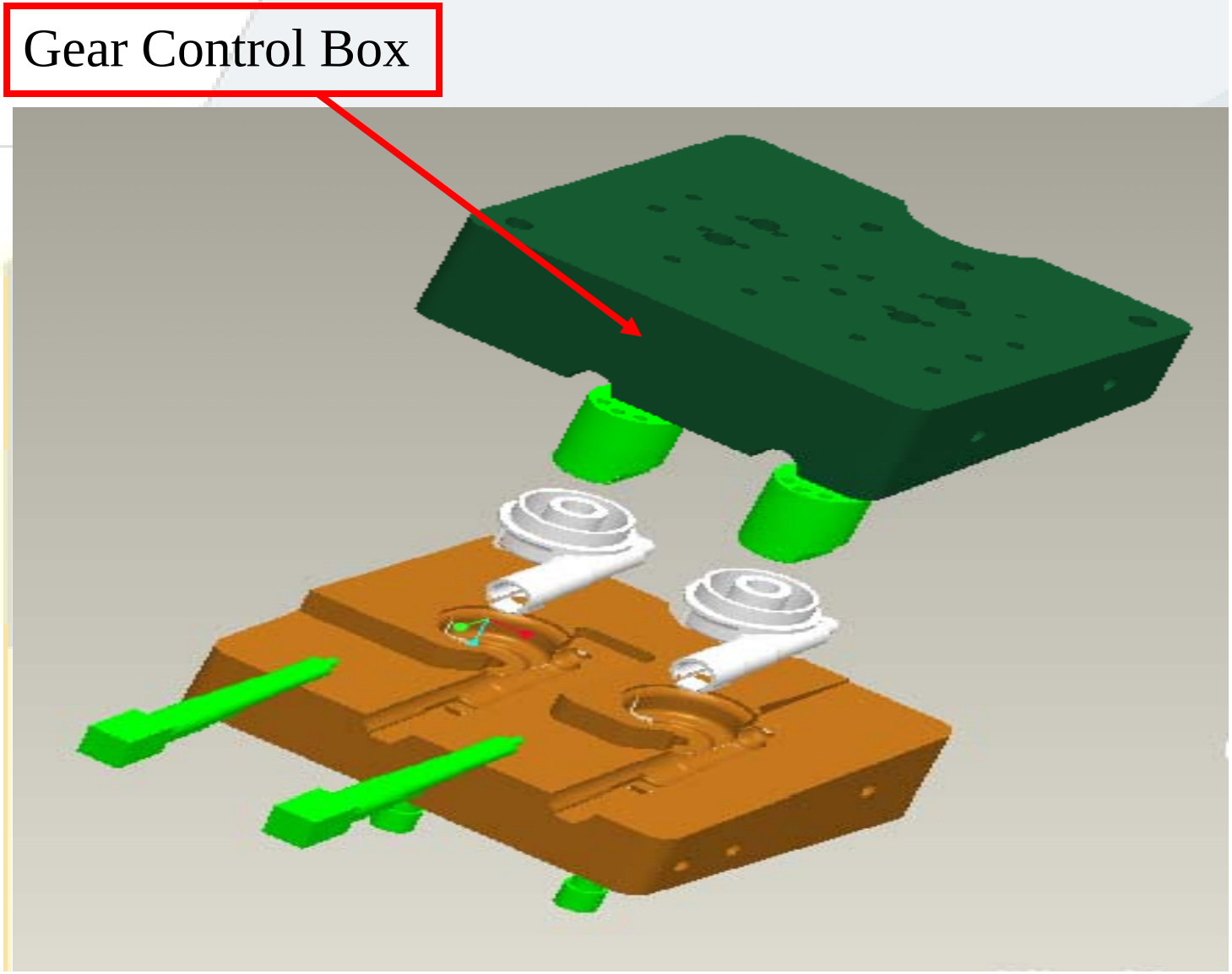
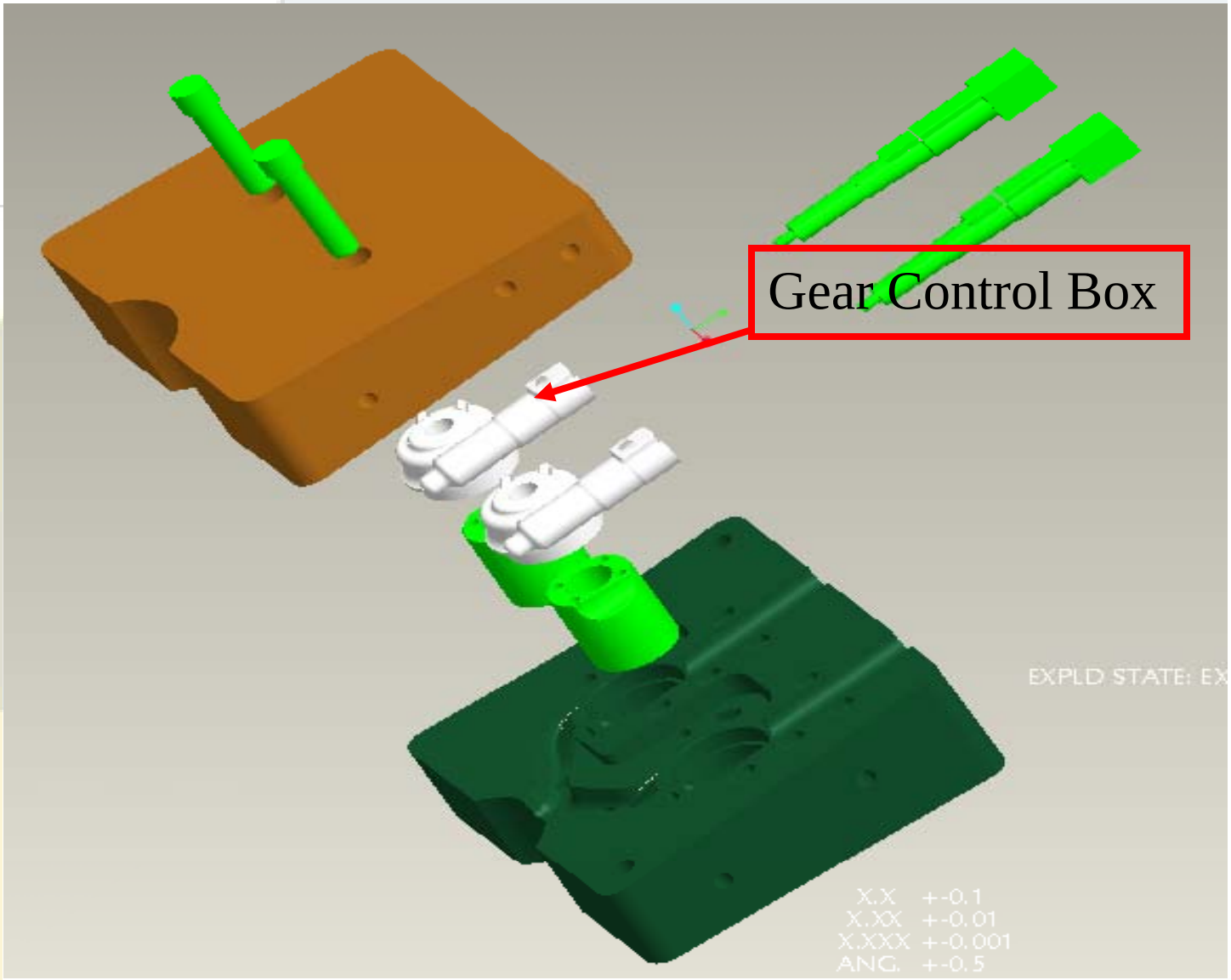


