

Weber Manufacturing Technologies Kitchen & Bath



Overview

Founded in 1962, Weber Manufacturing Technologies Inc. is a leading manufacturer of precision tooling for Automotive, Aerospace, and Home/Building Products.

Located in Midland, Ontario, Weber is a privately held Canadian company.

Weber offers high quality tooling in steel, invar and aluminum.

Over the last 20 years, Weber has offered nickel shell tooling using the Nickel Vapor Deposition (NVD) process. This process is also used for capturing fine surface detail, such as leather and wood grains, and authentically replicating them into hard tools.

170 employees, 135,000 sq. ft. facility

Certified ISO 9001:2008

On-site CAD Design capable (UGS, CATIA V5R20)

Modern simultaneous 5-Axis CNC machining centers

Full complement of CNC contour mills, gun-drills, vertical mills, and EDM machines

Canadian Controlled Goods Program registered (Satisfies US-ITAR requirement)

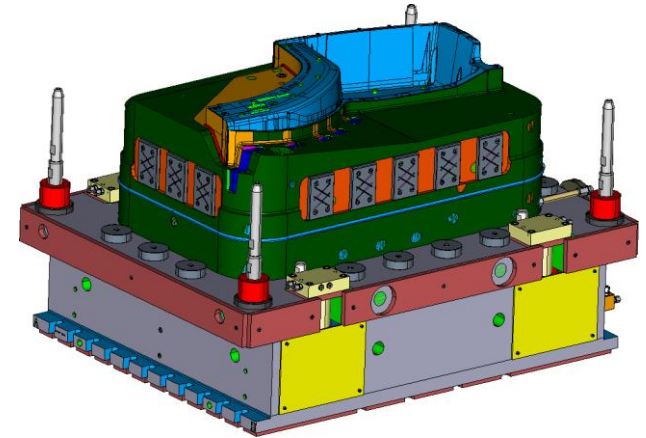


COMPANY HISTORY

- 1962 Established Weber Manufacturing (Windsor) Limited
- 1967 Relocated to a new building in Midland, Ontario
Established the Weber Tool & Mold Division
- 1989 Established the Nickel Tooling Technology (NTT) Division
- 1991 Sold our first Nickel Shell
- 1998 Built and tested NVD Pilot Plant
- 1999 Designed and Built Large Scale NVD Plant
- 2000 Commissioned the NVD Nickel Division
- 2001 Produced our first Nickel Shell in February
- 2004 Company purchased by American Capital Strategies and TMB Industries
- 2007 Company purchased by Zynik Capital Corporation
- 2009 Launched WeberGrain Technology and Mastergrain Doors
- 2011 Developed Nickel Coated Graphite (VNCG)

DESIGN ENGINEERING

- Extensive CAD/CAM capabilities
 - 10 workstations running:
 - UG-NX, IDEAS, Catia
- Innovative designers are working with customers to contribute to processes and provide tooling solutions
- Our engineering team manages all information and supports the machining, assembly and CMM teams
- Strict revision control on all documents and designs
- Part of the Weber focus is building relationships and responding to customer needs
- CAD data transfer:
 1. STEP, IGES and VDA (BI-DIRECTIONAL)
 2. IDEAS NX5 (NATIVE)
 3. CATIA V5R20 (NATIVE)
 4. UNIGRAPHICS NX6 and NX7.5 (NATIVE)
 5. SOLID-EDGE V20 (NATIVE)



MANUFACTURING & MOLD MAKING DEPARTMENTS

Weber has a large number of Machining, Fabrication and Assembly bays to suit all the shapes and sizes of our customer tooling



