

Advanced Engineered Materials' nano particle HPA boosts performance in zirconia-alumina ceramics. AEM enters into cooperation agreement with manufacturer.

Highlights

- 01 AEM has been collaborating since late 2024 with innovative Swiss company, Zürcher Frères SA (ZFS), to produce improved zirconia-alumina ceramics.
- 02 Using AEM's nano particle HPA, engineered for this application, has materially boosted ceramic performance producing significant improvements in the material's mechanical properties such as hardness and fracture toughness.
- 03 AEM and ZFS have entered into a cooperation agreement under which AEM will be the exclusive supplier of nano particle HPA for ZFS's zirconia-alumina ceramics production.

Announcement Overview

Advanced Engineered Materials is pleased to announce that its nano particle HPA brings real gains in the performance of zirconia-alumina ceramics by delivering significant improvements in mechanical properties such as hardness and fracture toughness.

ZFS has found the performance of zirconia-alumina ceramics manufactured with AEM's HPA in laboratory testing to be "outstanding".

Accordingly, AEM and ZFS have agreed to an on-going cooperation agreement regarding the zirconia-alumina ceramics produced by ZFS using AEM's nano particle HPA exclusively.

"Outstanding" performance
ZFS testing of zirconia-alumina
ceramics made with AEM's HPA

Managing Director and CEO
Michael Adams said:

"Our nano particle HPA has shown itself to be a real winner in these kinds of advanced ceramics applications. The improvement in mechanical performance compared to current suppliers is significant. It opens an exciting opportunity for AEM and Zürcher Frères to offer a performance-leading material to Zürcher Frères's current customers in advanced manufacturing. We have learned a lot about alumina-zirconia ceramics in the last eighteen months by collaborating with Zürcher Frères and highly value its innovative and collaborative culture."

Background

Zirconia-alumina ceramics comprise Alumina-Toughened Zirconia (ATZ) and Zirconia Toughened Alumina (ZTA). These are high performance ceramics used in a range of demanding applications. ATZ is mainly used for medical applications such as orthopaedic implants and dental prosthetics, as well as applications in advanced manufacturing where strength and wearability are critical such as parts of valves, nozzles and cutting tools. ZTA has applications in demanding wear and structural components, including pump and valve parts, mechanical seals, bearings and bushings, cutting tool inserts, wire and thread guides. The current market for ZTA and ATZ is approximately 3,000 tpa.

Zürcher Frères, Proprietor and CEO, Emile Zürcher said:

“Our company was founded over 69 years ago and we have always been at the forefront of innovation in materials manufacture from both metals and ceramics. We are proud that this tradition continues with these industry leading alumina-zirconia ceramics.”

Target Applications

ZFS is a specialist, high-value ceramics manufacturer, and AEM partners with ZFS to commercialise its nano HPA in ZFS's zirconia-alumina ceramics products. Several application areas are now under active evaluation:

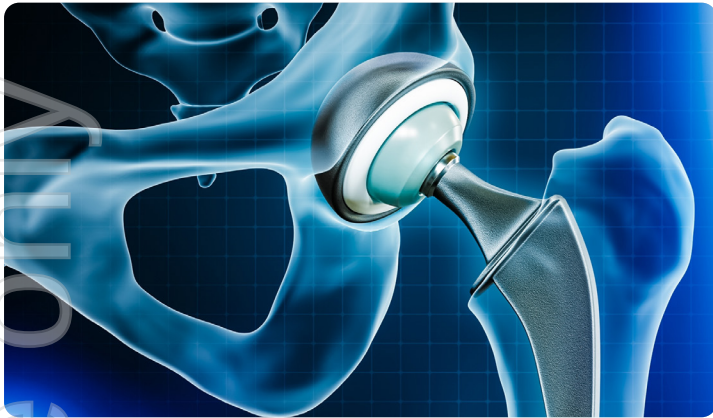
- 01 **Medical device components** where ATZ is already used.
- 02 **Dental and Medical Applications**, namely Dental and Orthopaedic Implants, an established opportunity.
- 03 **Dental cutting tools**, where ATZ's improved toughness targets tool breakage seen in earlier industry trials.
- 04 **Cutting tools**, where ATZ's toughness overcomes major technical issues.
- 05 **Ball bearings**, considered a highly promising application for ATZ; and
- 06 **Ballistic and armour protection**, an emerging area of interest given the established use of alumina-based ceramics in armoured vehicle applications.