TOOL DESIGN – GEAR CONTROL BOX

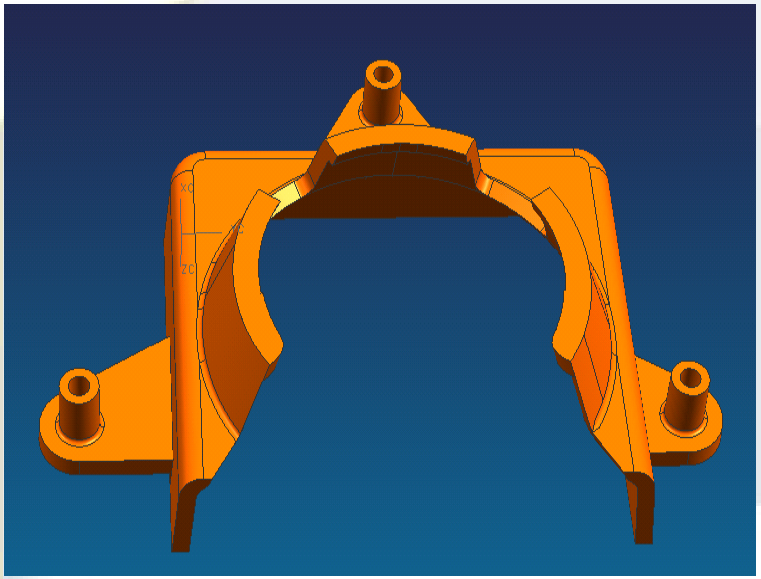


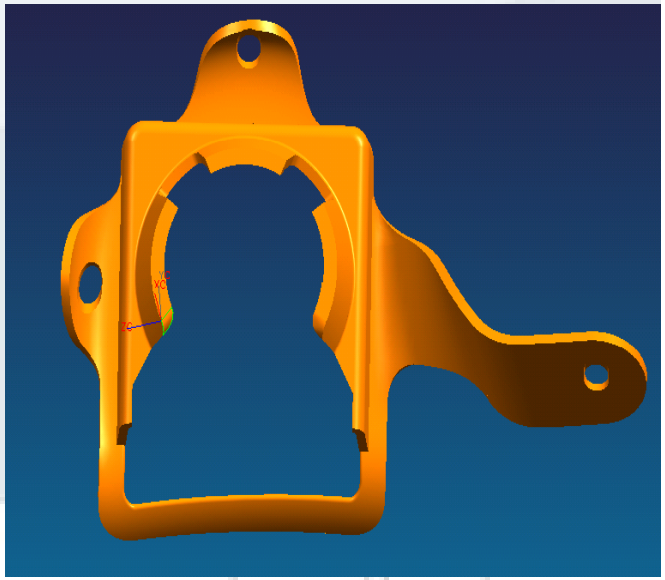
TOOL DESIGN – GEAR CONTROL BOX



Control box

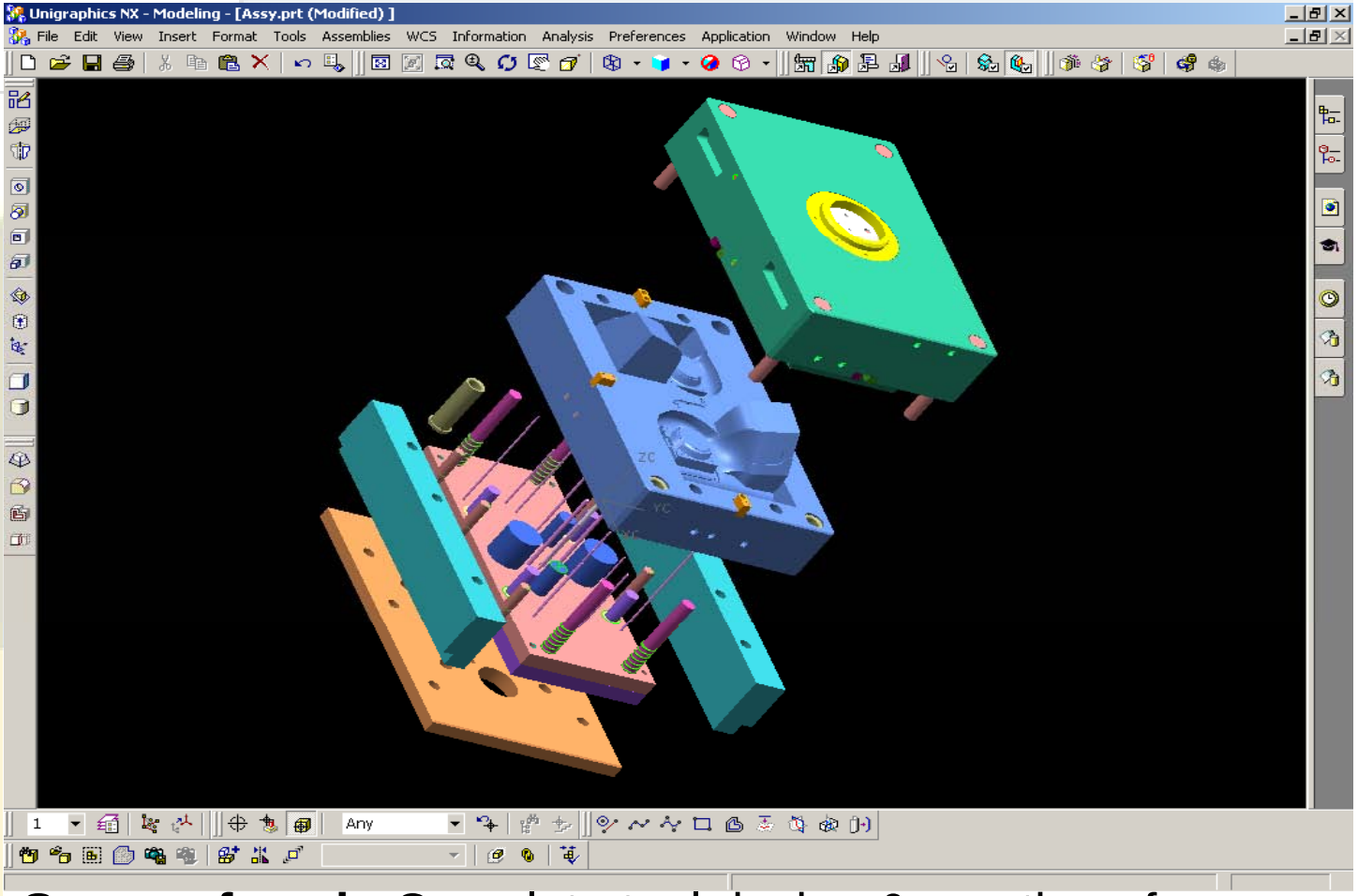
TOOL DESIGN – INJECTION MOULDING





Scope of work: Complete Tool Design and creation of manufacturing drawings.

