Artec 3D

VORTEQ

Three Case Studies on 3D Scanning

CEREBRA
Working wonders for children with brain conditions

Sanitätshaus Aktuell
Unser Lächeln hilft

Creating the world's fastest skinsuits with Artec Leo

photo credit: Vorteq

What is a skinsuit, and why are they needed?

What does a cyclist spend most of his energy on?

The biggest sources of aerodynamic drag for cyclists

More aerodynamic than being naked

Custom fabrics and patterns, no two skinsuits entirely alike!

The first step when making a custom skinsuit: measurement

Measuring the cyclist, three choices:

- A good old tape measure – inaccurate, many measurements needed
- A low-cost 3D scanner – slow, noisy data, the cyclist can move during scanning
- Artec Leo – fast, extremely accurate, no cables, handy built-in touchscreen, precise 3D models in minutes

3D scanning a cyclist with Artec Leo

photo credit: Vorteq

3D scanning a Huub Wattbike cyclist with Artec Leo

photo credit: Vorteq

Creating a skinsuit with Artec Leo

Capturing the cyclist's entire body fast

No time for body movement

Comfortable for both cyclist and scanning technician

All the vital anatomical regions are captured in hi-res detail

Export the scans to Artec Studio software

On to Geomagic Wrap for final steps

Send 3D model to Vorteq's computational draping system

Total time for the above process?

How long does it take to create a Vorteq skinsuit from start to finish?

The Vorteq skinsuit creation process in action

photo credit: Vorteq

3D-printed mannequins from Artec Leo scans

Why might a cyclist need a 3D-printed mannequin?

