AMC SUCCESS STORIES

Abstract

Dozens of unique and interesting projects have been completed at the AMC since late in 2017.

Wayne Sumple

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AMC Success Stories

Contents

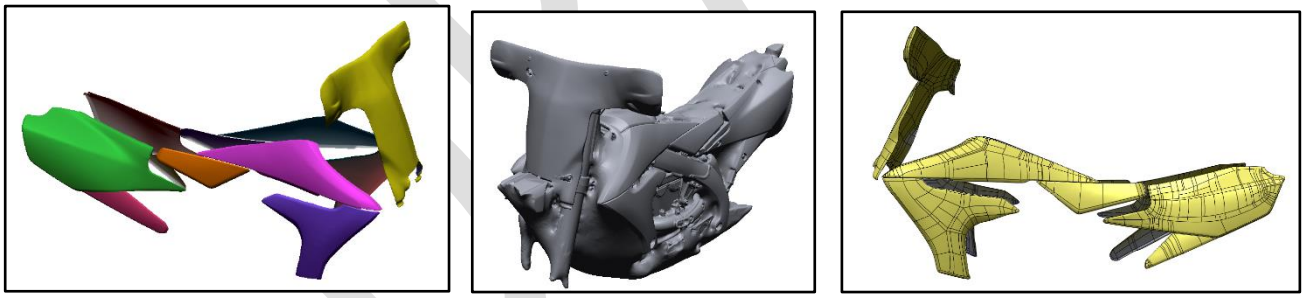
Slater Skins Racing

Moto-cross Motorcycle

November 2017

John Slater of Slater Skins Racing worked with CCAT engineers to create a 3D profile of a moto-cross motorcycle. The motor cycle was a 2017 Yamaha 450. CCAT's M3DI SLS-SE white-light scanner was chosen for this project. After scanning the part with structured-white-light technology, a 3D surface model was created. This surface model is being used by John to design and sell sponsorship advertising that is form fitted to the motorcycle's frame, body and engine. Slater Skins Racing is located in Milford, Connecticut - http://www.srpinternational.com/

1 Blue Light Scanning of Yamaha motorcycle



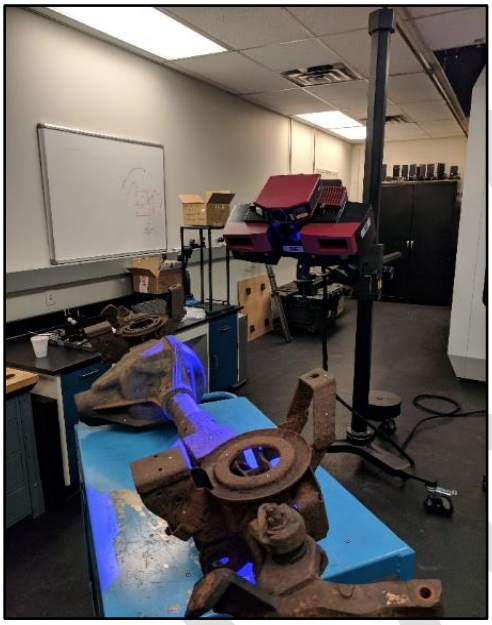
2 Surface Models

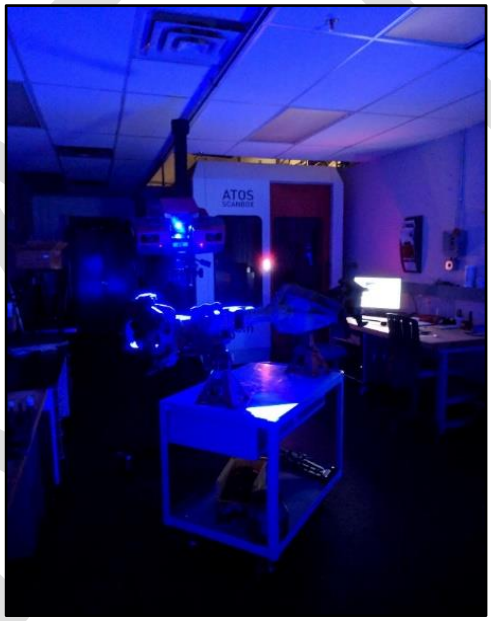
Clayton Off-Road Inc.

