Intelligent technology for fenestration systems that require superior thermal and structural performance.

The MLP™ (mechanical lock profile) is a structural cavity design that allows for increased thermal barrier cavity size for improving the energy efficiency of aluminum fenestration products. Intended for use in high performance building envelopes in the most demanding climates and conditions, the MLP™ integrates design and processing technology for superior thermal performance and shear strength over other architectural fenestration technologies.

MLP™ objectives

The MLP™ is an aluminum extrusion profile design and manufacturing method for products utilizing wider debridge widths for thermal barriers in situations that require optimal thermal and structural performance.

Proper thermal barrier cavity sizes, frame depth and location within the window frame will impact performance. The MLP™ fully encapsulated cavity design is stronger because the displaced metal—where the lanced indentations curve downward—provides more surfaces to mechanically lock and embed the polymer to the aluminium to create a strong, bonded composite.

Design guidelines

The location and orientation of a thermal barrier pocket can greatly impact the characteristics and outcome of the structural performance of fenestration systems.

The MLP™ prepares the extruded aluminum member by incorporating a lancing lug within the fill portion of the thermal barrier pocket to provide excellent adhesion and to resist fracturing.

The MLP™ can be used in place of standard thermal barrier cavity designs. While the MLP cavity is designed for cavities with larger debridge gaps, it can be adapted to any cavity size. The smallest recommended debridge width is 1/4-inch due to the lancing machinery processing parameters.

Azon provides professional assistance with extrusion profile design and engineering under the auspices of the AZO/Tec® technical services department. Engineering requirements, cavity dimensions and processing guidelines are available upon request.

Contact the **AZO/Tec®** technical department for technical details, drawings and specifications **azotec@azonusa.com**.

Figure 1. Azon MLP™ (mechanical lock profile)

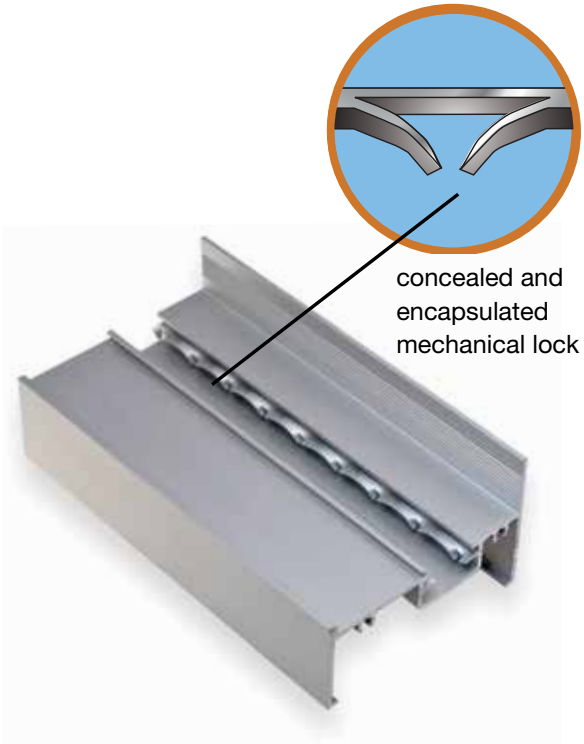

Figure 2. Performance components

The MLP™ cavity design allows for a wider separation in the aluminum profile to achieve a lower U-factor in most fenestration products.

Machinery

The Azon Lancer™ is a mechanical device that works to prepare and condition the MLP™ thermal barrier pocket prior to the polyurethane polymer filling step. The Lancer™ works inline with pour and debridge processing machinery* and will accommodate many common open-top thermal barrier extrusion profiles and is the essential machine for producing the MLP™.

The Lancer also enhances the shear strength of the resulting polymer and aluminum composite.

Extrusion drive and capacity

For general production, Azon recommends using specialized blades adapted for wider debridging. The Bridgemill™ 30-hp drive capacity can accommodate fenestration systems requiring larger debridge gaps, along with dual cavity MLP™ in a single pass. (Refer to Technical bulletin *Guide to dual cavity design-TB007* for more information.)

When determining the cavity location, care should be taken to allow for the use of the lance-type mechanical lock. MLP™ cavity design guidelines must be followed explicitly due to the special requirement of the encapsulated lancing lugs inside the cavity.

*Typically, the production of MLP cavity profiles can be done on existing machinery with little or no modifications. Azon can provide a checklist that allows manufacturers to know what modifications are required or if high-volume machinery is needed for advanced production.

MLP™ total design system includes

- High temperature resistant polyurethane polymer
- Wider cavity-lower U-factor achievable in most fenestration products
- Concealed mechanical lock
- No fee licensee contract with simple qualifications
- 10-year pass-through warranty
- Highest shear of all thermal barriers
- Cavity design assistance to meet performance goals
- Less material required to process the technology, with single extrusion (source reduction)

Figure 3. Lancer™ for producing mechanical locks

The lancing wheel travels along the lugs to produce lanced indentations that bend down into an extrusion cavity.

The Lancer™ machinery for producing the **MLP™** mechanical lock offers its own benefits—it is fast, quiet and it works inline with current pour and debridge lines.

Azon
643 W. Crosstown Parkway
Kalamazoo, MI 49008-1910
USA
Tel: (269) 385 5942
Fax: (269) 373 9295

Azon UK Ltd.
Block C – Unit C14-15
Duffryn Park, 1 Alder Avenue
Dyffryn Business Park
Ystrad Mynach
HENGOED
CF82 7TW
UK
Tel: +44 (0) 1443 814657

Azon Korea Inc.
E1-Space
19 Samseong 122 St.
Gangnam, Seoul 06085
Korea
Tel: + 82 (0) 2 3449 2200
Fax: + 82 (0) 2 3449 2229

Azon Polyurethane (Shanghai) **Co., Ltd.**
Room 504, Building 29
No. 58 Tonchuan Rd.
Shanghai 200333
PR China
Tel: + 86 (0) 21 6212 2213
Fax: + 86 (0) 21 6211 0004

