

Steve Matson

4182 Flat Creek Circle West Jordan, Utah 84088

November 20, 2014

Professor Lesley Bradshaw
4600 South Redwood Road
Taylorsville, UT 84123

Dear Professor Bradshaw,

My qualifications closely match your advertisement in the Salt Lake Community College Globe for a Technical Writing Student.

According to your job profile you need a student interested in pursuing an education in the challenging field of technical writing. As a current mechanical designer for Atwood Mobile Products, I have a broad range of experience in writing technical summaries and reports for:

- Internal employee training
- Design review summaries
- Project status reports
- Material strength analysis
- Fluid flow analysis

My prior work with Hughes Christensen has provided me with practical experience in developing technical training outlines for Design, Field, and Manufacturing Engineers relating to fixed cutter diamond drill bit design and drilling applications. These skills, coupled with my project leadership experience have provided me with proven competencies in public speaking, training, and training program development.

As this letter and my resume indicate, I am a dedicated professional with the skills and experience necessary to not only learn, but also teach. I am available to discuss this position; please call me at (801) 555-5555.

Best Regards,

Steve R. Matson

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Amada Punch Programming Procedures.....3-7

I organized this technical description for myself as a memory jogger to create NC programming code used in punching sheet metal parts for Atwood SLC manufacturing and several other facilities in the United States. I use this application infrequently, so it was important that I construct a procedural description using step-by-step instructions and screen captures to accelerate my relearning process.

CFDesign Software- Fluid Analysis Setup- Basic Process.....8-13

This document is for training new users in completing a fluid flow analysis utilizing my employers current computational fluid dynamics desktop application, CFDesign. A new user will typically have a basic understanding of 3D solids modeling and possibly experience using failure analysis or fluid flow software. These instructions are a road map to get from analysis setup to completion with reliable results.

New Engineering Employee Orientation Slideshow (Excerpts).....14-21

I created this industry specific presentation for new engineering department employees. It is used to enhance the orientation process at Atwood Mobile Products - SLC. It contains a brief introduction to the Salt Lake engineering department, the new company they have partnered with, and a short history of the RV industry our company serves.

Personal Resume.....22-23

Amada Punch Programming Procedure

Contact Information (Customer and Technical Support):

Merry Mechanization, Inc.
333A S. Indiana Avenue
Englewood, FL 34223
www.merrymech.com
1.941.475.1788
Customer #2022
Model #4596

Training (inquire about “Merry Mechanization Bucks,” we accumulate these each year as a part of our service package):

- Standard (4-5 days),
- Advanced (5 days),
- Remote (90 minute increments),
- CD training aid also available

Overview:

[Preparing CAD Drawings](#)
[File Organization Used Within SMP](#)
[SMP Programming Steps](#)

Preparing CAD drawings:

1. Pull desired drawing from masters file.
2. Open and flatten desired part in preferred CAD package.
3. Remove bend lines or other features not associated with punching.
4. Orient the part as needed and set drawing scale to 1:1 prior to saving as .DXF.
5. Save changes as a “.DXF” file format at 1:1 scale prior to opening in SMP.

Items to consider:

- CAD drawing line lengths can differ from labeled dimensions, which will cause problems when programming punch paths from imported files. Verify all dimensions on imported files within SMP against those called out in the drawing (right click on the part and go to “open in” and select “Flat” to see dimension of the part within SMP).
- Knockouts, dimples and other forming punches are designed to push material upwards. Make sure to orient your flat drawings so that the features desired are correctly oriented.
- Orient parts so burrs created from punch process will end up inside of the final product assembly. Burrs occur on the bottom side of all punched holes.

File Organization Used Within SMP:

6. Three folders exist in SMP under the subfolder “Directory Style: (created on 12/06)”
 - a. “New SMP Programs” – for new and/or revised programs... a.k.a. the working directory.

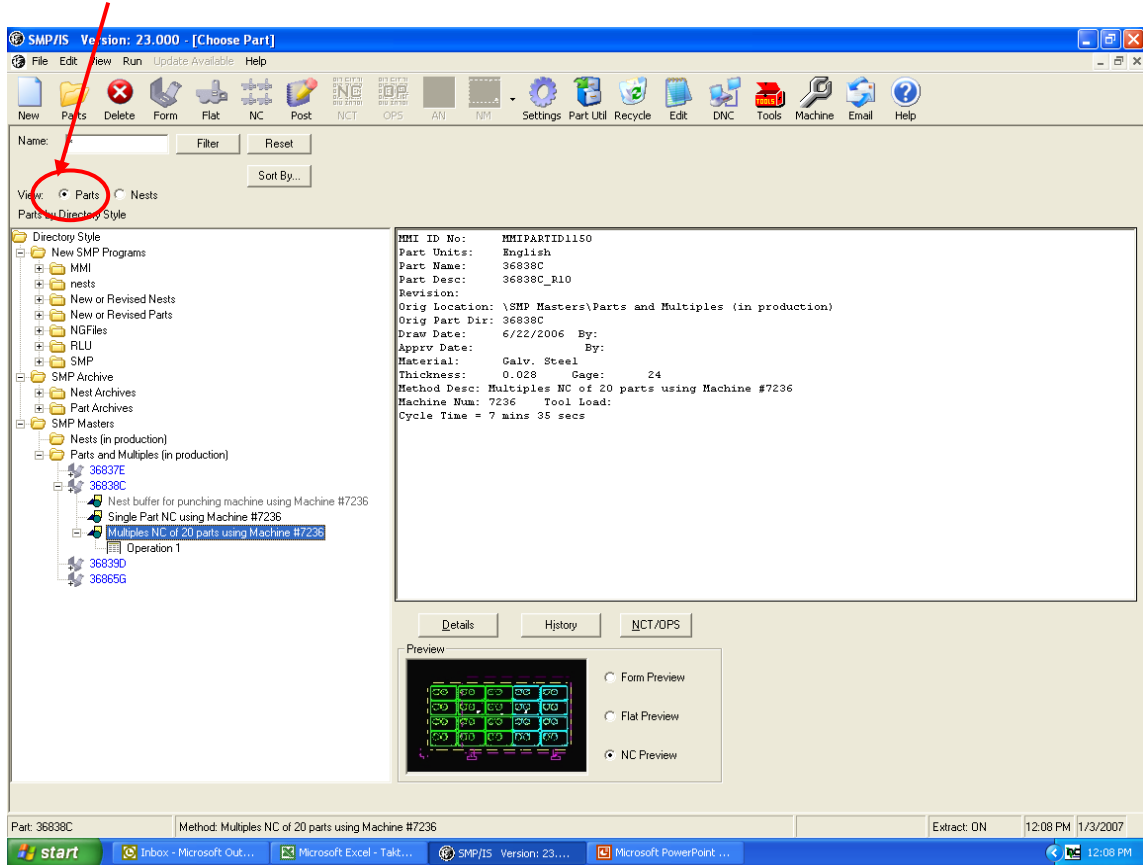
- b. "SMP Archive" – previous program revisions are stored here.
- c. "SMP Masters" – all programs currently being used on the Amada punch press are to be stored here.