Automotive Axle Bracket Repair Kit

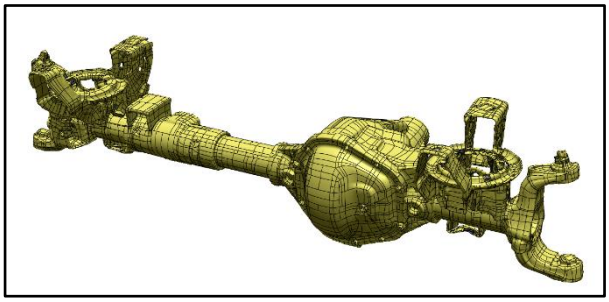
January 2018

Clayton Walters worked with CCAT engineers to reverse engineer an automotive axle. The axle is from a 1994 thru 2002 Dodge Ram. The GOM ATOS blue-light scanner was chosen for this project. After scanning the part with structured-blue-light technology, a 3D surface model was created. This surface model is being used to design and manufacture axle bracket repair systems for Dodge Ram applications. Clayton Off Road Inc. is located in East Haven, Connecticut - https://www.claytonoffroad.com/

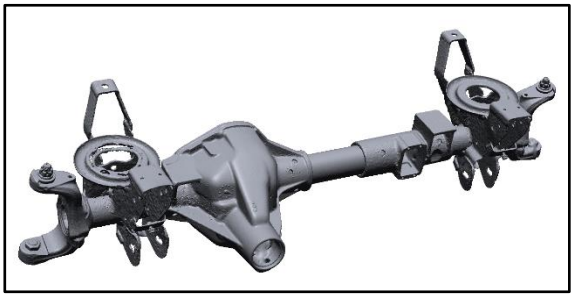




3 Blue-light scanning of axle



5 Surface Model



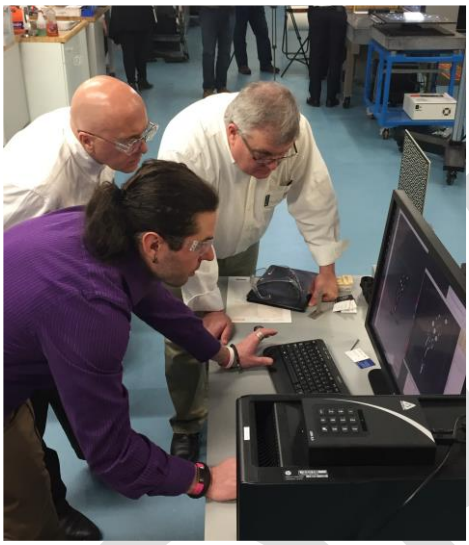
4 Point Cloud Model

AGC Acquisitions, LLC

Helicopter part

February 2018

Jim Bard and Mike Doolan of AGC Acquisitions, LLC worked with CCAT engineers to reverse engineer an electrical Brush Block for the Blackhawk helicopter, currently being made overseas. The part was an electromechanical assembly measuring about 3" x 4" x 8". The NSI X5000 CT X-ray machine was chosen for this project. After scanning the assembly with x-ray technology, a 3D surface model was created. This model provided AGC with enough information on the internal structure of the assembly to reduce cost and lead time to the Army and to bring the manufacturing back into the US. AGC is a premier supplier of precision aerospace components to customers around the world and is located in Meriden, CT. www.agcincorporated.com



6 Reviewing x-ray results and Brush Block mounted in CT scanner

Keith Duly International

Antique Automobile Part

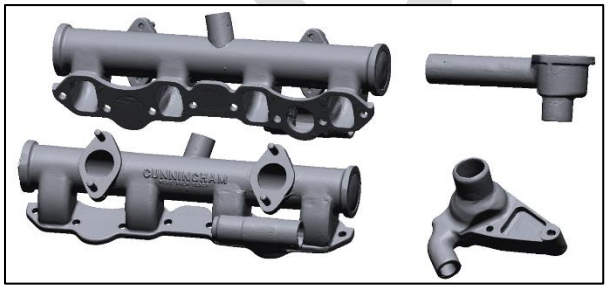
February 2018

Keith Duly worked with CCAT engineers to reverse engineer an antique automobile part. The parts are an inlet manifold for a 1951 Cunningham C2R competition car. The GOM ATOS blue-light and NSI X5000 CT X-ray scanners were chosen for this project. After scanning the part with structured-blue-light and CT x-ray technologies, a 3D surface model was created. This model provided Mr. Duly with enough information about the structure of the manifold to have it manufactured again after more than 80 years. The modified Chrysler 331 Hemi engine that will go into the Cunningham will be built and tested by Carlquist Competition Engines of Waterbury.

