# ASX Announcement

18 November 2026

# Dedicated MXene Production Reactor Commissioned in Texas

## Highlights:

- Upgraded Flash Joule Heating reactor built, installed and commissioned to support ECT's 12-month R&D and engineering services agreement with Metallium Limited (ASX: MTM).
- First MXene production campaign using the upgraded reactor at Metallium's 'Gator Point' campus in Texas scheduled to commence this week.
- Reactor is dedicated to ECT's MXene chemistry, with four temperature probes and closed-loop control, lowering contamination risk and allowing tighter control of the variables that determine product quality.
- On-site laboratory analysis expected to lift testing frequency and shorten the feedback loop between runs.
- Independent coating evaluation for EM and IR performance for drones and other key applications targeted to commence in early December 2026.

Environmental Clean Technologies Limited (ASX: **ECT**) ("**ECT**" or "**Company**") advises that the upgraded Flash Joule Heating (FJH) reactor to be used for its MXene production campaign has been built, installed and commissioned at Metallium Limited's (ASX: MTM) 'Gator Point' Technology Campus in Anahuac, Texas. The reactor is ready for the first MXene production campaign at Gator Point, which is scheduled to commence this week, following earlier MXene production at an external facility. The work is being undertaken under the 12-month R&D and engineering services agreement between ECT and Metallium announced on 4 August 2026.

For ECT, commissioning marks the transition from demonstrating that its FJH process forms MXene to developing a controlled and repeatable production process. The upgraded reactor provides improved process control and faster analytical feedback to optimise conversion, batch-to-batch consistency and material quality, key requirements before material can progress to customer evaluation. Following completion of the Xenica acquisition on 16 November 2026, the programme is being advanced as part of ECT's broader MXene technology platform.

### Reactor Commissioning Completed

Metallium's commissioning programme covered the power supply, process piping and gas-handling lines, together with scrubbers to treat off-gas from chlorination. Cold commissioning verified equipment, utilities, instrumentation and controls without process material, including leak testing, safety interlocks and

shutdown functions. Hot commissioning confirmed heating performance, temperature control at the desired temperature target and operation of the off-gas scrubbing system.

**Purpose-Built for MXene Production**

The upgraded reactor has been instrumented and configured specifically for the MXene chlorination process. While the external facility used for ECT's earlier flash runs operated with a single temperature probe and manual control of temperature and gas flow, the Gator Point system has four temperature probes with closed-loop feedback control of both reactor temperature and gas flow, giving direct control over the key variables that determine product quality. The reactor is also dedicated to ECT's MAX-phase feedstock and MXene chemistry, reducing the risk of cross-contamination from unrelated feedstocks and process residues that can affect product purity and characterisation results. This is the level of control needed to move from forming MXene to producing it consistently.



*Figure 1. Metallium's Gator Point Technology Campus in Texas (left) and one of several Flash Joule Heating reactor systems installed at Gator Point (right).*

**MXene Campaign**

The campaign is scheduled to commence this week, initially processing approximately 400 grams of ECT-supplied titanium aluminium carbide MAX-phase precursor. On 9 October 2026, ECT reported that its first two flash runs had produced MXene, with independent X-ray diffraction (XRD) analysis consistent with the formation of chlorine-terminated MXene. The campaign in the upgraded reactor will focus on refining operating parameters, assessing conversion and recovery rates, and evaluating the consistency and characteristics of the resulting MXene material across successive production runs. The 400 grams refers to precursor input.

Samples from each run will be recovered and analysed in the on-site laboratory at Gator Point. This allows operating conditions to be refined with less reliance on external turnaround times and is expected to substantially increase testing frequency, so that results from each run can inform the next. Metallium has procured an X-ray diffractometer for the on-site laboratory, which will be used to identify the crystalline phases present in campaign samples. A second reactor system is being upgraded in parallel, incorporating improvements identified during the build and commissioning of the first unit.

**Chief Scientist and CTO, Justin Sharp, commented:** *"This reactor is built to make MXene consistently. It is dedicated to our material, controls temperature and chlorine flow automatically, and with analysis on site, every run tells us how to improve the next. That is what gets material into customers' hands."*

**About MXene**

MXenes are two-dimensional materials only one to two nanometres thick that conduct electricity like a metal, which is why they are being developed for electromagnetic interference (EMI) shielding and infrared and radar signature management on drones, aircraft and military electronics. ECT's FJH route replaces the conventional hydrofluoric acid process, which takes 48 to 72 hours for batches typically under 100 grams, with 30 to 60 minute runs and no liquid acid (Figure 2).