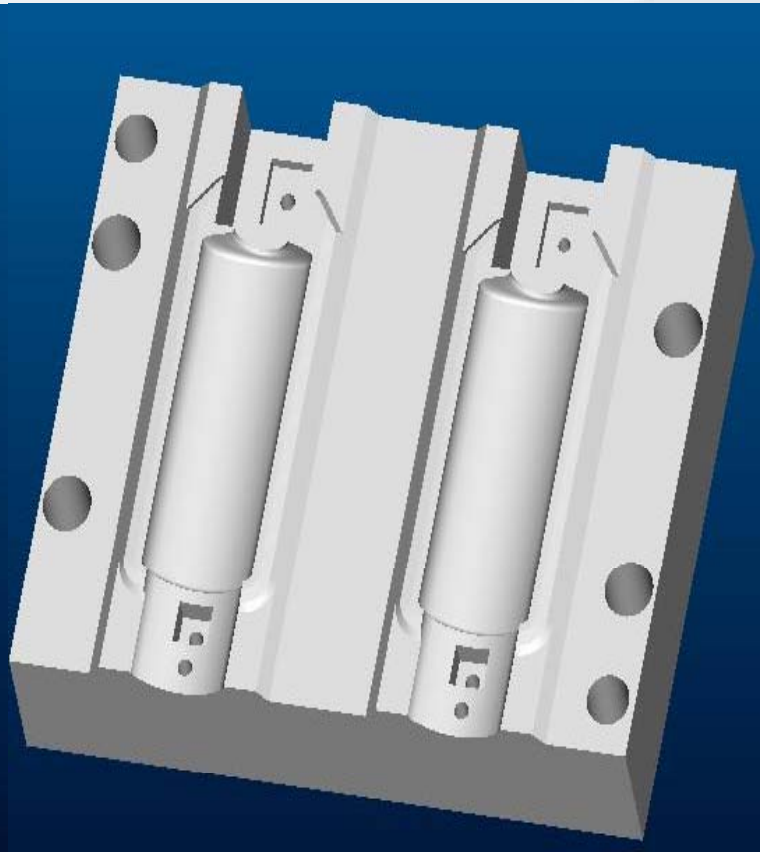
DESIGN OF INJECTION MOULDING TOOL



Scope of work: Complete tool design & creation of Manufacturing drawings

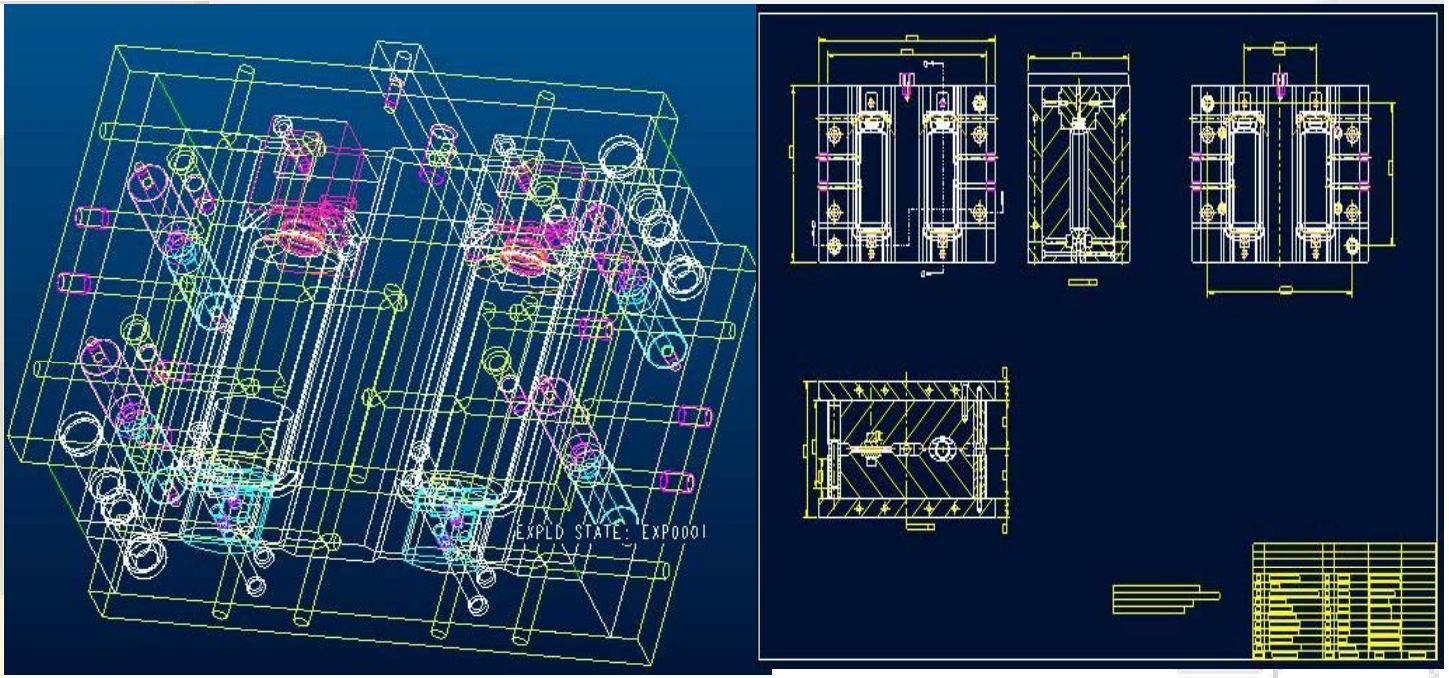
DESIGN OF TWO CAVITY BLOW MOLD

Component – PVC Bottle



Cavities of the blow mold

MOLD ASSEMBLY



Scope of work: Design of a two cavity blow mold for a PVC bottle. The complete mold assembly was created in 3D CAD and then the assembly and manufacturing drawings were created.

SHEET METAL TOOL DESIGN

TOOL DESIGN – PRESS TOOLS

- **Sphinx has done tool design of following sheet metal components.**

Passenger Car

Door Hinge, Rail, Roof side Inner (Right & Left), Panel, Front Pillar (Right & Left), Reinforcement Front Door Hinge (Right & Left)

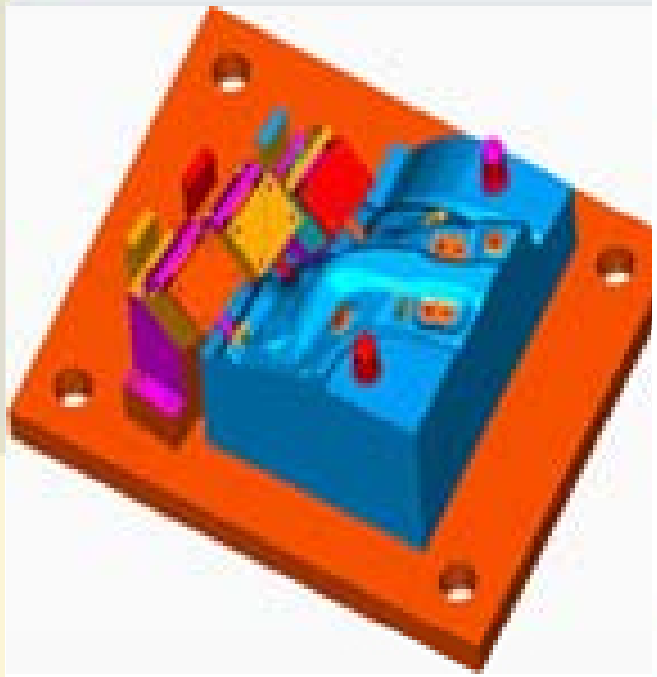
Tractor

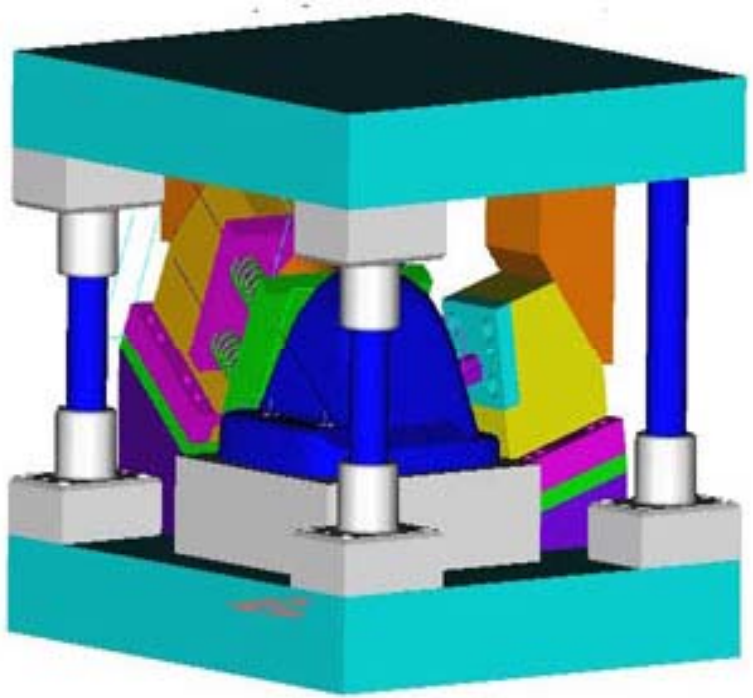
Dash Board, Instrument panel front

Scooter

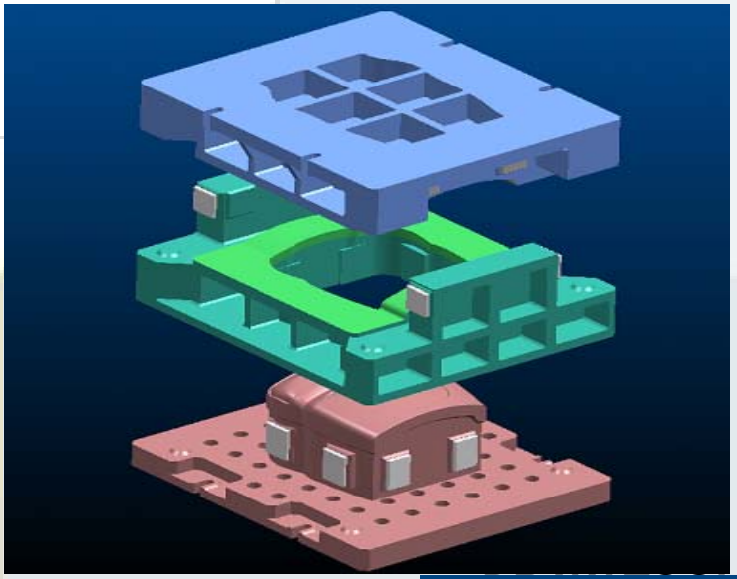
Front mud guard, Front Panel (Right & Left), Front Center Panel, Fuel Tank