Items to consider:

- Maintaining this structure will benefit SMP programmers to quickly find and manipulate programs being used in production. Once programs have been validated and released to production, you may move the SMP files from the "New SMP Programs" folder to the "SMP Masters" folder and move old master revisions to the "SMP Archive" folder.
- **Important!!** Remember that all organizing or moving of files must occur within SMP. SMP will not recognize files if moved within the Window explore view.

SMP Programming Steps:

7. Click on "Parts" if you are importing a new part drawing or revising a current part or multiples layout, and "Nests" if you wish to create or revise a nest.



8. Right click on the "New SMP Programs" folder and create a new folder. Name your folder and the new part/nest being created with the part number(s) and revision level(s).

Items to consider:

- Your OPS & GCD code will output using the same file name as the folder you create it in.

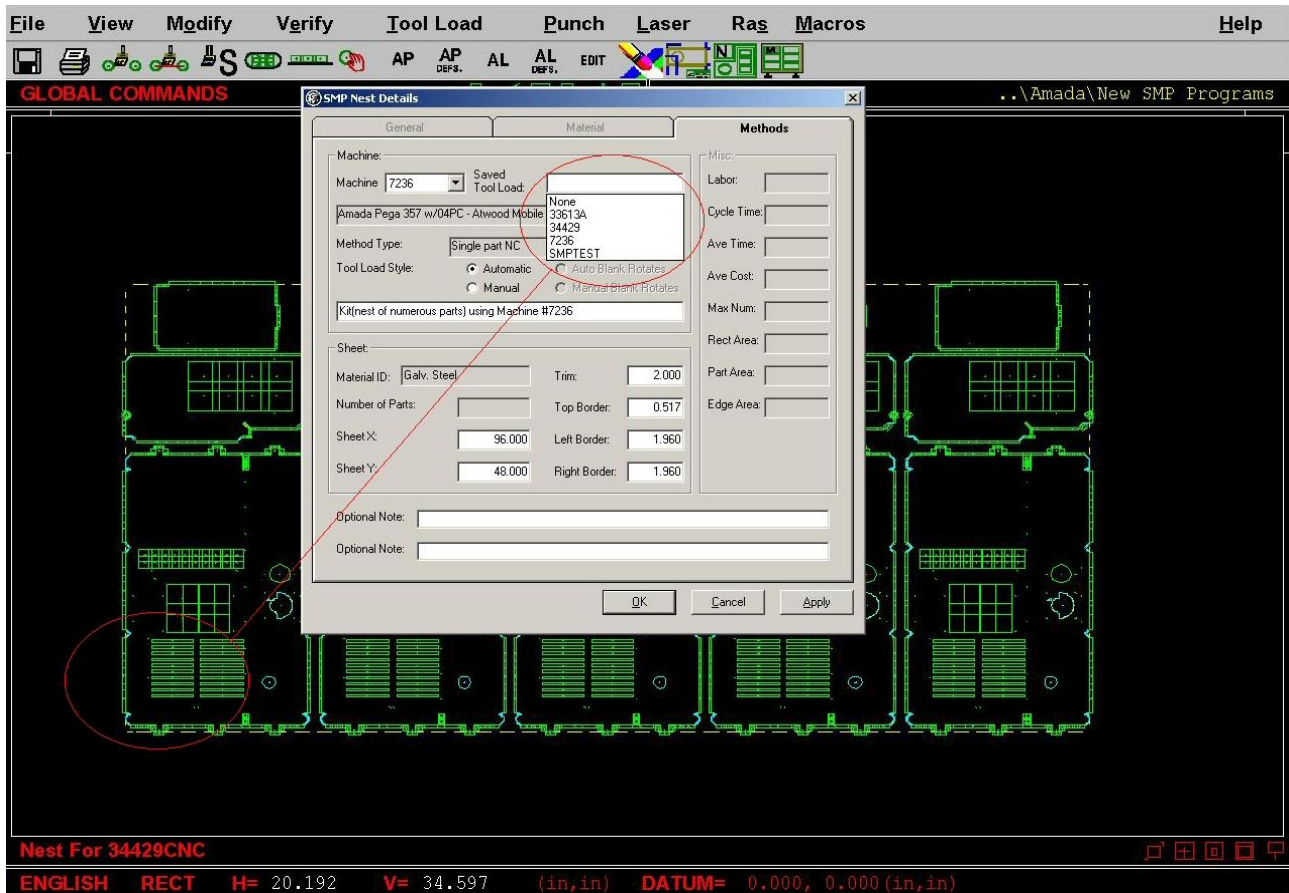
9. If revising an existing part, multiple, or nest find the part/nest to be revised in the “SMP Masters” folder and perform a “Save As...” within the “File” menu then move the new file to the “New SMP Programs” folder.

Items to consider:

- When making a modification to an existing part within a nest, make any punch changes in the master part file rather than just the NC file within the nest. This will ensure that if any later nests are created, the best punch layout/sequence will occur in each newly designed nest.
 - Click- “Settings/environment/DNC/NC Code”. Under “Generic DNC Directory”, change “DNC Directory to represent G-Code sub-folder.
10. Click- “New Part”.
 11. Select “Create a New Part”.
 12. Select “Draw in FORMED/GEOM” to draft an entirely new part, or select “Import from a CAD File”.
 13. If importing a CAD file click- “CAD Information...” and select part, then click- “OK”.
 14. Under “SMP Part Details/Material” select material to be used for part.
 15. Under “SMP Part Details/Method Info” select machine type for part material, then click-“OK”.
 16. Now in FLAT mode.
 17. Rotate part if desirable and use “Autotrack” to ensure imported geometry has no gaps and is trimmed properly.
 18. Click-“NC” for NC programming.
 19. Observe holes, green means the tool is available and has been selected and used by SMP automatically. Blue means the appropriate tools are not in the tool load.
 20. Click-“Tool Load/Graphical Load Manager”.
 21. Match necessary tools with those listed on the Tool Load Sheets obtained from Glen. Do the same for all intended hits.
 22. Drag/drop tools from tool crib to appropriate tool load station as per the Tool Load Sheet. Click-“OK”.

Items to consider:

- When nesting two parts with varying tool loads, SMP will require you to reprogram all conflicting hits.
- Use standard loads whenever possible. Save non-standard tool loads in Single Part NC.
- Name the tool load using the 5 digit Atwood part number associated with the part being punched.
- Be sure to pick this non-standard tool load from “Saved Tool Load” list after processing the nest of parts if the nest contains blue, unsolved hits. Again, the blue hits indicate the tool is not in the standard tool load.