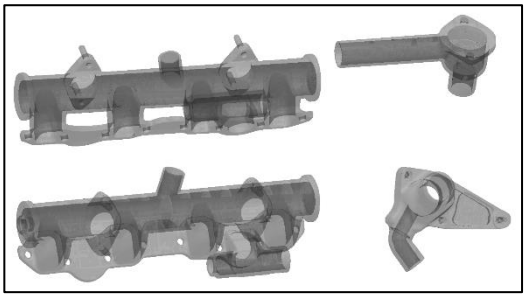
9 1951 Cunningham C2R

10 Manifold Parts

7 Blue Light scanning



8 Surface models



11 X-Ray scans

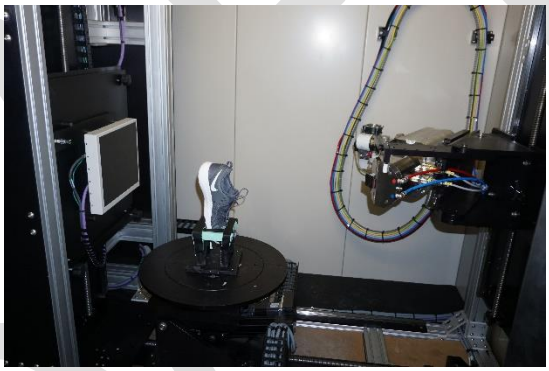
Results Group

Medical device

January-March 2018

Mark Roser of Results Group worked with CCAT engineers to improve several prototypes of his footwear product – Flyband Exo-Skeleton. The product prevents foot ulcers by making it easier to walk, and also easier to heal from a variety of foot and ankle conditions. In order to produce prototype devices, Mr. Roser needed to know the inside shape of 3 sample shoes. The NSI X5000 CT X-ray machine was chosen for this project. After scanning three shoes chosen by Mr. Roser with x-ray technology, a 3D surface model was created for each shoe. Mr. Roser then created SolidWorks models for each of these shoes and CCAT used our 3D plastic printer to print the insert portion of Mr. Roser's product.
https://www.resultsgroupllc.org/projects

13 Prototype



12 Sample shoe in CT scanner

14 Surface models

Bombardier

Composites dry machining

February 2018

Bombardier engineers worked with Zimmerman, Keller and CCAT engineers to evaluate dry machining of aerospace composites material on CCAT's Zimmerman machining center. Quantities of air born dust particles were measured inside and outside the machining center, before, during and after machining the material.