No need for re-measurement, use the same 3D model

Creating skinsuits for riders on the other side of the world

Different races, different skinsuits, custom

Using the mannequins to test new fabrics and patterns in a special wind tunnel

Fast creation time, overnight shipping to the athlete anywhere around the world

3D-printed mannequins from Artec Leo scans

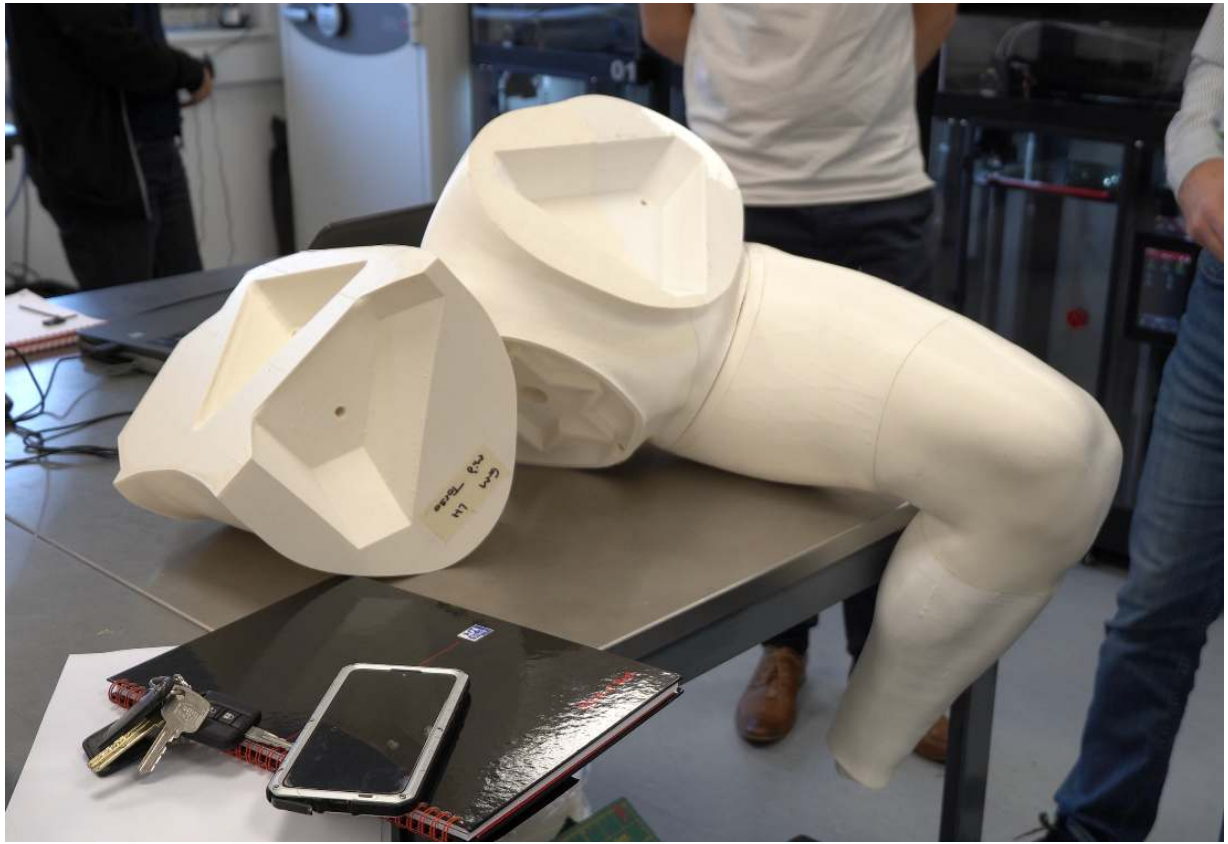

photo credit: Artec 3D

Vorteq-wearing Huub Wattbike: 3 golds, 2 silvers, and 3 bronzes at the British National Cycling Championships in Manchester, UK, January 2020

photo credit: Vorteq

Video: Creating the world’s fastest skinsuits with Artec Leo

Video credit: Artec 3D

Custom 3D-printed helmets with Artec Eva

photo credit Cerebra

A custom riding helmet for Imogen

Imogen's early life, born premature, spastic diplegia, hydrocephaly
Wheelchair-bound, can't run and play like other kids
Her great love, her favorite activity
But she couldn't do it safely, comfortably
Why don't commercial riding helmets fit properly?
Turning to Cerebra for help
Cerebra – a UK charity helping children with special needs
Cerebra and University of Wales ATiC partnered up
How they used Artec Eva to 3D scan Imogen in minutes
Easy to use, high-resolution, 100% safe structured white light