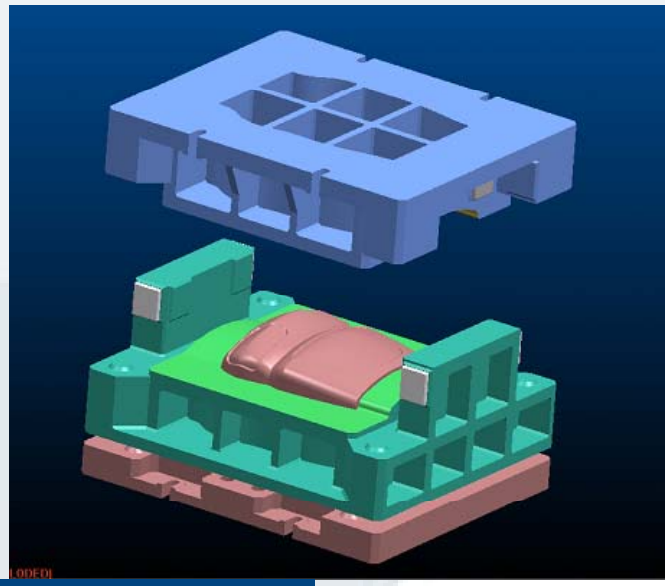
SHEET METAL TOOL DESIGNING

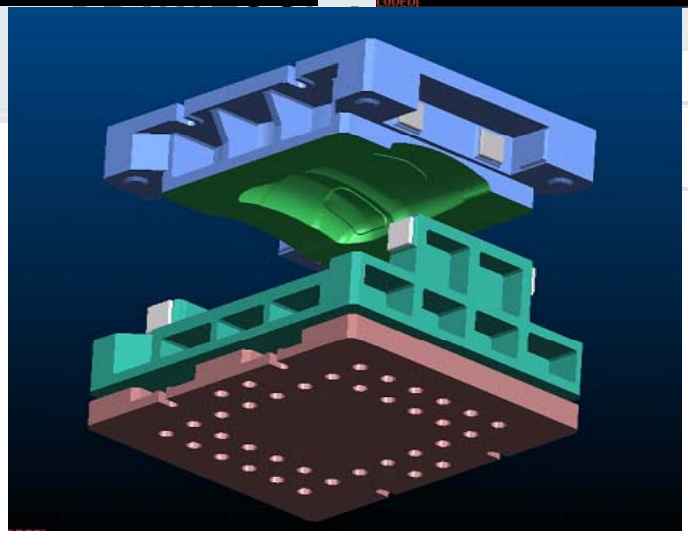




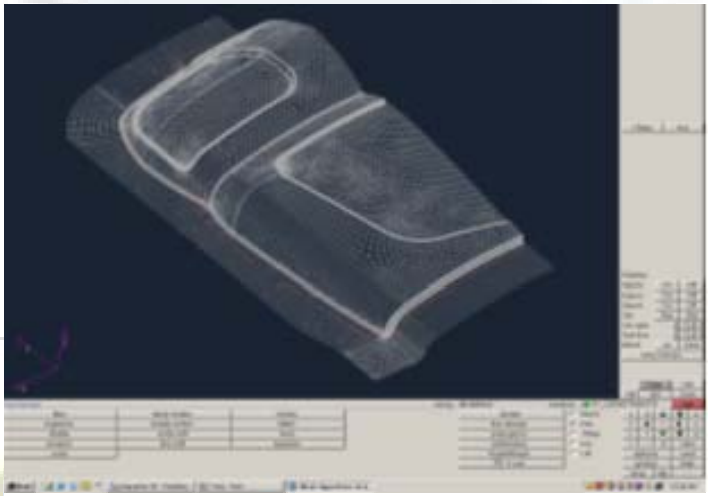
SHEET METAL TOOL DESIGNING



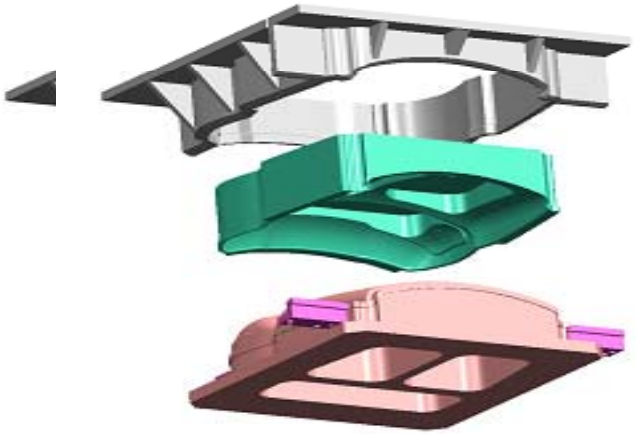




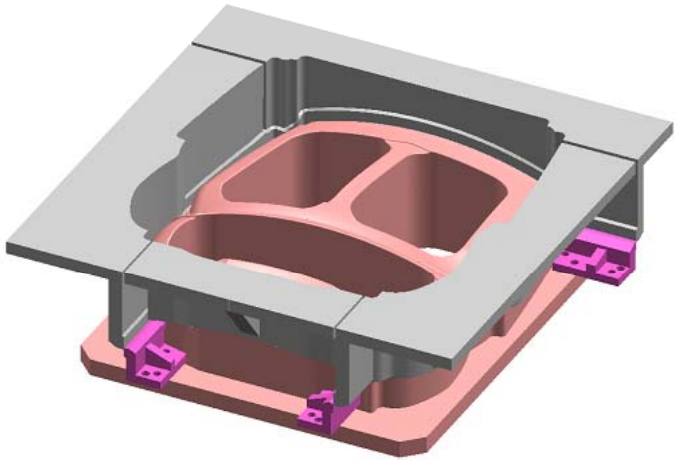
SHEET METAL TOOL DESIGNING



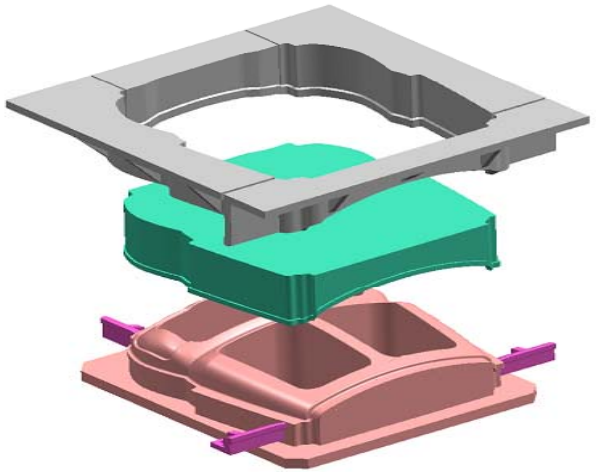
Trim Line Development



Trim Tool Assembly

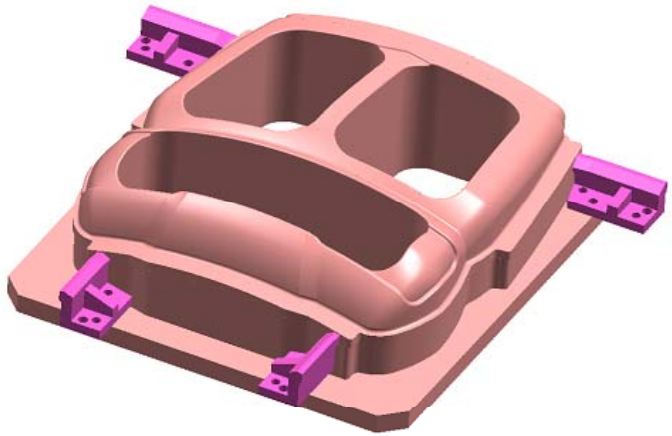


Trim Tool Assembly

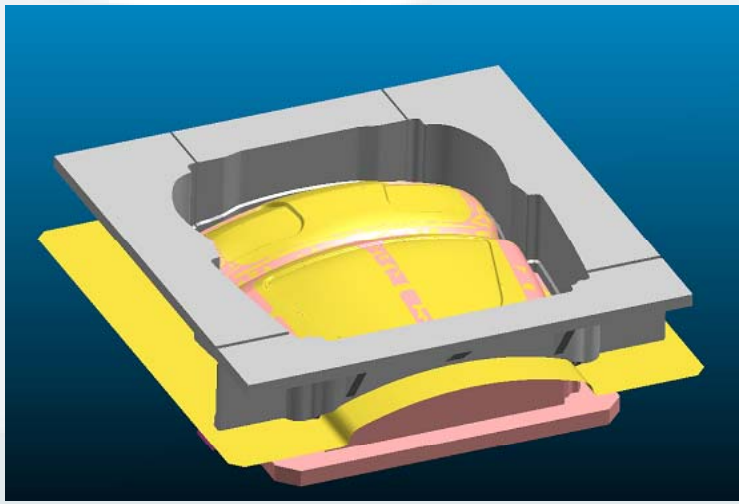


Trim Tool Assembly

SHEET METAL TOOL DESIGNING



Trim Tool – Bottom Half

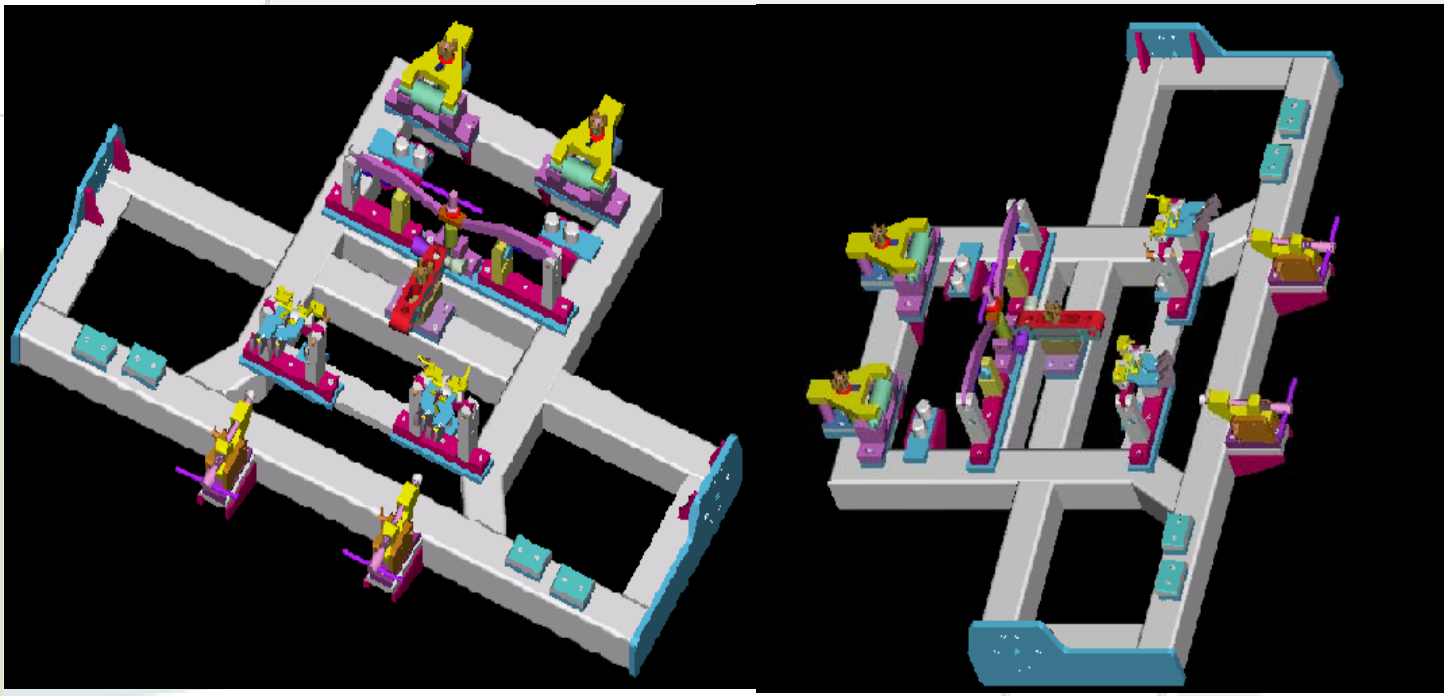


Trim Tool Assy. With Comp.