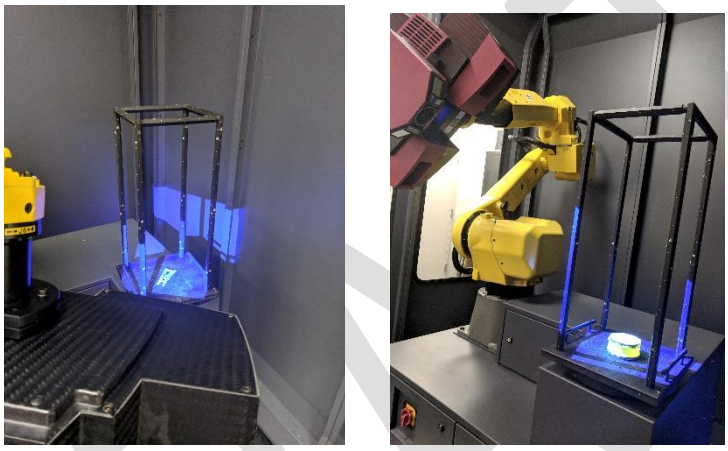
Witnessing Dry Machining Test Run

Dreamspace

RC Car Part

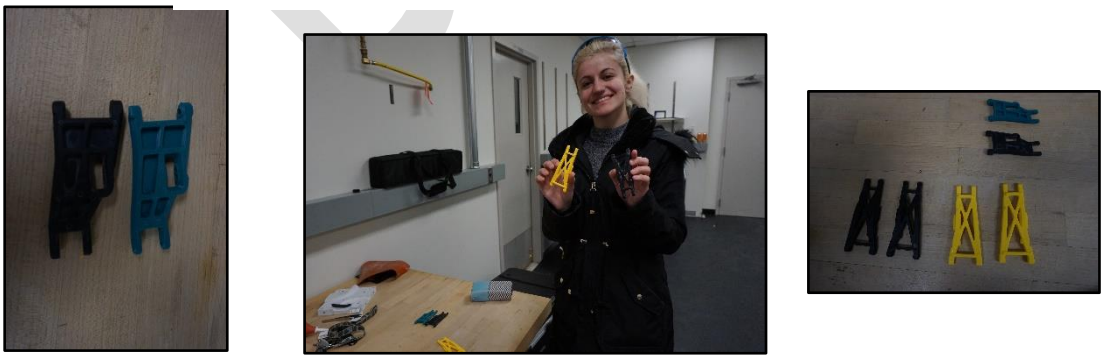
February 2018

Ashley Harris of Dreamspace 3D Printing & Design worked with CCAT engineers to reverse engineer several Remote Control (RC) car parts. The parts were axles and tire rims. The GOM ATOS blue-light scanner was chosen for this project. After scanning the parts with structured-blue-light technology, 3D surface models were created for each. These models provided Ashley with all the data she needed to print them on her 3D printer. Dreamspace 3D Printing & Design operates out of Westbrook, CT. https://www.instagram.com/dreamspace3dprinting/



16 Blue-light scanning RC car parts

17 3D models of RC car parts



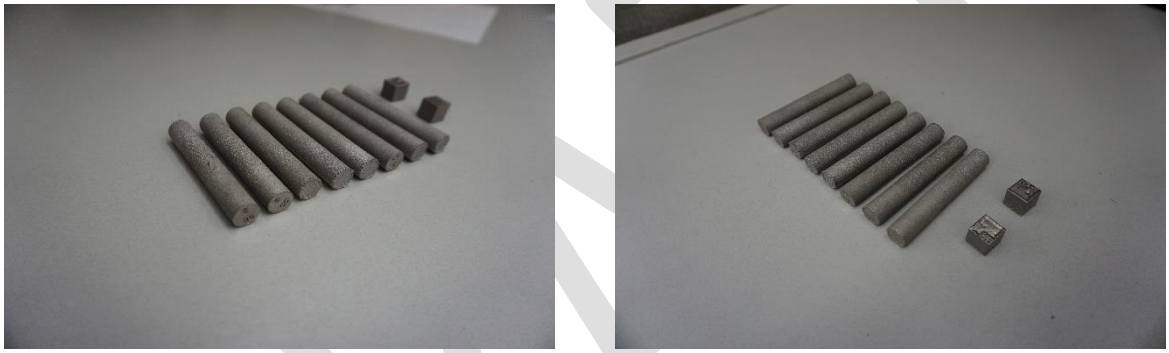
18 3D Printed RC car parts

Addaero

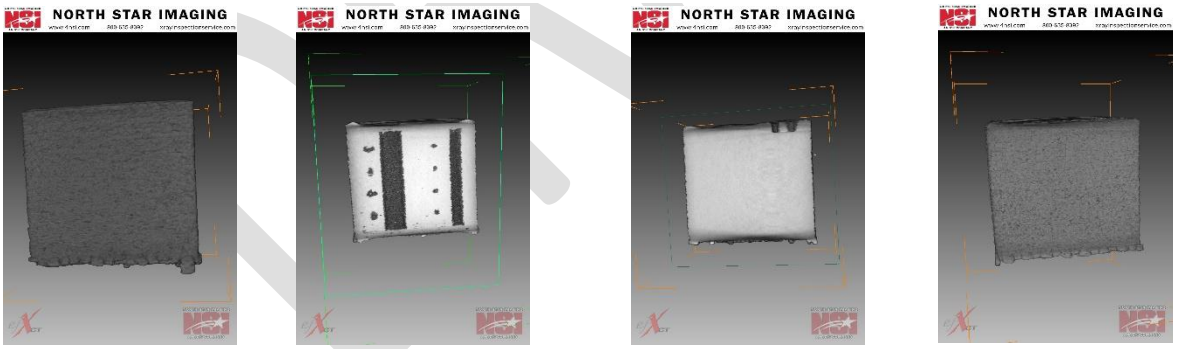
Metal Additive

March 2018 (NOT TO BE RELEASED UNTIL END OF APRIL 2018)

John Scovill of Addaero worked with CCAT engineers to analyze several test coupons before and after they were exposed to HIP processing. Test coupons were 3D printed from metal powder that was specified for Aerospace applications. The NSI CT scanner was used for this project. Addaero and Bodycote are using the results to evaluate the ability to detect defects in AM components, and to confirm that appropriate thermal processing treatments can reduce or eliminate those defects and improve final part material properties. Addaero is located is New Britain, CT. Bodycote has many locations across the globe and is the world's largest provider of HIP and heat treatment processes for industry. Bodycote HIP processes are used by both the Additive Manufacturing industry, the powder metallurgy industry, and the casting industry to eliminate processing defects to improve material properties.



19 3D Printed Metal Coupons



20 Reconstructed Scan Data of Small Blocks

21 Analyzing Results