23. Select "Punch/process" and place hits.

Items to consider:

- Tab thickness should be between 1/2 and 1/3 of the material thickness (i.e. $[1/2T+1/3T]/2$ -or- $5T/12$)
- Do not punch less than 2.5 times the material thickness including between holes and from a hole to an edge. NC color code: Green = punched, Yellow = not punched, & Blue = need a decision.
- Slow machine federate for knock outs, and consider air blow for cooling tools.

24. Check all tools used against the Tool Load Sheet, and make any necessary adjustments.

25. If part file has bends, create "frame" or "rack" based on part size leaving 1/2" clearance at top and bottom of punched part to edge of punched "frame". This is a standard established by manufacturing for ease in setting up parts to bend.

26. NC punch single part and "frame" individually. Then create nest adding a single "frame" and adding duplicate parts horizontally that fit within the "frame".

27. Click- "Go to MULTIPLES".

28. Modify part positions on sheet along with Web thickness (usually around 0.625").

29. Be sure not to place parts within 3.5 in of trim (bottom border). Click-"OK". **Note:** clamps are at approximately 6 and 72 inches from bottom left corner.

30. Click-"Reposition Shift".

31. Place repositioning pads over areas NOT being punched out (some minor repositioning will occur automatically).

32. Place work area to enclose entire sheet. If unsuccessful, when asked for the “amount of shift” either 24 or 48 depending on sheet size (these numbers correspond to the amount of horizontal shift).
33. Click-“Modify/Optimize/Automatic Optimization/Yes/Where Tool Last Finished/Yes/All Tools/Medium/All Tools.
34. Click-“Re-plot With Tool Path”
35. Review hit progression.
36. Click-“Save”.
37. Click-“Write Code”.
38. Enter 4-digit program number (i.e. part number minus the first digit and revision letter).
WARNING! Do not deviate from this 4-digit naming convention otherwise the Amada will not read the ops or gcd file during the download to the controller.
39. Press-“2” for English units.
40. Click-“NCT/OPS”.
41. Review OPS sheet and G-Code.
42. In windows explorer, retrieve and transfer both the .OPS and .GCD files to Amada punch press for pre-production trial run.
43. Print the .OPS file, which includes tool load information for punch press operator.
44. Open and edit the .GCD file by adding the following description as shown below:

```

5003.gcd - Notepad
File Edit Format View Help
O5003 (35003J, 89 Element Brkt, 08-26-09)|
G92X72.Y50.
G90
/M23
/M33
X3.258Y32.537T255
G28I1.19J0.K10
X15.654Y32.911
Y30.852
X16.154
Y32.911
X17.847Y32.537


```

After the 5 character file name, type <space>, open bracket, then type full PN with current revision letter, short description, current date, then type close bracket. WARNING: Open and close brackets must be used to avoid read errors during file download from Amada Controller to Amada Punch Machine.

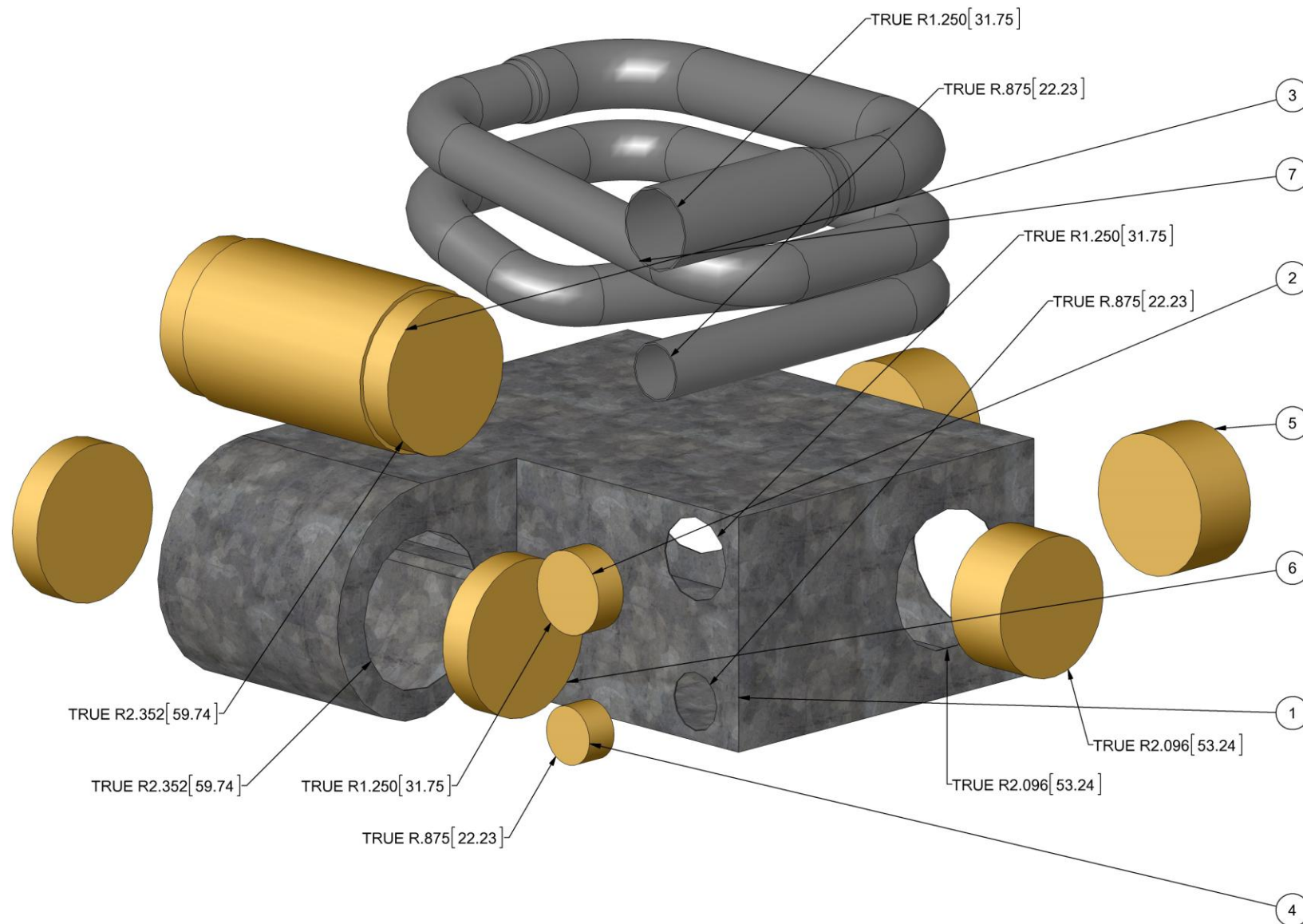
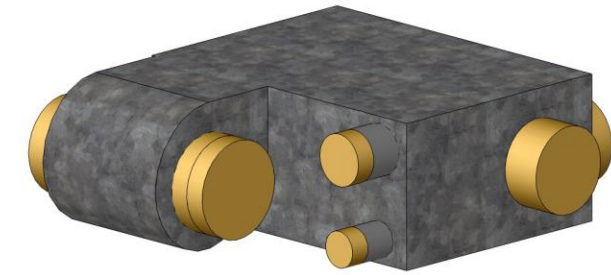
Basic Process (See CFDesign Help, Getting Started for "Basic Process" list that includes hyperlinks)