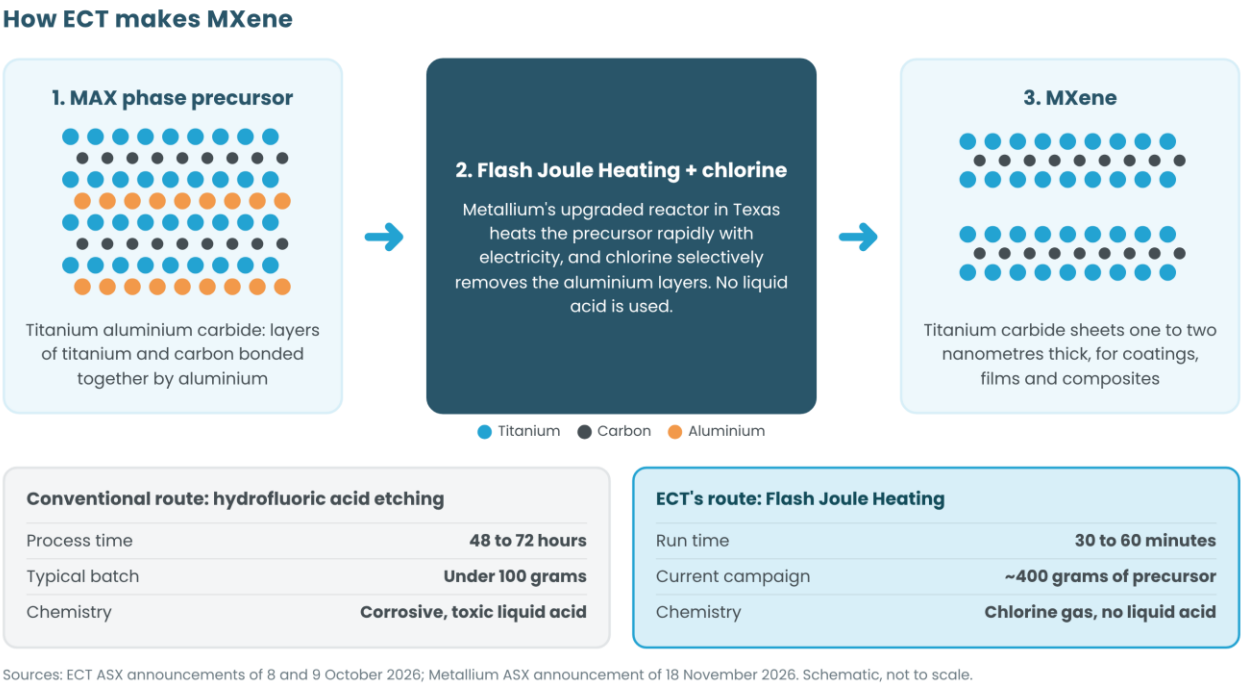



***Figure 2.*** *How ECT makes MXene, compared with the conventional acid route.*

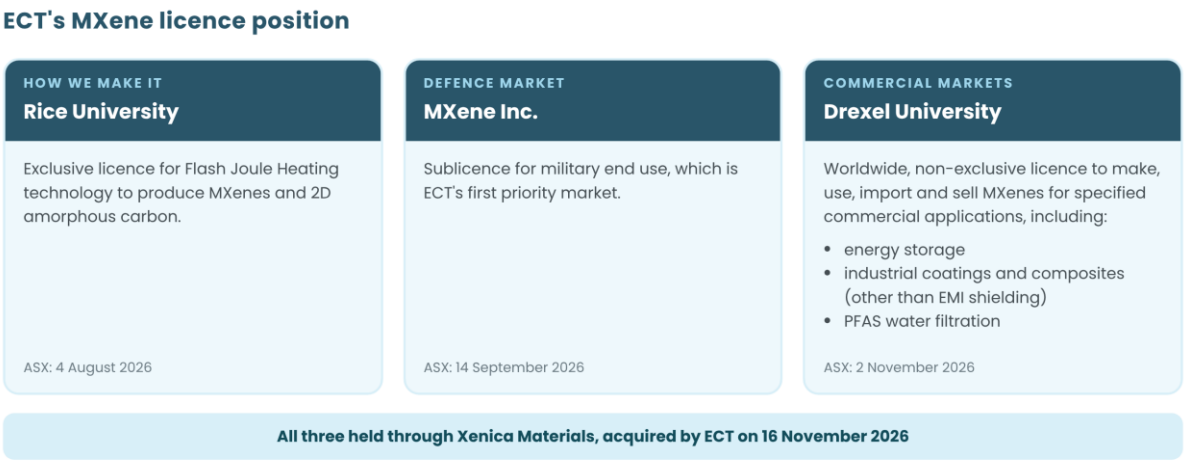



***Figure 3.*** *ECT's MXene licences, held through Xenica (ASX: 16 November 2026).*

**Next Steps**

ECT's immediate focus is on establishing consistent and reproducible production of MXenes. The campaign will be used to refine operating conditions for conversion, consistency between batches and material quality. Material that meets the required standard will then progress to independent characterisation and application-specific testing, and to supply for customer evaluation and qualification against the performance and quality requirements of targeted defence, advanced materials and industrial applications. Defence remains ECT's initial priority. ECT will update the market as campaign results are analysed.

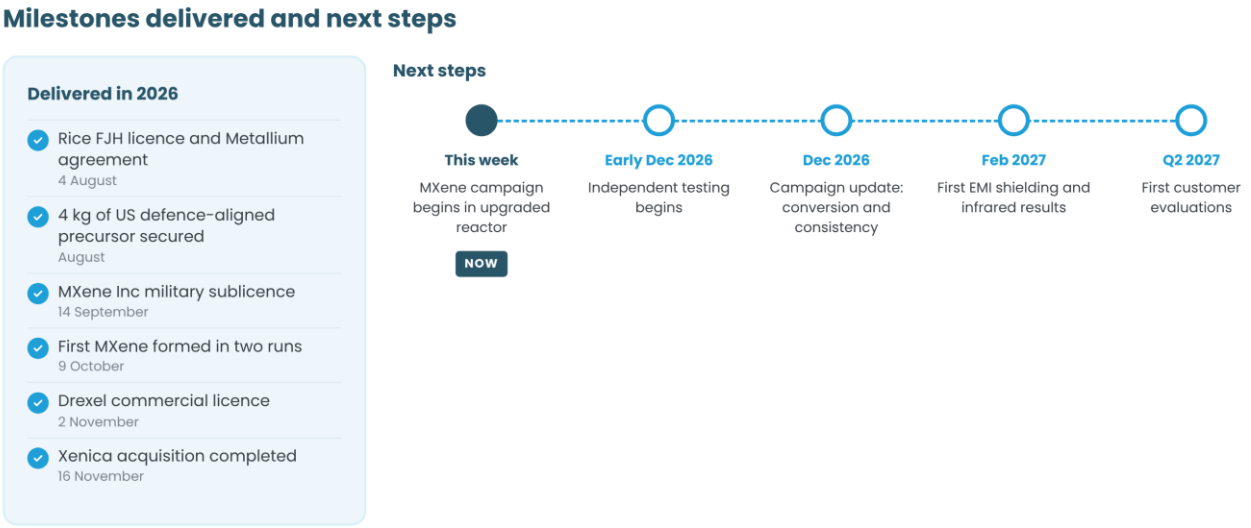



***Figure 4.*** *Milestones delivered in 2026 and next steps.*

**Executive Chairman Faldi Ismail said:** *"Commissioning this upgraded reactor represents an important milestone in ECT's strategy to develop a commercial MXene production capability. We have already demonstrated that our process can produce MXene. Our focus now is on establishing the consistency, quality and repeatability required to progress towards customer qualification. With a dedicated reactor now commissioned for our MXene work in Texas, and the addition of Xenica to ECT's technology platform, we are building the foundations to advance MXene development towards commercial applications. This is an important next step in translating our technology into a commercially relevant opportunity for ECT and its shareholders."*

This announcement is authorised for release to the ASX by the Board.

**For further information, please contact:**


**INVESTORS**

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**Forward-looking Statement**

This announcement may contain forward-looking statements regarding future events or performance, including statements regarding the planned MXene campaign, process performance, conversion, consistency between batches, product quality, customer evaluation and qualification, and commercialisation. These forward-looking statements are based on current expectations, assumptions, and projections that involve inherent risks and uncertainties. Actual results may differ materially from those anticipated due to various factors, including market conditions, regulatory changes, technological advancements, and economic conditions.

Investors are cautioned not to place undue reliance on forward-looking statements, which speak only as of the date of this announcement. The Company undertakes no obligation to update or revise any forward-looking statements, whether as a result of new information, future events, or otherwise, except as required by applicable securities laws.

Investors should carefully consider the risks and uncertainties disclosed in the Company's periodic reports filed with the Australian Securities Exchange (ASX) and other regulatory authorities. Forward-looking statements are provided as of the date of this announcement, and the Company disclaims any obligation to update them, except as required by law.