3D scanning Imogen's head with Artec Eva

photo credit: Cerebra

3D scanning Imogen's head with Artec Eva

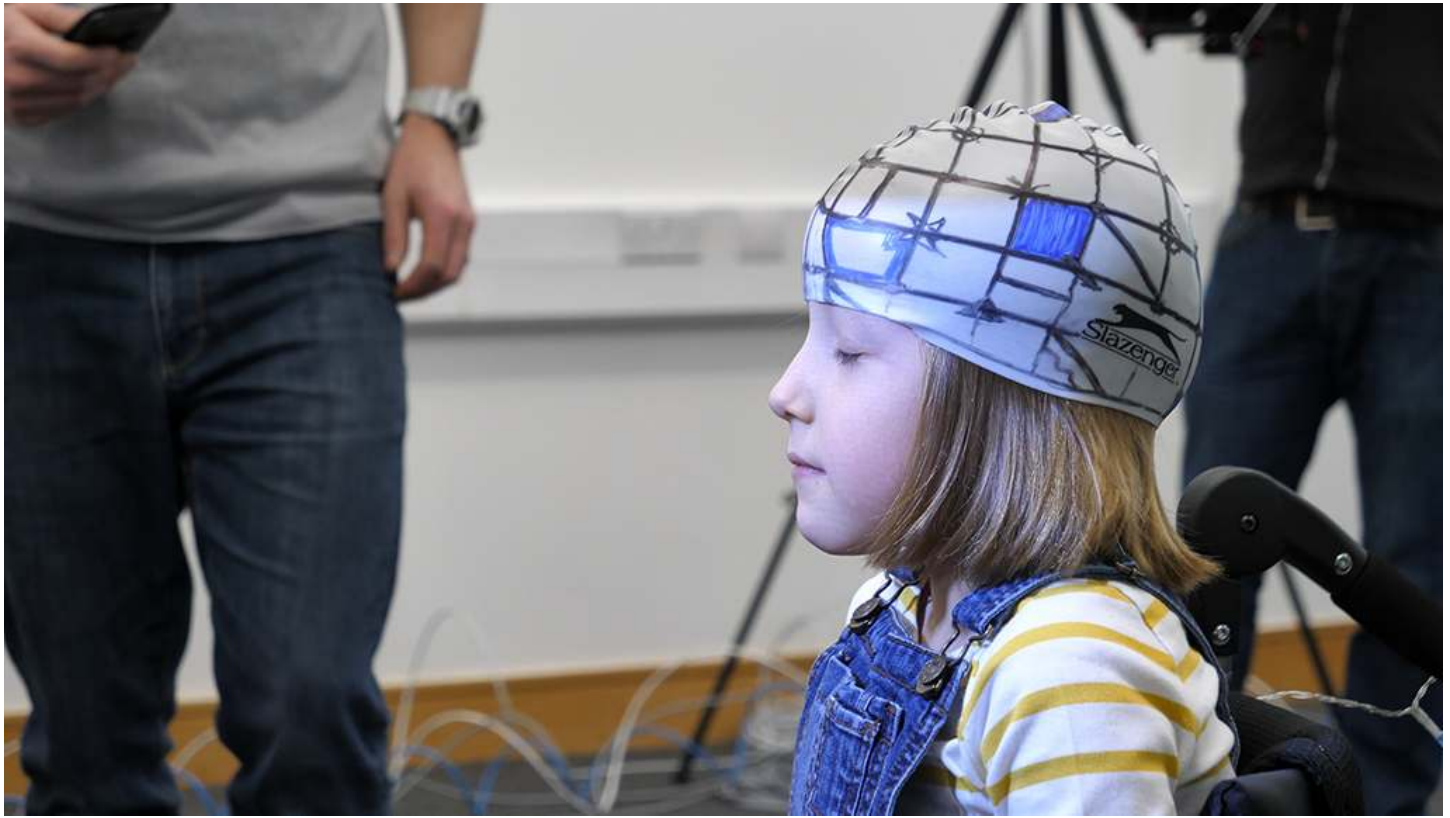

photo credit: Cerebra

Real time Artec Eva scan of Imogen in Artec Studio software

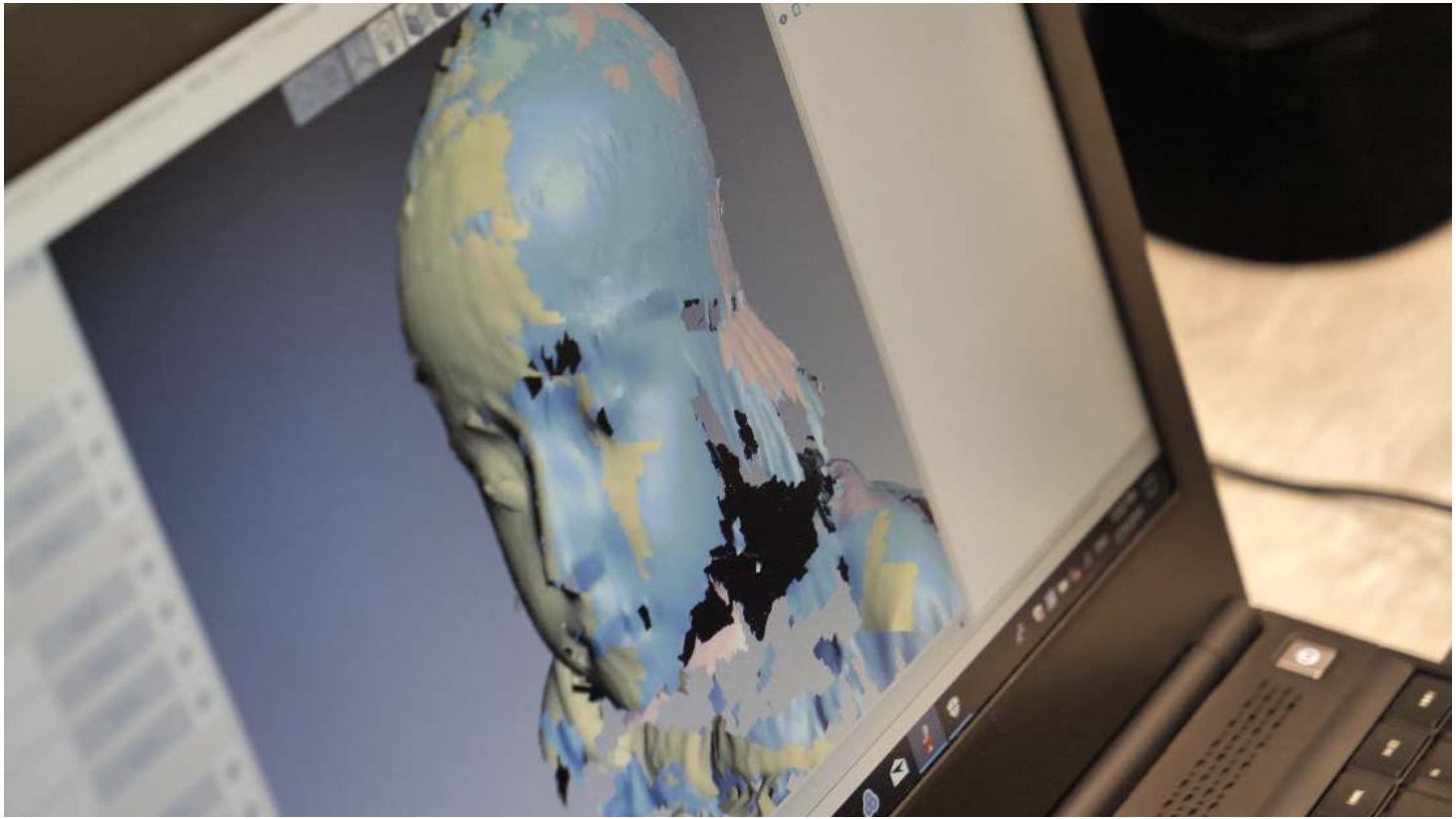

photo credit: Cerebra

Creating Imogen's new riding helmet

No need to sit still for long, hard for many special needs children

Only a few minutes of scanning, post-processing the 3D model in Artec Studio software

Exported to CAD for creating custom liner and durable shell

3D printing and CNC milling brought the helmet to life

Helmet was BSI approved

Three helmets made so far

Many other custom products for children with brain-related neurological conditions

A store-bought helmet (L) and Cerebra's 3D-printed helmet (R)

photo credit: Cerebra

Fitting Imogen with her new custom helmet

photo credit: Cerebra

Imogen and friend, before a ride

photo credit: Cerebra

Video: Artec Eva helps make a custom 3D-printed helmet for Imogen

video credit: Cerebra

Creating a thought-controlled, 3D-printed bionic arm with Artec Eva

photo credit: Sanitätshaus Klinz

A 3D-printed dream come true for Paul Teupel

Paul’s disability from birth

First prosthetic arm as a child

Many uncomfortable prosthetics over the years