1. Prepare your CAD model for CFdesign. (See Figure "A")
2. Launch from CAD into CFdesign.
3. Use the Design Study Manager to create the Design Study.
4. For the first time user, now that you're in the CFdesign environment, it's a good time to familiarize yourself with the User Interface and the basic work flow.
5. Repair or modify the geometry, if needed.
6. Assign materials to all parts in the model. (See Figure "B")
7. Assign boundary conditions. Boundary conditions define where and what comes in and goes out. (See Figure "C")
8. Switch to the Meshing task, and click the Automatic Size button. There are other ways to assign the mesh, but this is the easiest. (See Figure "D")
9. If some parts need to move, switch to the Motion task to assign motion.
10. Open the Solve dialog, and define the model physics. Click Solve to start the analysis. (See Figure "E")
11. Go to the Results task, and look at your results (while it's running and after it's finished). (See Figure "E")
12. Need to make a change? Clone the design or scenario in the Design Study Bar, make your change in your CAD tool.
13. Launch again, and update the design in the Design Study Manager.
14. Run the new design, and compare results in the Decision Center. To learn more about the Decision Center
15. Ready to automate the design study? Create several designs in the CAD model and assign parts and surfaces into CAD entity groups. Launch into the Design Study Builder. Run the scenarios from the Solver Manager.
16. Track your analyses using the Solution Monitor and CFdesign e-mail notifications.

CFD-ASM-NXG-LACKIE-MSeries_10-10-2103 - Thursday, December 04, 2014 1:59:49 PM

		Atwood Mobile Products LLC	
		1874 S. PIONEER RD. SALT LAKE CITY, UT 84104	
TITLE:			
ENGINEERING PROJECT:	SIZE B	DWG.	REV.
ITEM REF:	SCALE: 1:8	SHEET: 1 OF 6	

Item #1: Prepare your CAD model for CFDDesign



- 1a) Create individual solids in Solidworks then create the assembly file. Solids should be simplified versions of the actual CAD parts. Minimize the use of cosmetic fillets to avoid creating "sliver" geometry in CFDDesign. Sliver geometry increases mesh time or can prevent an imported assembly from meshing.
- 1b) Note that the casing cutouts and mating plugs or components are exactly the same size to avoid creating sliver geometry or assembly interference. CFDDesign will tolerate sliver geometry, but terminates the import process if interference between solids is detected.
- 1c) Fully mate all components in Solidworks before attempting to import into CFDDesign. CFDDesign will tolerate some degree of movement, e.g. a cylinder mated Coincident and Concentric with a hole (the cylinder is still able to spin concentric to the center axis of the hole) . You'll receive an error message during import if components aren't mated properly. Correct the problem in Solidworks and reimport the assembly.
- 1d) The plug components (Items 2, 3, 4, 5, 6) are extra parts that need to be created in Solidworks and mated over each inlet or outlet opening. They facilitate the analysis process by sealing off the analysis cavities and are assigned a material type and a boundary condition.

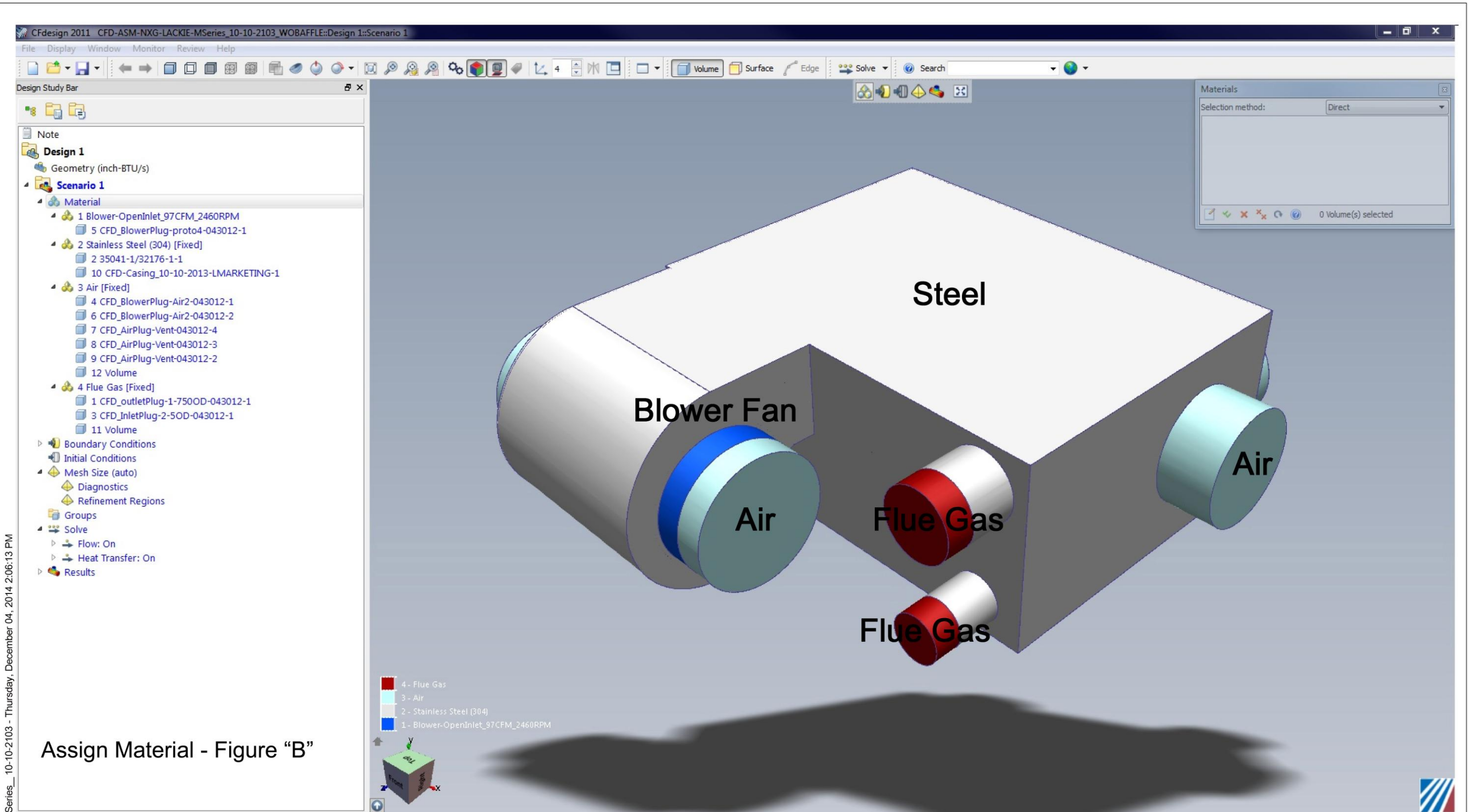
CFD-ASM-NXG-LACKIE-MSeries_10-10-2103 - Thursday, December 04, 2014 1:59:49 PM