• Large multi tool programs

• Fabrication



• Large Machining bays

• Assembly and Tool Tryout Bay



IN HOUSE HANDWORK

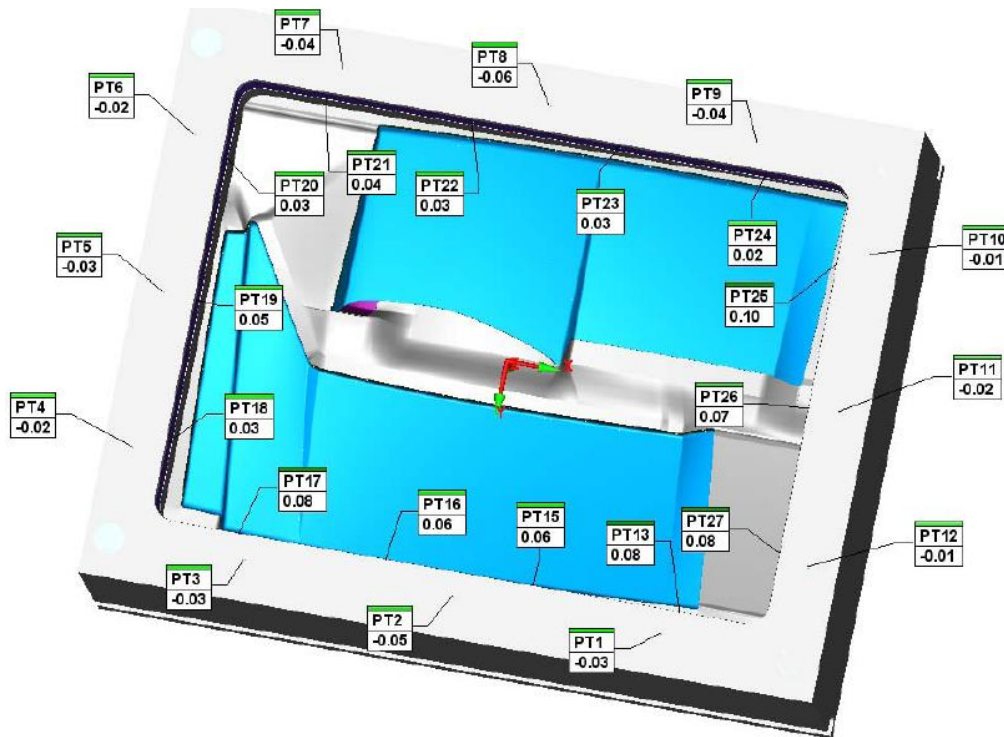
Weber's Handwork and Polishing Department can handle all types of mold finishes including Class A and High Diamond Polish



Handwork Department Typically Deals With
Steel, Aluminum, Nickel, & Invar Molds

QUALITY ASSURANCE

- 2 Computer Controlled CMMs
- Certification of Models, Tooling Aids, Molds, Steel & Finished Parts to Math Data
- Diffracto Class-A Surface Quality Verification
- Certificate of Conformance
- Detailed Inspection Reports sent to Customer



CMM Inspection Report

Date:..... January 18, 2011

Job #:..... so5584 Fixture Inspection Serial # 0001 PO# SP168221

Program:..... Z2156-CUFX CURE FIXTURE

Customer:..... HITCO

Temperature:..... 24 °C Humidity 15 %

Units:..... Inches

Tolerance:..... Variable

Data:..... Customer

Revision:..... 000

Co-ord. System:..... Measured in Global. Reported to Global.

Scale Values:..... Measured with 1.000 applied. Reported with 1.000 applied.

Inspection Machine: DEA Delta CMM

Inspector(s):.....James Cox

Comments:

Nominal values created by CMM department from math data.