- SAME WAY WE HAVE DEVELOPED:
- CAM TRIMMING TOOL
- RESTRIKE AND FLANGE TOOL
- CAM FLANGING TOOL

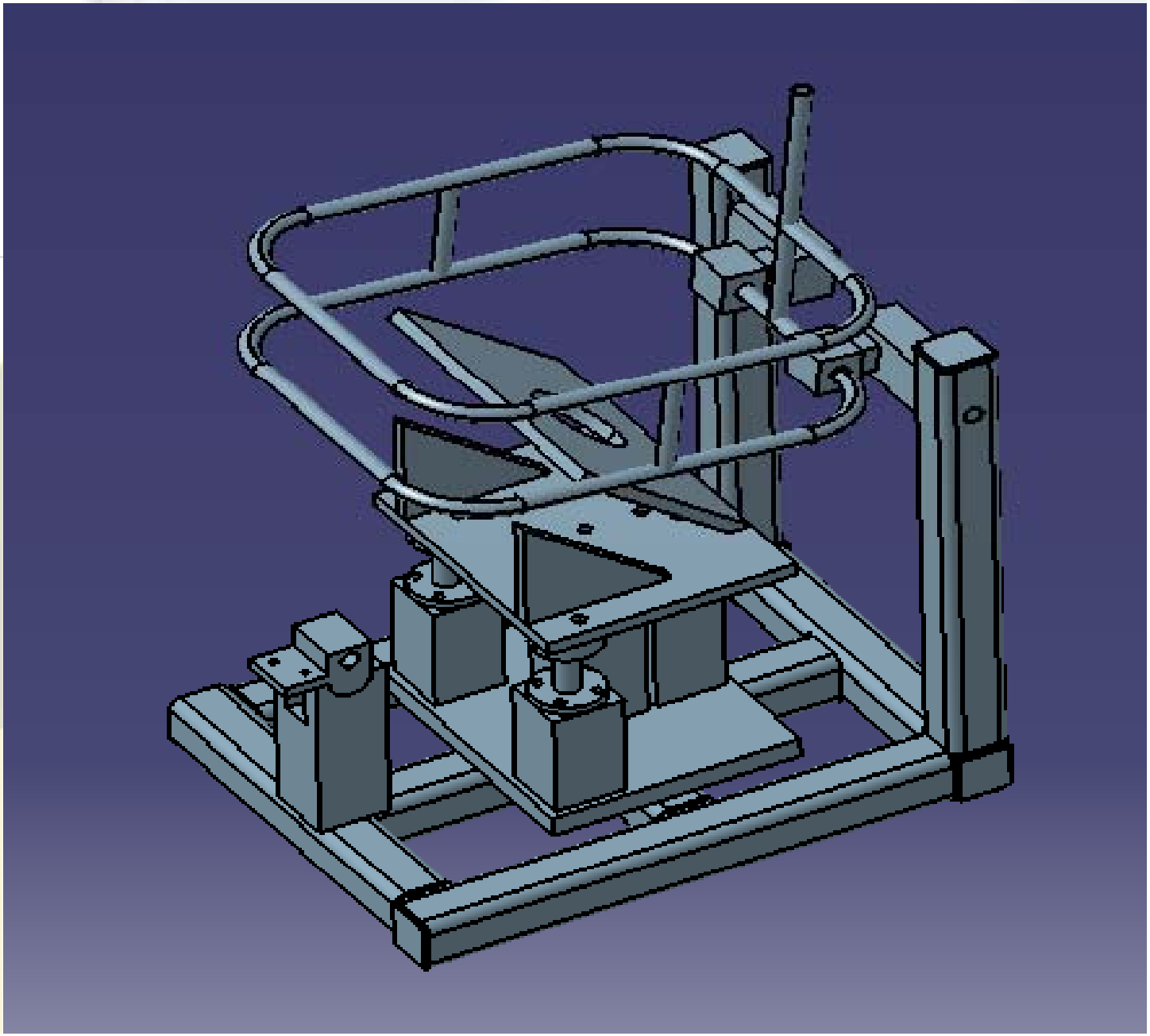
JIG & FIXTURE DESIGN

DESIGN & FABRICATION OF WELDING FIXTURE

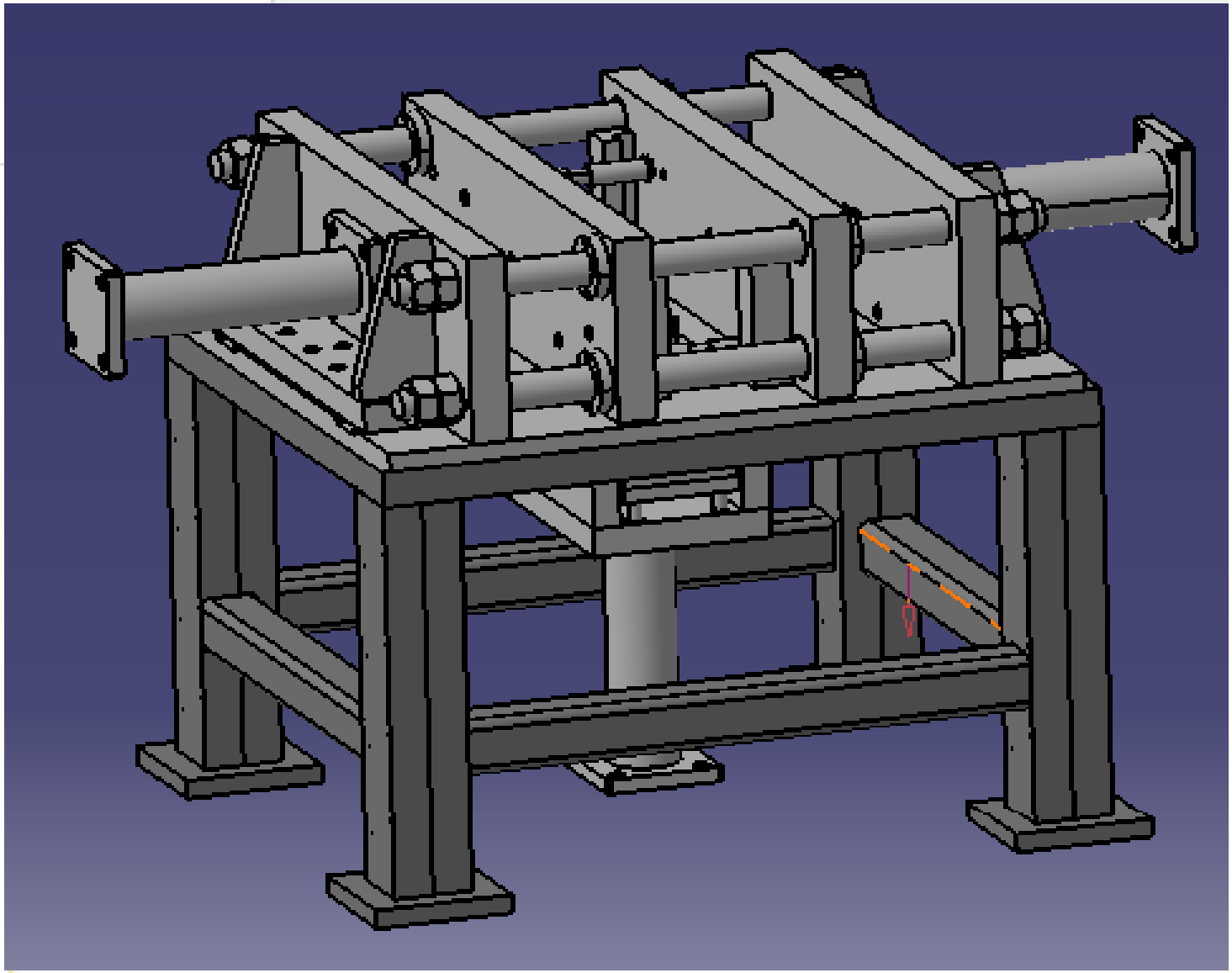


Assignment: To design the welding fixture for the tag welding for fabrication of a grading blade which had 20 different components for one of our clients in UK. Sphinx completed successfully this project in India within the stipulated time.