ITEM NO.	PART NO.	QTY.
1	CFD-Casing_10-10-2013-LMARKETING	1
2	CFD_InletPlug-2-5OD-043012	1
3	CFD_BlowerPlug-pto4-043012	1
4	CFD_outletPlug-1-750OD-043012	1
5	CFD_AirPlug-Vent-043012	3
6	CFD_BlowerPlug-Air2-043012	2
7	35041	1

Atwood Mobile Products LLC
 1874 S. PIONEER RD. SALT LAKE CITY, UT 84104


TITLE: _____

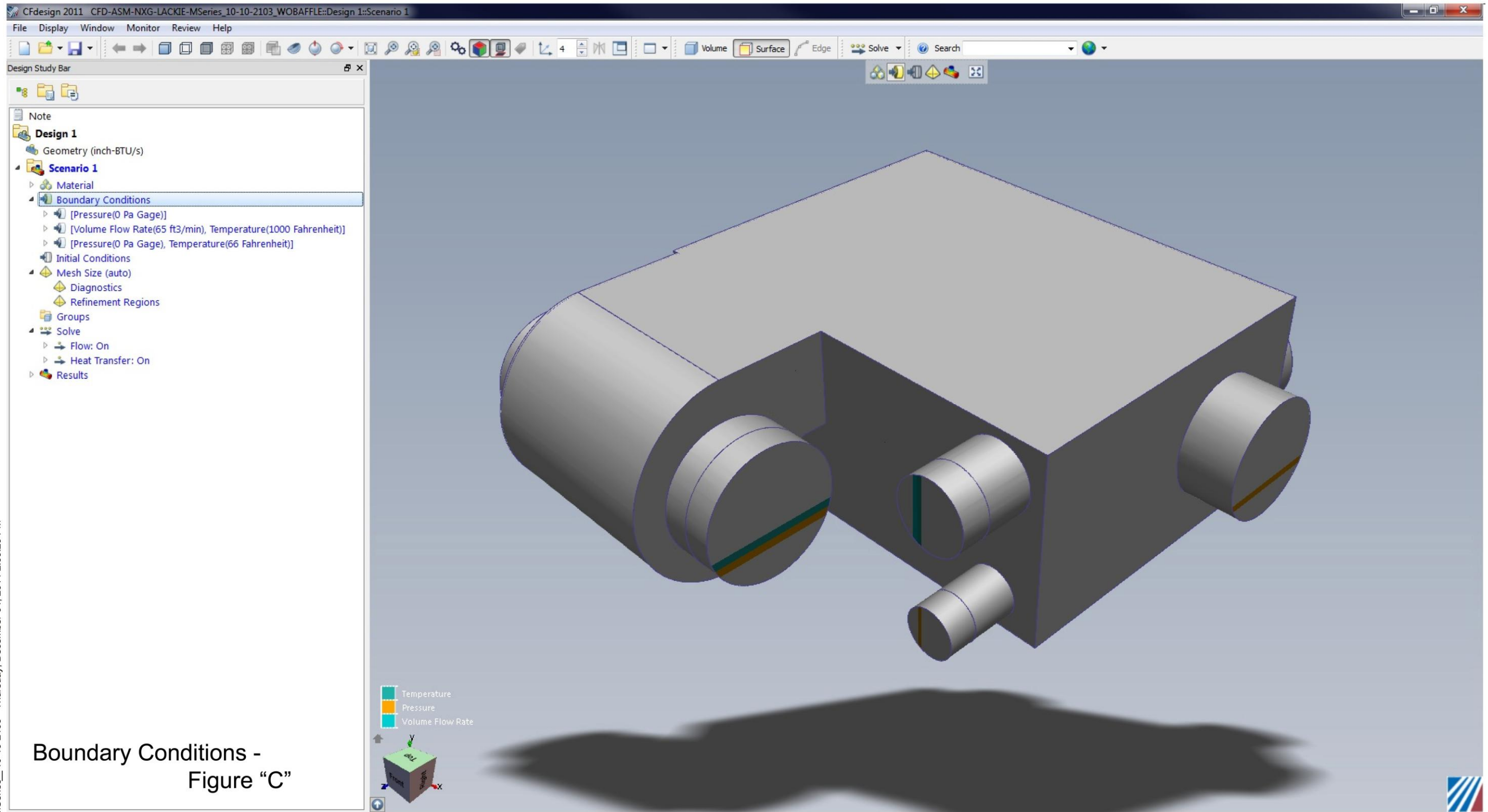
ENGINEERING PROJECT: -	SIZE: B	DWG.:	REV.:
ITEM REF: -	SCALE: 1:8	SHEET: 2	OF 6



Assign Material - Figure "B"

Item #6: All items in the assembly must be manually assigned a material type including the fill solids that CFDesign creates when each analysis cavity is properly sealed with no gaps, no interference between solids. Material properties can be assigned in Solidworks and, if I remember correctly, retained in CFDesign.


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TITLE:			
ENGINEERING PROJECT:	SIZE B	DWG.	REV.
ITEM REF:	SCALE: 1:8	SHEET: 3 OF 6	