Inspector Signature: *John Doe*

Approved By: *A. Plouffe*



QUALITY ASSURANCE

DEA Mitutoyo & Delta - Coordinate Measuring Machines

Table capacity - 4,400 to 40,000 pounds

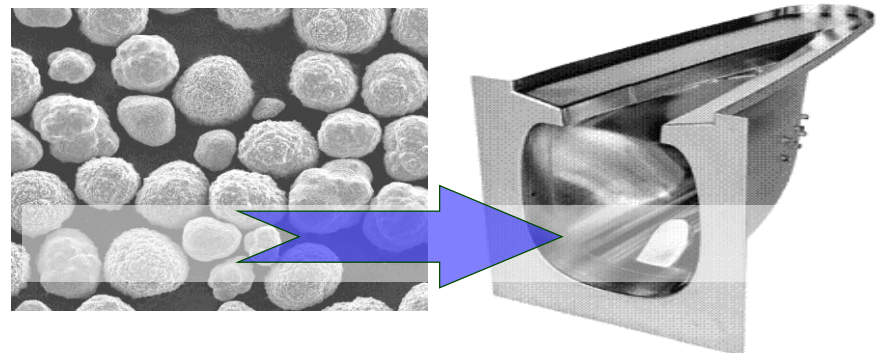
Software- PCDMIS



NVD NICKEL PRODUCTION FACILITY



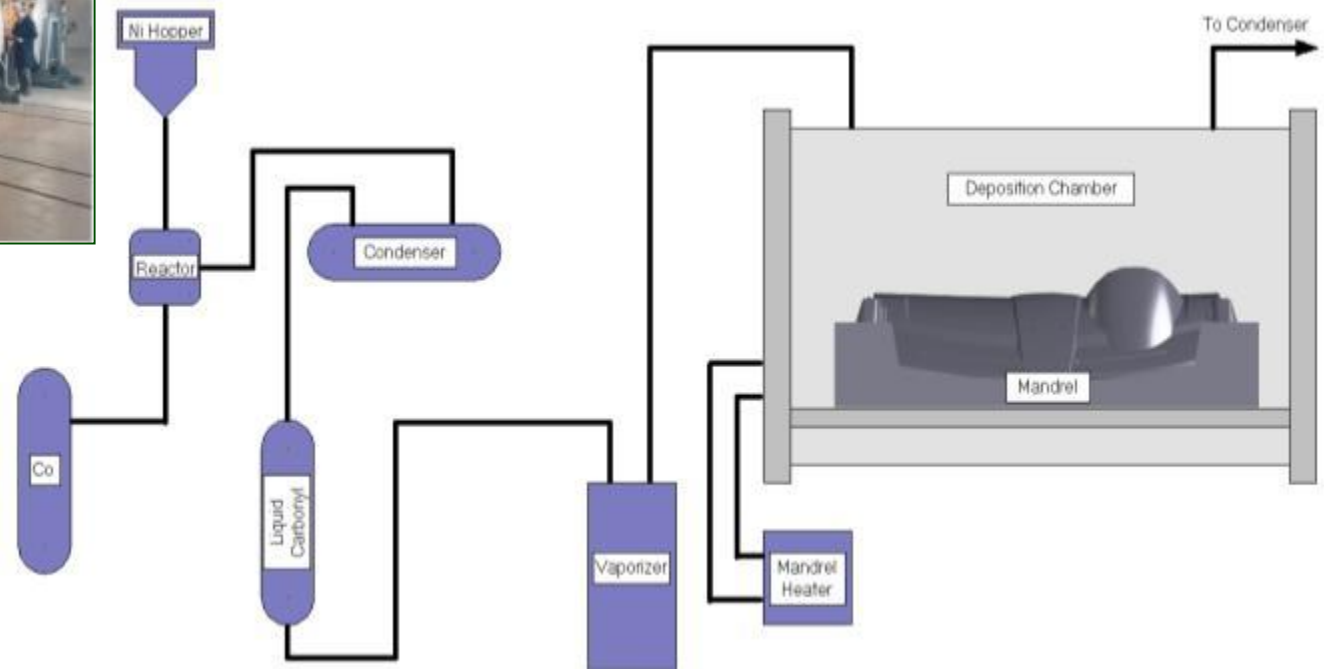
- World's largest Nickel Vapor Deposition facility
