CONVERGE® CSTI™
POROUS ACETABULAR
CUP SYSTEM

Where technology and experience meet.
Converge CSTi Porous Acetabular Cup System
Long-term clinical success with CSTi combined with advanced technologies

Building on 15 years of successful results with Cancellous-Structured Titanium™ (CSTi™) coated shells\(^1\), Converge is a comprehensive system designed to accommodate virtually every press-fit primary or revision surgical scenario.

The Converge System features advanced bearing technologies Metasul\(^\text{®}\) metal-on-metal and Durasul\(^\text{®}\) highly crosslinked polyethylene designed to dramatically reduce wear-related complications.

Designed for optimum congruency with the ability to effectively seal the shell, the Converge System addresses critical concerns about stability, wear, fixation and maximum range of motion.

The Converge System offers a unique spectrum of six different shell styles and a broad range of sizes, from 39-81mm.

Protrusio shell with 10mm titanium build-up at the dome region for deep acetabular socket deformities. 1.5mm press-fit.

Multi-Hole shell with up to 9 sealable screwholes for more demanding cases. 1.5mm press-fit.

Rimflare shells with spikes and a total flare of 1.5mm at the rim encourage press-fit in areas of best-quality bone. Available with or without sealed screwholes.

Rimflare shell with screwholes

Rimflare shell without screwholes

Cluster-Hole shell with sealed screwholes located in a superior cluster pattern to obtain optimum screw penetration into patient’s best bone stock. 1.5mm press-fit.

Hemispherical shell for optimal bone/implant congruency with two sealed screwholes. 1 or 2mm press-fit, depending on final reamer size.

Standard, hooded, protrusio, and constrained inserts are available for use with the Converge System.
Advanced Tribological Systems
A new era in Total Hip Arthroplasty

To address the problem of wear-induced late aseptic loosening, we pioneered two advanced tribological systems:
Metasul metal-on-metal and Durasul highly crosslinked polyethylene. These low-wear alternatives enhance the surgeon’s ability to provide a long-term solution to THA patients.

Metasul Metal-on-Metal
Over 15 Years Proven Success
Since 1988, over 200,000 Metasul components have been implanted worldwide with excellent results.6

Metasul has passed the test of time: In a unique retrieval study involving 177 explants that had been in situ for up to 10 years, Rieker et al. found that the average volumetric wear rate for Metasul was 200 times lower after the “run-in” period than typically observed in conventional metal-on-poly couplings.

Durasul Highly Crosslinked Polyethylene
Near Zero Wear
In rigorous laboratory testing, the wear levels of Durasul highly crosslinked polyethylene were below measurable levels even after 27 million cycles on a hip simulator. Independent lab tests have verified that the wear rate of Durasul is near zero and is less than any competitive polyethylene.3,4

Large Diameter Head System (LDH)
Because of Durasul’s low wear properties, larger heads with diameters up to 44 mm can be used.5 Results of simulator testing have shown wear of Durasul liners is independent of head size, while wear of conventional polyethylene increases dramatically with head size. Larger diameter heads more closely replicate a patient’s anatomy, enhance stability and increase ROM.

In Situ Wear Study
In a study of 118 explants, the average wear rate for Metasul components was found to be about 3µm/year after the “run-in” period. Conventional polyethylene is known to wear 100µm to 200µm per year.7

Unique Constrained Insert Option
This insert addresses the primary shortcoming of traditional constrained inserts, limited ROM, while maintaining the constraining functionality. In this design, ROM was increased by placing cut-outs in the rim of the constrained implant where impingement is most likely to occur. And because it is manufactured from Durasul, larger heads (up to 38 mm) can be used, further increasing the ROM.
Building on Long-term Success with CSTi-Coated Shells
99.1% survivorship after 12 years\textsuperscript{9,10}

**Ingrowth Fixation**
In a postmortem analysis\textsuperscript{9} employing backscattered electron imaging, a series of seven porous acetabular components harvested at 10 to 64 months showed consistent and uniform biologic ingrowth into the CSTi surface. Contact microradiographs of all seven components revealed that an average of 84% (+/- 9%; range 72% to 93%) of the periprosthetic bone was in direct apposition to the porous coating. This study also found that the volume fraction of bone in the porous coating corresponded to the volume fraction of bone measured in human cancellous bone.

**Thermo-Clean™ Manufacturing Process**
Converge CSTi shells are manufactured using the Thermo-Clean process. With Thermo-Clean, all machining steps occur before the application of porous coating to ensure that the shells are not exposed to any machining fluids. With Converge you can see evidence of this by the visible crystalline structure of the titanium alloy on the inner diameter and grit-blasted section of the outer diameter. This is caused by extreme temperatures (>1500\degree F) during the thermal sintering application of the CSTi porous coating. Surface roughness is not affected.

**Clinical History**
The Converge System evolved from the clinically successful APR Acetabular Cup System, which has been in use since 1986. Like Converge CSTi cups, APR cups were CSTi-coated hemispherical, press-fit cups.

A recent survivorship analysis of 110 APR cups implanted with screw fixation revealed a 99.1% percent survival after 12 years\textsuperscript{10}.

**7 to 11.9 Year Results for CSTi Porous-Coated Press-Fit Shell without Screw Fixation\textsuperscript{10}**

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<tr>
<th>Patient Population</th>
<th>110 hips, 103 patients</th>
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<tr>
<td></td>
<td>132 hips initially</td>
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<td></td>
<td>16 hips lost to death at an average of 4.8 yrs</td>
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<td></td>
<td>6 hips lost to follow-up at an average of 3.3 yrs</td>
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<tr>
<td>Average age</td>
<td>61 yrs</td>
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<tr>
<td>Average follow-up</td>
<td>10.2 yrs</td>
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<th>Results</th>
<th>1 revised for aseptic loosening</th>
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<td></td>
<td>3 had non-progressive radiolucencies at final follow-up, not revised</td>
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<th>12-yr survivorship (Kaplan-Meier analysis):</th>
<th>99.1% (Revision or recommended revision for aseptic loosening as the endpoint)</th>
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<td>95.4% (Revision of cup for any reason as endpoint)</td>
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Maximum Insert Thickness
The 3.5 to 3.75mm shell thickness minimizes the stiffness of the implant while maximizing possible insert thickness.

Industry Leading Locking Mechanism
Compared to the findings of an independent study by The Orthopaedic Research Laboratories at The Mt. Sinai Medical Center (Cleveland, Ohio), Converge scored the highest cup-liner congruency and highest push-out resistance of all systems tested.

Initial Stability
With its broad range of shell styles, the Converge System enables 1mm, 1.5mm or 2mm press-fit depending on shell style, surgeon preference, and bone quality.

1 Please visit www.centerpulseortho.com for a complete reference list.
2 Testing performed by Massachusetts General Hospital Biomechanics Lab. Data on file with Zimmer Austin.
Contact your Zimmer representative
or visit us at www.zimmer.com.