DESIGNING OF SPM’s



DESIGNING OF SPM’s



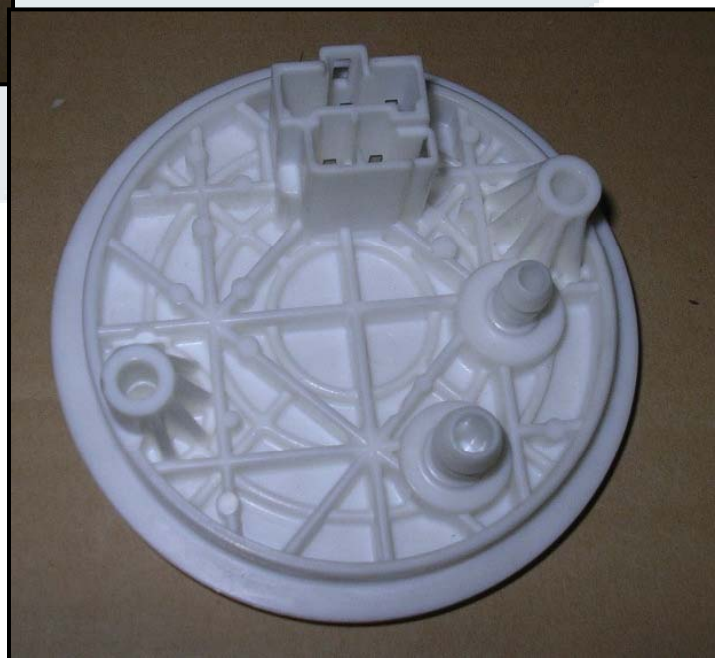
FINAL PARTS PICTURES

Door Handel Assembly

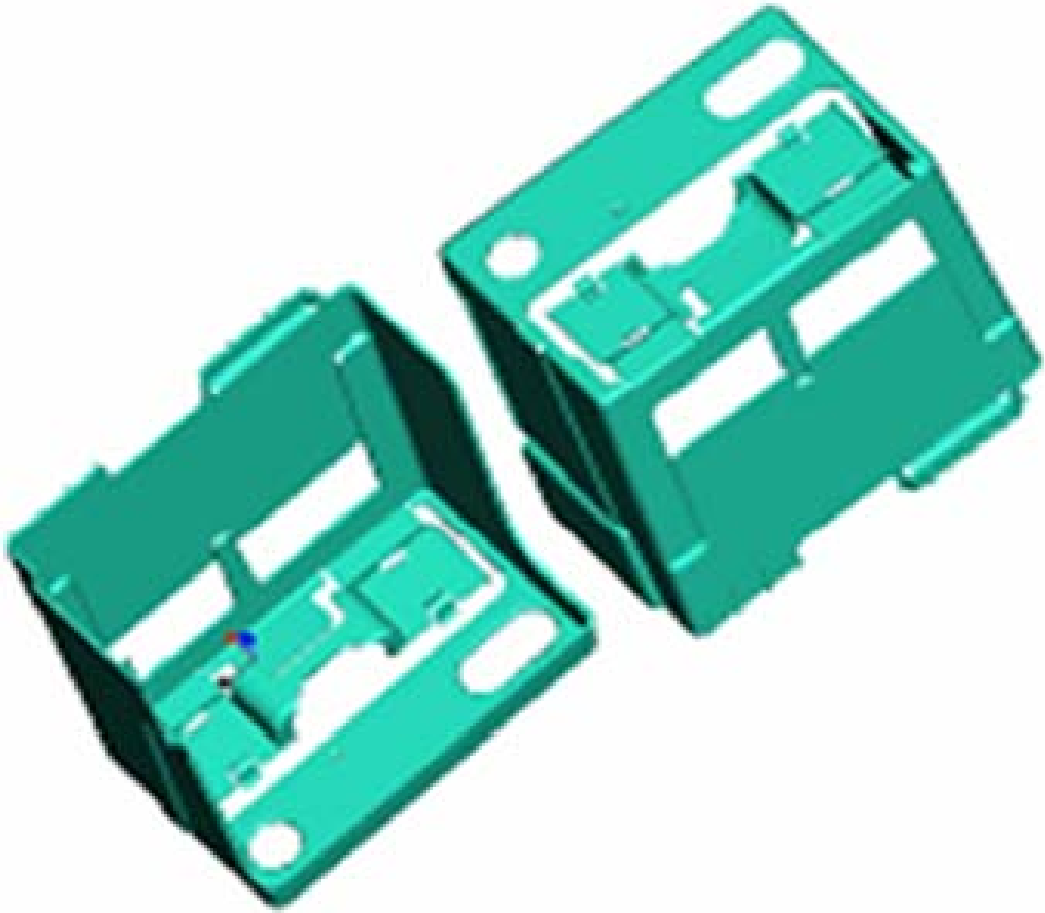
Louvers for Air blowers

Ash Tray in Bakelite

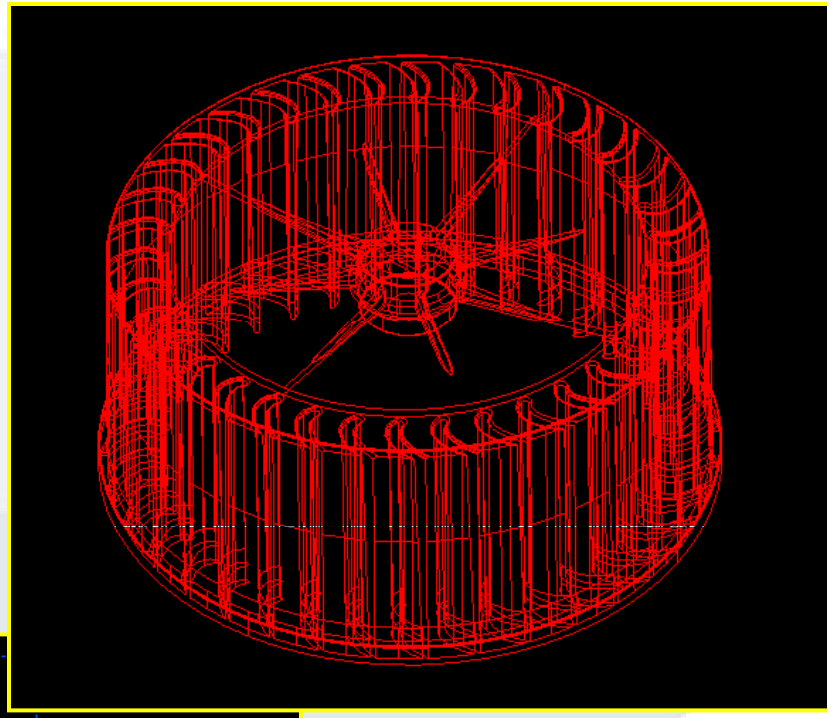
Cover Fuel tank for Gasoline & Diesel models