- Modern, computer controlled plant, built in 2000
- 400,000 lbs annual Ni deposition capacity
- NVD nickel is 99.98% pure
- 1.74m X 3m shell size capacity
- Speed is 0.25mm per hour, 6mm in 1 day
- Superior process to Electroformed Nickel



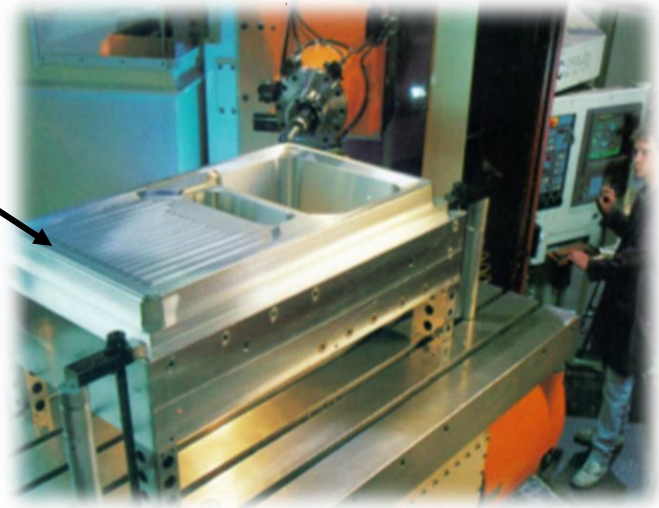
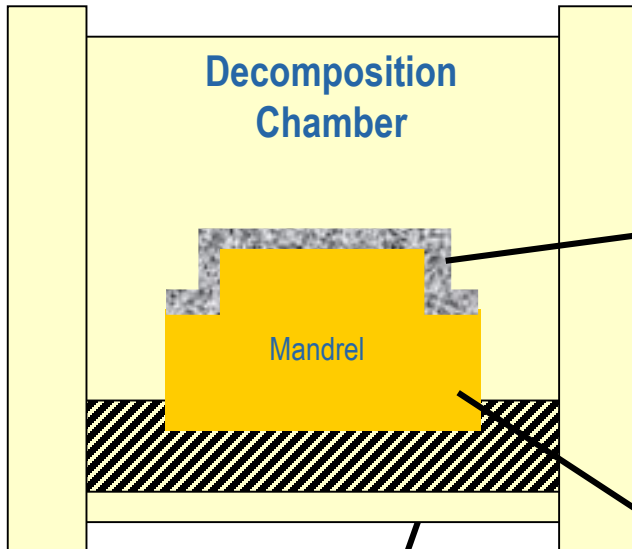
Chemically convert nickel to solid shapes