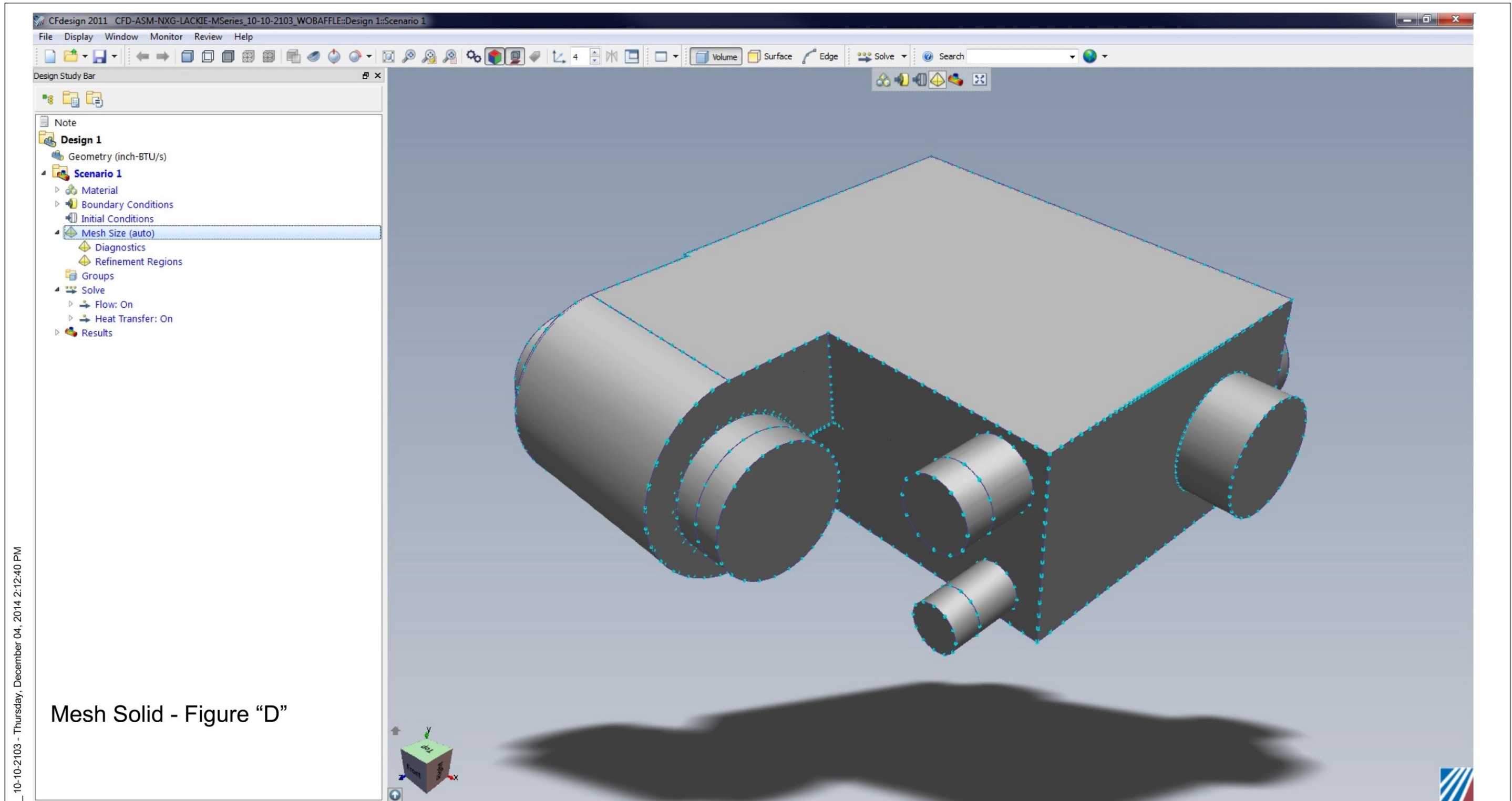


Boundary Conditions -
Figure "C"

Item #7: Inlet and outlet surfaces are assigned boundary conditions that define temperature, pressure, flow rate, etc.


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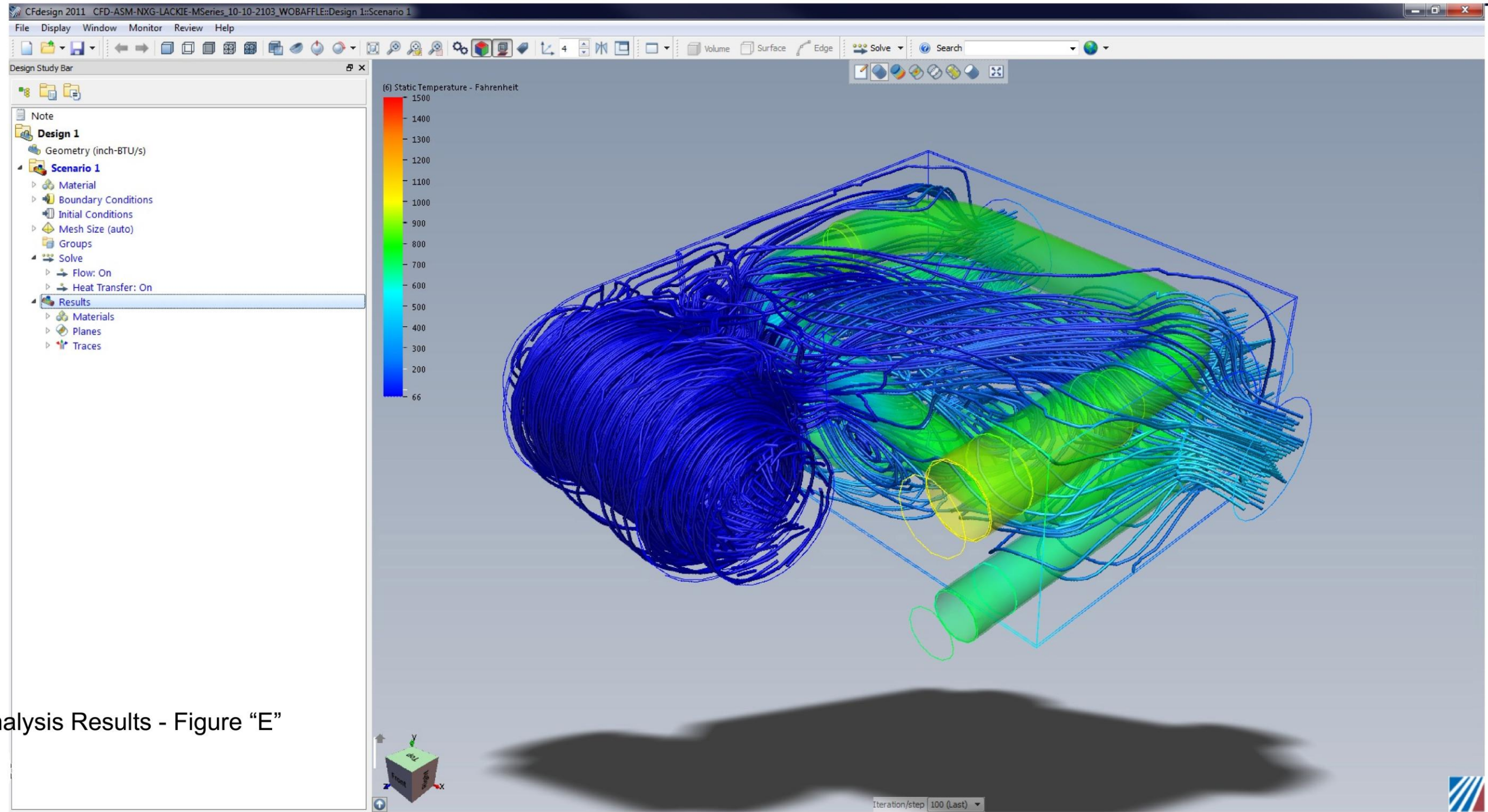
 Atwood Mobile Products LLC 1874 S. PIONEER RD. SALT LAKE CITY, UT 84104		TITLE:	
		ENGINEERING PROJECT:	SIZE B
ITEM REF:	SCALE: 1:8	SHEET: 4 OF 6	



Mesh Solid - Figure "D"

Item #8: Assign mesh size and density. Mesh size values can be set globally, autosized by CFDesign, or manually set by region. Meshing shouldn't take more than 10-20 minutes maximum. Remember that mesh time impacts analysis time. If the process takes too long, mesh density may be too concentrated in a particular area of the model or the assembly may contain sliver geometry that CFDesign is unable to mesh.