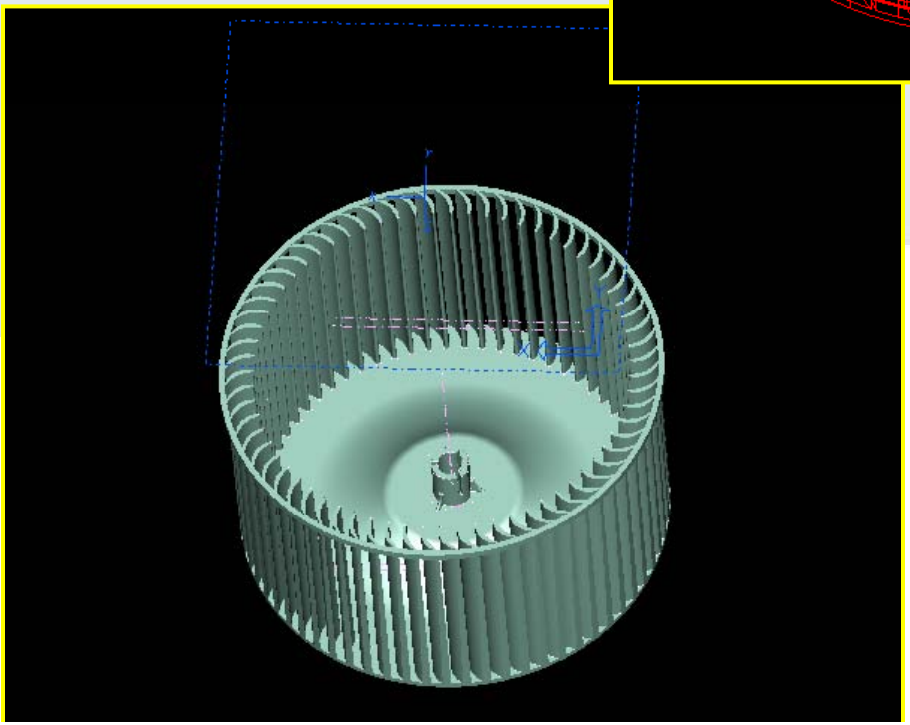


Battery Cover



Blower of AC

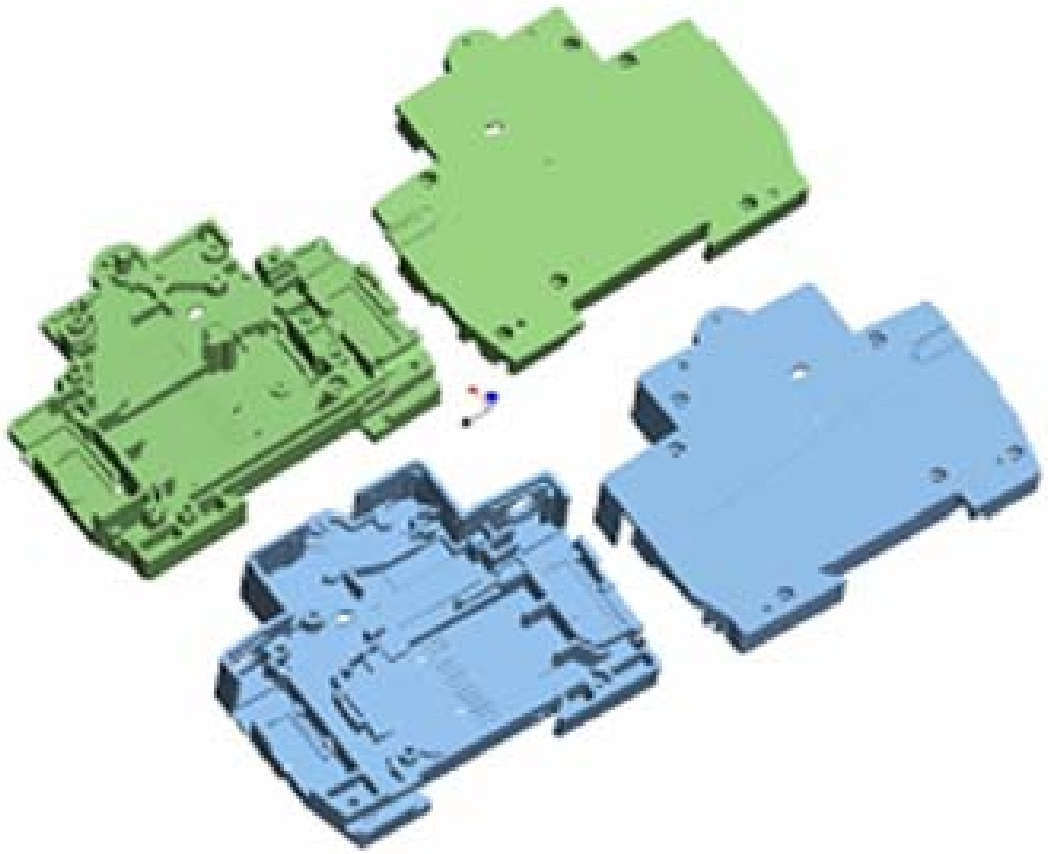




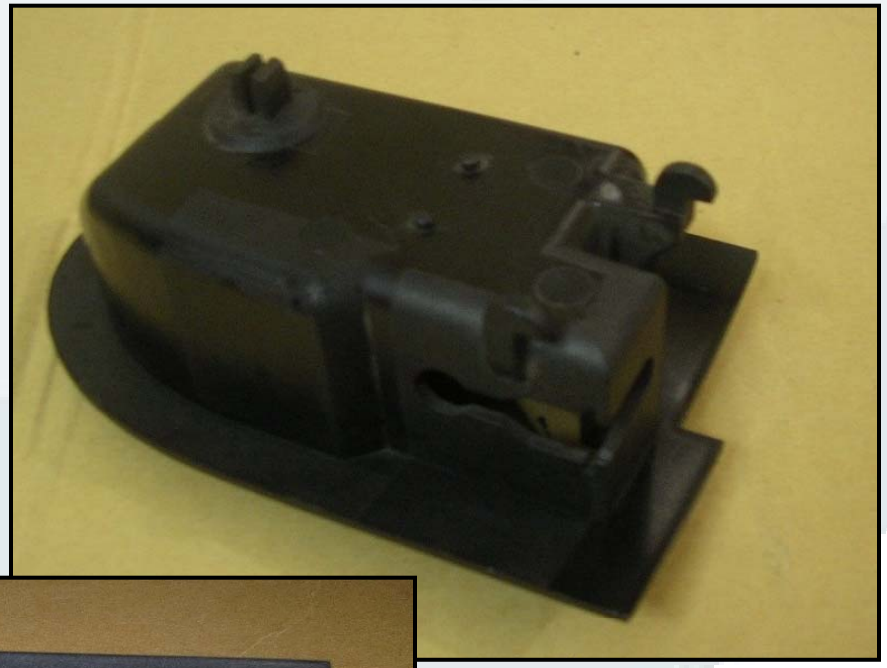
Side Indicator Light

Nebulizer Motor

4 Cavity injection mould design of MCB

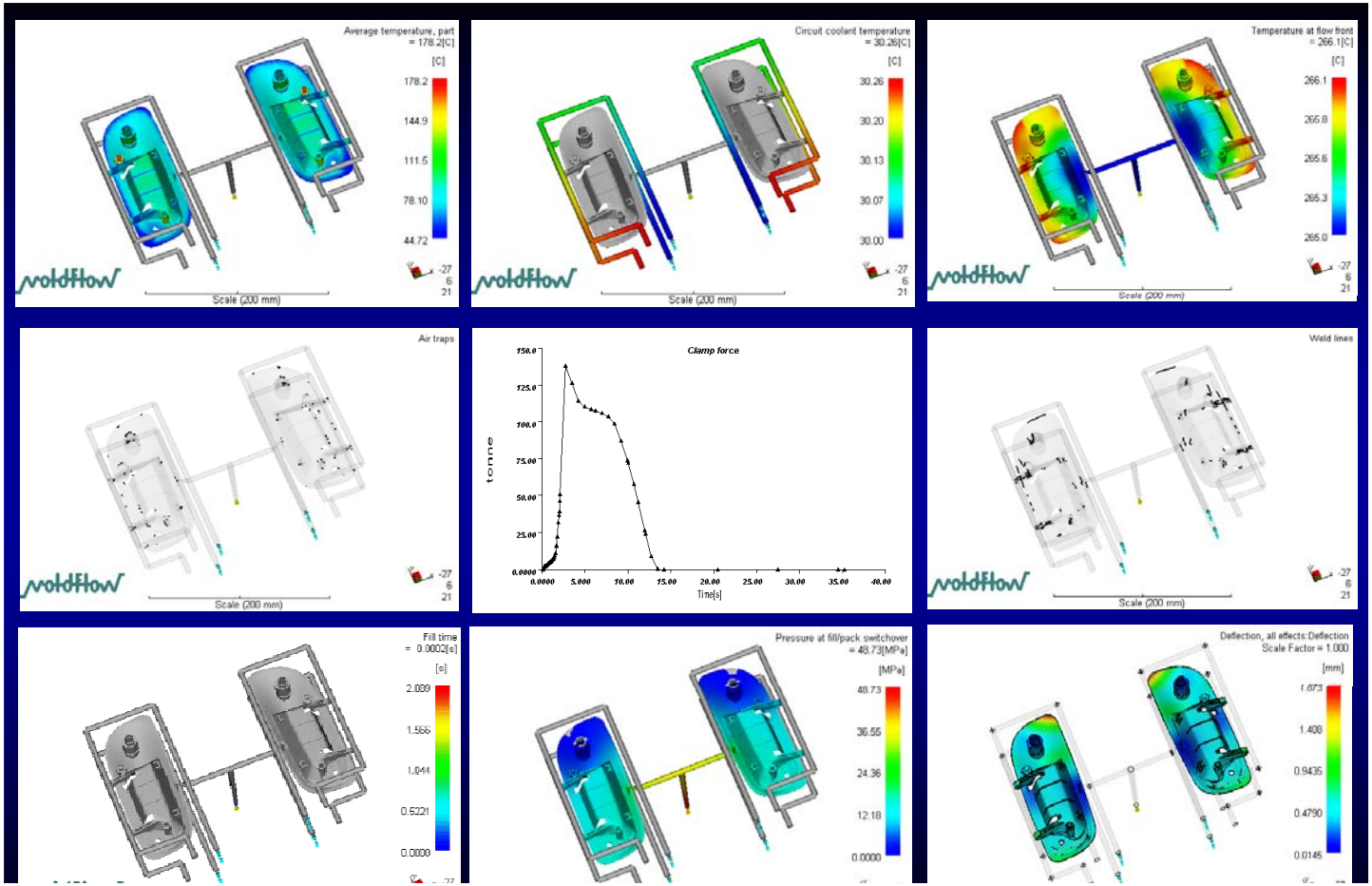


1+1 Cavity injection mold for Door Handel Case

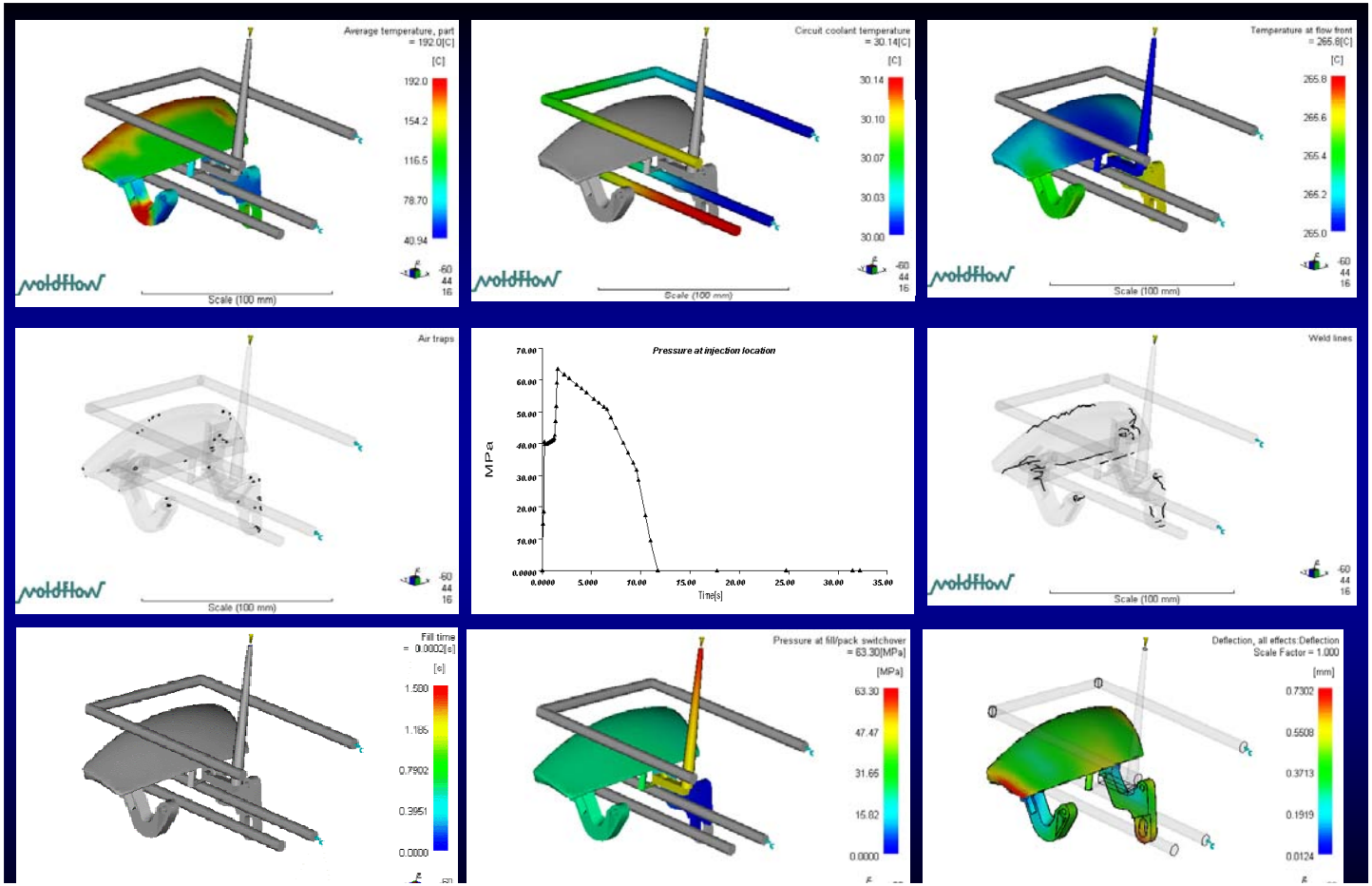


MOLD FLOW ANALYSIS

COOL, FLOW AND WARP ANALYSIS FOR DOOR FRONT HOUSING



COOL, FLOW AND WARP ANALYSIS FOR LEVER TAIL



SUMMARY

- In the business of Engineering and IT services for the last 11 years.
- Experience in on-site, off-site and off-shore projects.
- Ready for complete “business process outsourcing”
- Expertise in applying various engineering standards

“Rely on diverse Design capabilities of Sphinx to enable your business to achieve faster time-to-market, reduced operational costs and competitive advantage.”

“Lets Team Up”

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