NICKEL VAPOUR DEPOSITION

- The mandrel is placed in the deposition chamber and heated to approximately 180°C
- Nickel is deposited onto the mandrel at a rate of 0.25 mm/hr



DEPOSITION



NVD NICKEL VS. ELECTROFORMED SHELL



1. 25mm per 100 hr deposition rate
2. Uniform thickness & temperature
3. Negligible residual stress
4. Cavities made sequentially from the same mandrel
5. Little variation from cavity to cavity
6. Replace damaged shell in 3 weeks
7. Hollow deposition possible in many cases
8. 0.999 pure Ni – weldable and no de-lamination
9. No environmental impact (closed system)

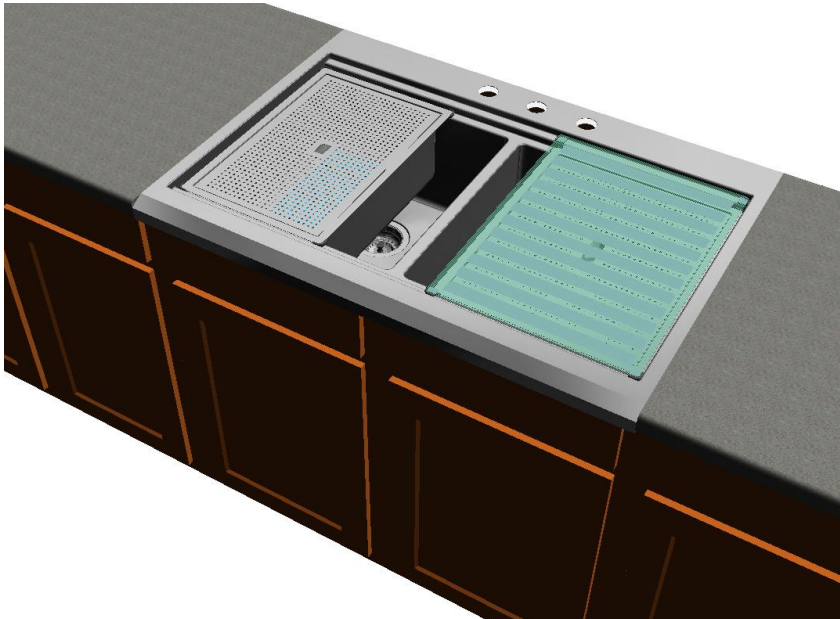
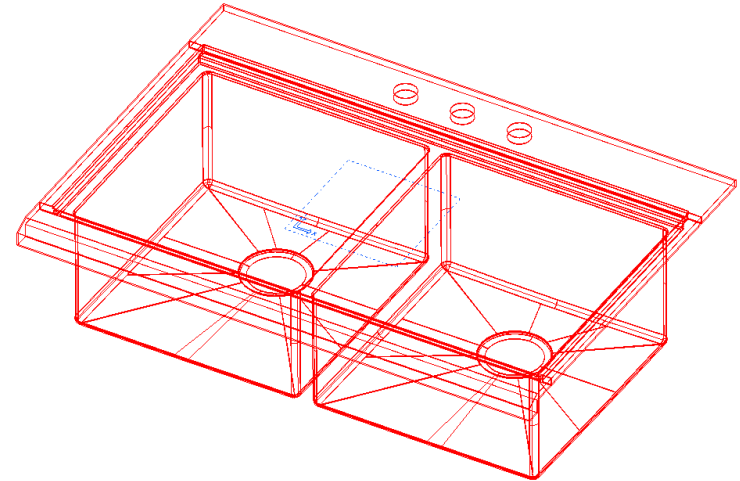
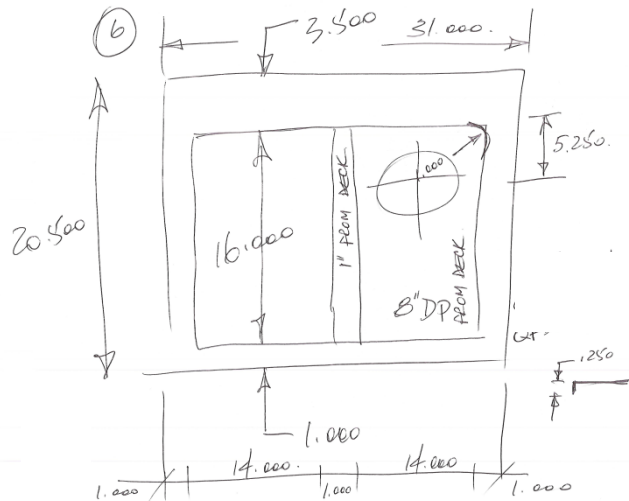