		Atwood Mobile Products LLC 1874 S. PIONEER RD. SALT LAKE CITY, UT 84104		
		TITLE:		
ENGINEERING PROJECT:	SIZE B	DWG.	REV.	
ITEM REF:	SCALE: 1:8	SHEET. 5 OF 6		




Analysis Results - Figure "E"

Item #10: Solve. Default solve settings can be used or manually adjusted to fine tune results data. Since you'll be using the "motion" option in your analysis, you should contact Autodesk for set up tips. Note the air traces at the blower fan shown above. Blower fan air flow simulation was created with a static solid rather than using "Motion". I manually defined the axis of rotation and specified the fan rpm based on the unit size we were testing.

Item #11: Results. Output flow results to text, image, or video format.

CFD-ASM-NXG-LACKIE-MSeries_10-10-2103 - Thursday, December 04, 2014 2:16:15 PM

 Atwood Mobile Products LLC 1874 S. PIONEER RD. SALT LAKE CITY, UT 84104		TITLE:	
		ENGINEERING PROJECT:	SIZE B
ITEM REF:	SCALE: 1:8	SHEET: 6 OF 6	

New Engineering Employee Orientation Slideshow (Excerpts)

Slide 1



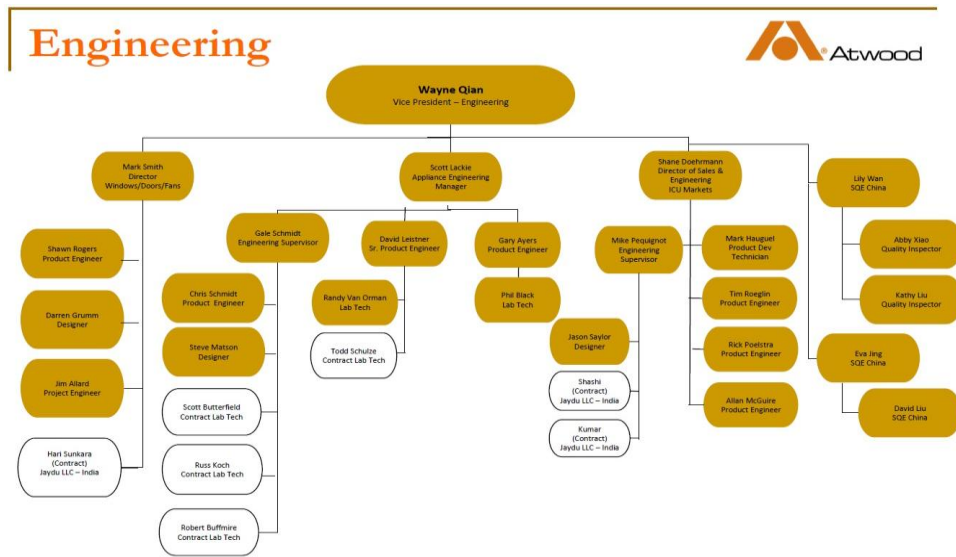
New Employee Orientation: Atwood Mobile Products Engineering

The goals and objectives of this proposed program:

- 1) Formally welcome the employee to ensure they feel they are part of the Atwood Mobile Products Community, decrease employee anxiety, set the tone of employee morale and positive employee commitment
 - 2) Introduce the Engineering Department's structure and core responsibilities, give a short history of Atwood Mobile Products and a brief overview of the RV industries' history
 - 3) Restate Atwood's core values, mission, and vision statements
 - 4) Reinforce the importance of the employee's contribution to the success of Atwood Mobile Products
- I would like to take a few minutes of your time to walk you through my vision of the proposed orientation. This will help you understand the proposed scope and purpose of this program.

Atwood Mobile Products

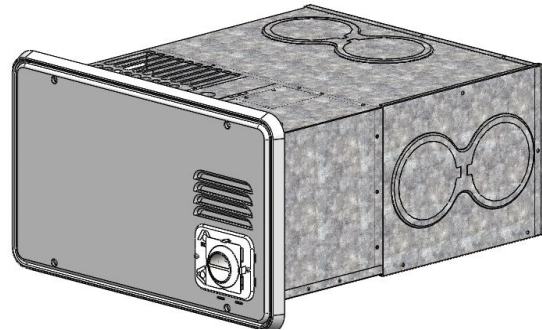
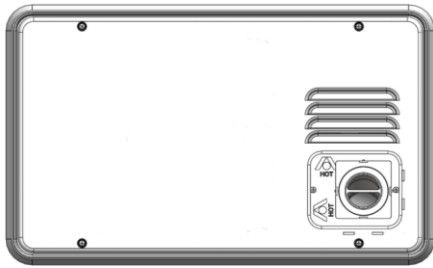
► Engineering Organizational Chart



Atwood Mobile Products is headquartered in Elkhart, Indiana. We currently have three manufacturing facilities located in Elkhart, Greenbriar, Tennessee, and Salt Lake City, Utah. Elkhart and Salt Lake have onsite Engineering support. Greenbriar receives its engineering support from the Elkhart Engineering group.

Atwood Mobile Products

- ▶ New Products – Design and Development
 - NexGen RV Furnace Series
 - Large Furnaces 35,000 to 40,000 BTU (DC or AC)



The Large series would be used in large trailers, 5th wheels and custom coaches over 40' in length.

Atwood Mobile Products

▶ Current Products – Engineering Design Maintenance and Cost Savings Change Requests.

- RV Furnaces



- Ranges and Stove Tops



- Water Heaters 6–10 Gallon Tanks or On–Demand (Tankless)



- Helium Refrigerators



- Ceiling Vents and Fan Systems

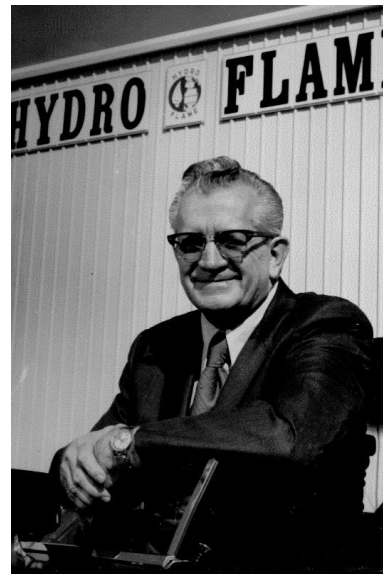


This represents some of the major products lines Atwood Mobile Products manufactures. These products are designed, maintained, and improved upon by our Engineering groups through suggestions and recommendations from Atwood Manufacturing, Marketing, travel trailer manufacturers and RV customers.