3,000 tpa

Estimated global demand for ZTA/ATZ across medical, manufacturing and industrial applications

Each application represents independent validation of AEM's nano HPA in demanding, high-performance environments, reinforcing its potential for broader adoption across global advanced ceramics markets.



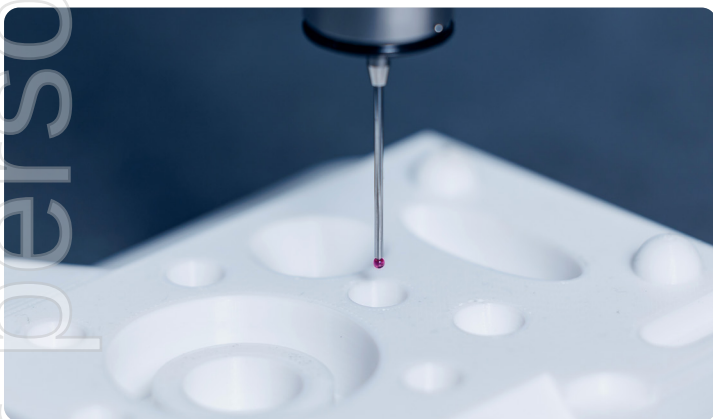
Hip Implant:

ZTA ceramic components for hip implants, leveraging their advantages over titanium implant materials through enhanced wear resistance and excellent biocompatibility.



Dental Implant:

A new generation of ATZ for dental implants. Supporting the trend toward metal-free, aesthetically optimised restorations. With substantially improved fracture toughness over conventional ATZ grades, the material retains the key benefits of ceramic implant solutions.



Cutting Tools:

The new ATZ ceramic cutting tool inserts are designed for machining selected metals, leveraging their advantages over conventional insert technologies to deliver enhanced performance.

About Zürcher Frères SA (ZFS)

Zürcher Frères SA is a Swiss, family-owned precision manufacturer with over 69 years of experience in powder metallurgy, based in Les Bois, Switzerland. ZFS specialises in producing rotors and other components for the Swiss watchmaking industry using metal and ceramic injection moulding, hot isostatic pressing and sintering. The company works across a broad range of advanced materials, including tungsten, tungsten carbide, titanium and technical ceramics, supported by in-house metallurgical testing and quality control. ZFS is owned and led by its Proprietor and CEO, Emile Zürcher.

About Advanced Engineered Materials (AEM)

Advanced Engineered Materials Limited (ASX: AEM) is a producer of high purity alumina (HPA) with production facilities in Cap-Chat, Quebec, Canada. Following completion of a two-year capital works program, the Cap-Chat Plant is now commercially sized with a 2,000 tpa nameplate production capacity and is moving to increase capacity to 3,000 tpa in 2026 (thereby completing the Stage 1 Expansion Project), with further expansion through to 6,000 tpa capacity from 2029 (Stage 2 Expansion Project). At 3,000 tpa full production rate, the Plant will be the 3rd largest HPA production asset outside of China.

<US\$0.05/kWh

Renewable hydroelectric power supply at <US\$0.05/kWh

~77%↓

Carbon emissions of approximately 2.8 tonnes CO₂e per tonne of HPA, ~77% lower than traditional alkoxide production methods

✓ VERIFIED

Emissions profile verified in accordance with ISO 14064 (updated 2025)

✓ ISO

Management systems certified to ISO 9001, ISO 14001 and ISO 45001



AEM expects to position within the lower half of the global HPA cost curve while delivering high purity, ex-China supply to customers seeking ESG-compliant sourcing.

→ Watch the latest video of the
**AEM HPA Commercial Plant from
June 2026 here**

Get in Touch



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This announcement has been authorised for release by the Executive Chairman and the Managing Director & CEO of Advanced Engineered Materials Limited.

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Forward Looking Statements

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