1. 25mm per 2000 hr deposition rate
2. Shell thickness is not uniform
3. Inherent residual stresses
4. Cavities made simultaneously from different mandrels
5. Problematic variation from cavity to cavity
6. Replace damaged shell in 16-30 weeks
7. Cannot do hollow
8. Sulfates contamination from electroplating bath = difficult welding + de-lamination risk

NVD SHELL BASED TOOLING OFFERS...

- Conformal Heating/Cooling -> Faster cycle time
- Uniform nickel shell wall thickness -> Improved thermal distribution
- Mold release -> Fine grain structure
- Mold durability -> 34 – 38 Rc hardness
- Weldability -> allows for repairs or joining of multiple shells
- Fast Process (0.25 mm/hr) -> ¼" in 1 day!
- Reusable mandrel for duplicate shells -> Repeatable accuracy
- Short duplicate shell delivery times -> ~ 2-4 weeks
- Significant cost savings for duplicate shells
- CNC Machined Metallic Mandrels -> Accurate shells, greater part quality
- NVD Shells are virtually stress free -> Accurate shells

FROM CUSTOMER CONCEPT TO 3D CAD PRODUCT MODEL



RAPID MODELS FOR STYLING APPROVAL OR TRADE SHOWS



CNC MACHINED STYLING MODEL

- 2-3 WEEKS

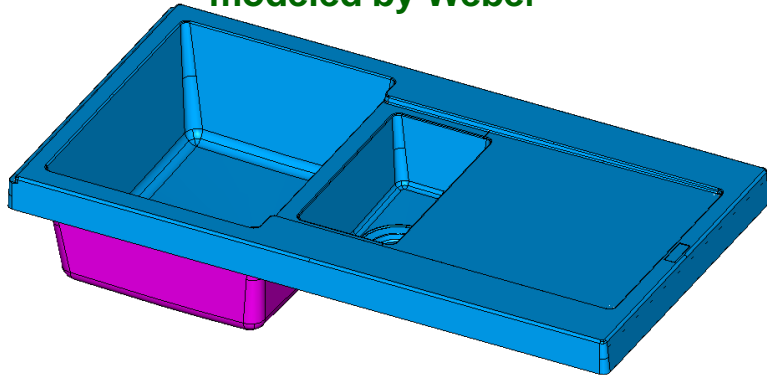


FINAL MOLDED PRODUCT

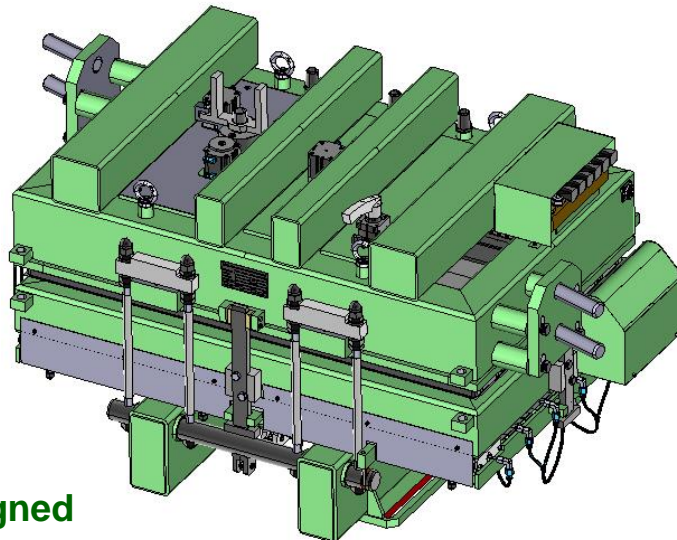
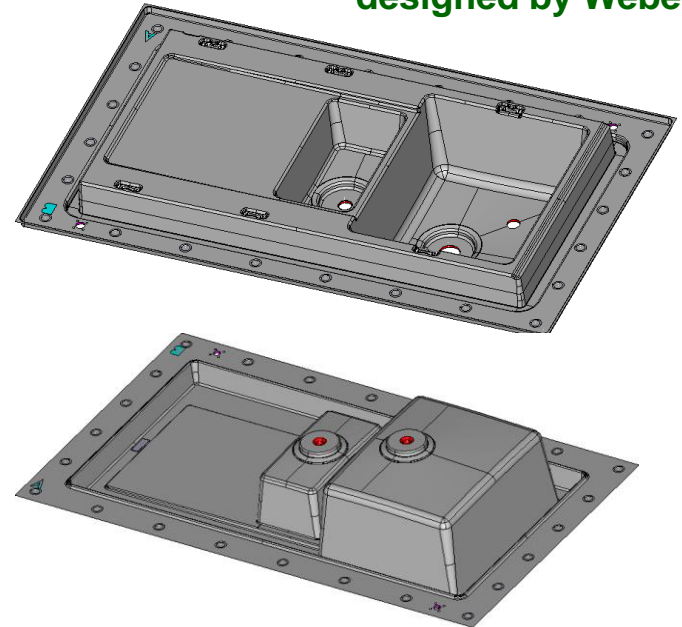
- NICKEL SHELLS IN 8 WEEKS
- FULL MOLD IN 14 WEEKS