DID YOU KNOW! The Atwood 79 Everest Star II Furnace was carried by the 1981 American Medical Research Expedition to Mt. Everest and used in the record setting Pacific Crossing of the Double Eagle Balloon.

Atwood mobile products Company History – Salt Lake City Location

Utah Hydro Corporation
was founded in July 1951
by George William Jackson
in Salt Lake City, Utah.



Originally it manufactured natural gas burners for boiler heating systems used in hospitals and larger commercial buildings. Natural gas was quickly replacing burning oil as the preferred heating fuel and Hydro Corporation was there to manufacture them at a time when gas lines were being installed across the entire Wasatch front.

In the early 1960's George took his Shasta trailer to Mirror Lake for some camping and realized how cold the high-mountain nights could get with nothing but a campfire for warmth. He began thinking about a method for safely heating his trailer which became the first RV furnace invented. George discovered a method called "sealed combustion" and incorporated that idea into his first RV furnace, the B8. It was a free standing, gravity style (no blower fan) heater that gained popularity due to the fact it could not only provide heat inside the RV while doubling as a coffee pot warmer.

Atwood Mobile Products – RV History

▶ Recreational Vehicles – A Brief History



"The 1910 RVs offered minimal comforts compared to today's homes-on-wheels," says Woodworth. "But they did provide the freedom to travel anywhere, to be able to get a good night's sleep and enjoy home cooking. One notable exception to today's RV was the bathroom. In 1910, it was usually either yonder tree or yonder bush."

The recreational vehicle turn 104 years old this year. According to the Recreational Vehicle Industry Association, about 8.2 million households now own RVs. (Photograph from the collections of Al Hesselbart and the RV/MH Hall of Fame and Museum)

Atwood Mobile Products – RV History

Early Shasta “Canned Ham” Travel Trailer

Of the hundreds of different brands of "canned ham" style travel trailers manufactured during the 40's, 50's and 60's, the classic Shasta Trailer is certainly one of the best known.



This well known company was established in 1942 and these rounded beauties were built on Keswick Ave in Van Nuys California then later Northridge California, with another facility in Goshen Indiana. The predecessor to the Shasta, the "Cozy Cruiser", began rolling out of the factory in 1951, with the classic "canned ham" shape. Early Shastas retained this rounded side profile through model year 1957. The popular Shasta trailer came with warm natural wood interior paneling and cabinets of Birch or Ash. The kitchen counter and dining table were covered with color-coordinated laminate which was also used for the simple sliding doors on the wood cabinets over the dining table. The single 110v ac outlet was barely adequate but the butane powered wall lamps cast a warm and cozy light against the golden hue of the interior woodwork. The classic Shasta canned-ham shape was changed to a more squared-off style, front and back, beginning with the 1965 models, but the much-loved Shasta Wings continued intact through the end of the 1968 model year. Whether it's the Cozy Cruiser model from the early 1950's, or the Compact, 16-SC, 16-SCS, 16-RK, Astrodome, Starflyte, Airflyte, 1400, 1500, 1900 or more modern Loflyte and Stratoflyte models, Shasta travel trailers remain one of the most popular family trailers on the road today.

ATWOOD MOBILE PRODUCTS

Welcome to Atwood Mobile Products...

This brief presentation was created to give you a better understanding of the rich and varied history of Atwood Mobile Products, the recreational vehicle industry, and a brief introduction to the roles and responsibilities of the Atwood Engineering Group.

Please feel free to ask questions before we continue...

Be prepared to field employee questions pertinent to the presentation. Refer all other questions to the appropriate department leads or supervisors.

Steve R. Matson

4182 Flat Creek Circle
West Jordan, UT 84088

Cell: (801) 599-2175

Email: stmatson2005@comcast.net

Qualifications Summary

- A goal oriented, solutions focused professional with strong CAD and 3D Modeling experience.
- Well organized and structured with the ability to handle multiple projects and meet deadlines.
- Possess a strong work ethic, able to thrive in a diverse work environment while maintaining focus on excellence in all projects undertaken.
- Proven interpersonal and communication skills working effectively with all levels of corporate personnel to meet short and long term company objectives.

Career Summary

Currently working for Atwood Mobile Products, designing RV Heating Systems, AC/DC Electrical Distribution Panels, and other RV accessories and components. Three years experience with NewTech Drilling Products designing and manufacturing steel body, fixed cutter drill bits for the petroleum, natural gas, and mining industries. Twenty years experience with Hughes Christensen Company a world leader in the design and manufacture of matrix body, fixed cutter, and tricone drilling bits for the petroleum industry. Expertise includes strong customer service skills, manufacturing support and internal training skills. Known for strong work ethic, reliability, accuracy, honesty and problem-solving abilities. Consistently obtained superior performance reviews.

Skills Summary

Design

- Prepare design layouts, parts and assembly components from preliminary sketches to final release documents within time, financial, and technical requirements.
- Competent in applying basic mechanical engineering concepts and drafting standards.
- Hands-on knowledge of SolidWorks 3D Modeling software, AutoCad, Microstation, Anvil, and BobCad CAD software.
- Scheduled and assisted in lab and field testing of prototype, new, and legacy drill bit products to improve, validate, and document drilling performance.

Manufacturing Support

- Provided expert technical support to local and remote production facilities to resolve day-to-day manufacturing issues to maintain quality, service, and on-time delivery to the end customer.
- Interacted daily with vendors to secure manufacturing supplies needed to meet production demands.
- Served as an interface between design engineering and manufacturing personnel to establish and implement product documentation, and process improvements.

Training

- Assisted in the design and development of technology based learning, including Computer Based Training, Web Based Training, and group presentations.
- Conducted technical training of Design Engineer and Field Engineer new-hires.
- Trained Hughes Christensen customers from various companies within the oil industry in the basics of drill bit design and manufacture.

Computer

- Computer literate; SolidWorks 2001-2014 3D Modeling software, CF Design Computational Fluids Analysis Software, AutoCad, Microstation, Anvil, BobCad 2D CAD software, Microsoft Word, Excel, PowerPoint, Adobe PhotoShop, Adobe Illustrator

Education

- Attending undergraduate A.P.E program – Mechanical Engineering, Salt Lake Community College, Graduate of Cyprus High School-SLC, Utah

*References available upon request.