Why did traditional prosthetics mostly stay the same for decades?

Carsten Suhle of Klinz Orthopedics had a new idea

A 3D-printed arm + an Ottobock hand = a thought-controlled arm

Scanned Paul’s healthy arm and residual arm with Artec Eva

Post-processed the scans in Artec Studio

Exported the scans as 3D models

Early 20th century prosthetics on display at Klinz Orthopedics

photo credit: Artec 3D

3D scanning Paul’s residual arm with Artec Eva

photo credit: Artec 3D

Creating Paul's new arm, the final steps

Imported the 3D model into Geomagic freeform

Designed the new arm with mirrored 3D model of Paul's healthy arm

3D model of residual limb for perfect-fitting socket design

3D printed out of PA2200 plastic

Combined with Ottobock hand, arm is myoelectric-controlled

Why did the German national health insurance endorse 3D scanning and printing as being superior to traditional prosthetic/orthotic creation methods?

- Much less time and money
- Clean, comfortable process for patients (no plaster casts!)
- More durable, longer lasting prostheses and orthoses

Paul proudly demonstrating the use of his new arm

photo credit: Artec 3D

Video: Bringing to life a 3D-printed, bionic arm with Artec Eva

video credit: Artec 3D

Thank you!

Please visit www.artec3d.com/cases
for more information