COMPLETE MOLD DESIGN

Part data can be
supplied in 3D CAD or
modeled by Weber



Nickel shells
designed by Weber

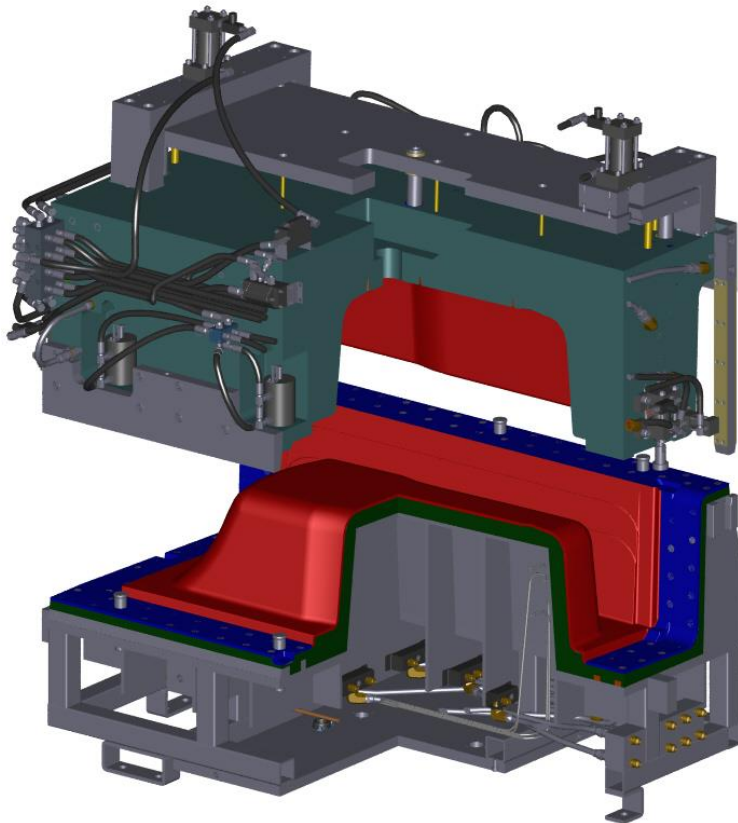


Complete mold designed
fully in 3D CAD

MOLDS DESIGNED, BUILT AND TESTED AT WEBER



SPRAY / INJECTION MOLD FOR BATH TUB WITH INTEGRATED SKIRT



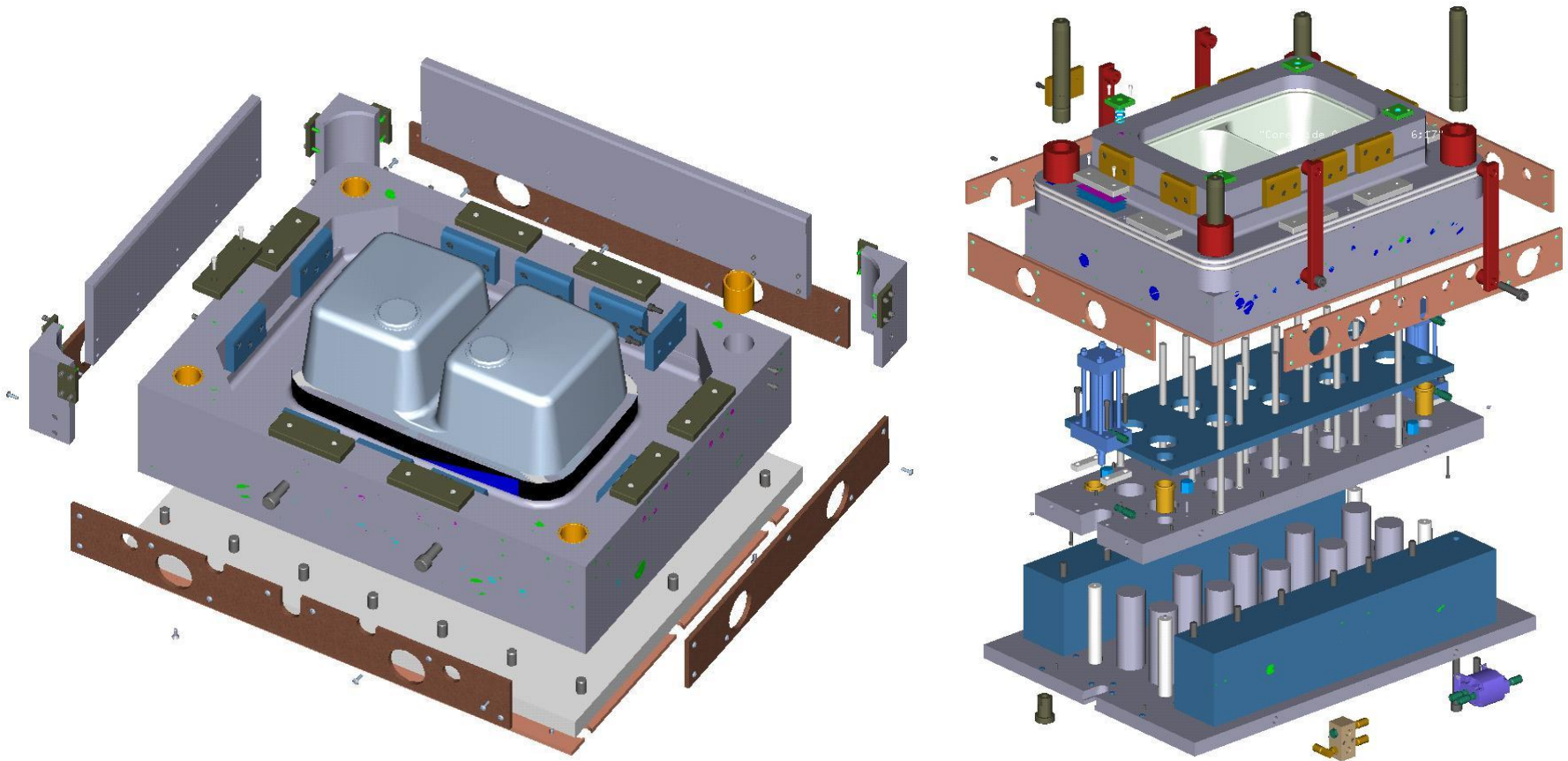
Hybrid mold utilizing NVD shell for the showface and aluminum billet for the backface

MULTI-CAVITY INJECTION / COMPRESSION MOLDS FOR KITCHEN AND VANITY SINKS



NVD Shells supported on aluminum frames

COMPRESSION MOLDS



Mold machined from P20 steel

RAPID HEATING / COOLING FOR MINIMUM CYCLE TIMES

- Molds can be Heated / Cooled via copper tubes attached directly to the back side of the nickel shells with copper filled epoxy or solder

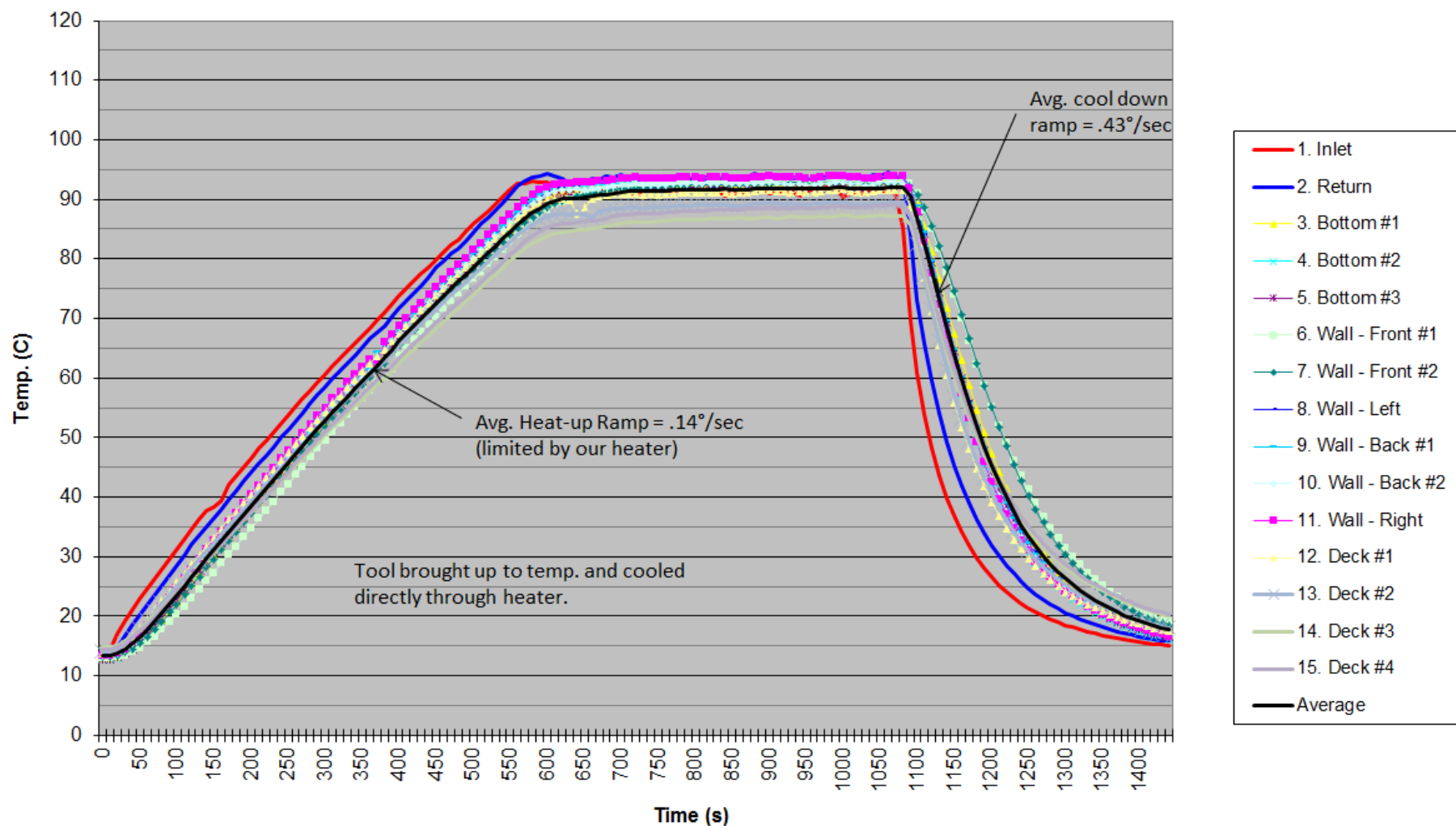


Copper paste



Soldered lines

Copper Paste Lines Normal Heat-up/Cool Down



NO PROGRAM TOO LARGE...



...OR JOB TOO BIG



HEAD OFFICE



16566 Highway 12
P.O. Box 399
Midland, ON L4R 4L1 CANADA

Tel: (705) 526-7896 [Main]

Fax: (705) 526-3818

Web Page: <http://www.webermfg.ca>

Chris Barber
Business Manager

Direct: (705) 527-2948

Mobile: (705) 427-5287

Fax: (705) 526-3818

Email: chris.barber@webermfg.ca