AddUp

MICHELIN
A BETTER WAY FORWARD

ADDITIVE'S SUCCESS IN THE TIRE INDUSTRY

Sipes for tires are designed to improve road holding on wet or wintery roads, while still allowing the rubber to remain rigid, and maintain these levels of rigidity, when the tire is new or worn. Michelin has been utilizing laser Powder Bed Fusion since the early 2000's to manufacture tire sipes used within their tire molds.

HISTORY OF SIPING

1923
Siping is invented to add traction to shoes

1950
Not largely applied to tires until 25+ years later

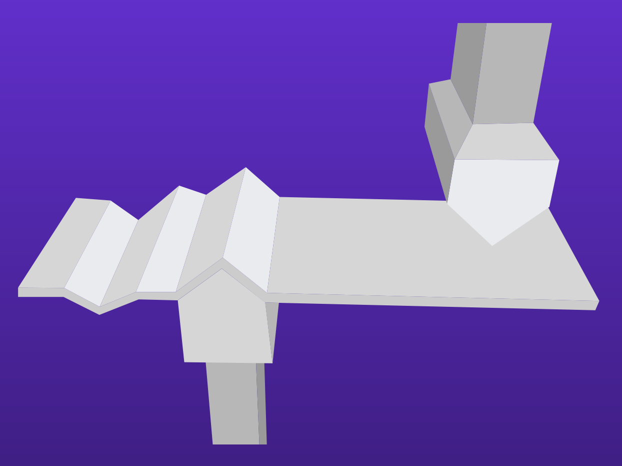
2000
Starts the arrival of Metal 3D printed sipes

CHALLENGES

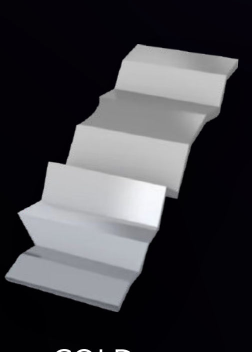
Conventional manufacturing and installation of tire mold inserts involves a light metal casting of an aluminum silicon alloy. Tire mold segments are made by casting or milling with finishing carried out manually.

Broad sipes can be inserted into the mold segments, but narrow inserts less than 3mm are not easy to work with due to the hardness characteristics of the alloy. Steel sipes are used instead, made by stamping and cold bending.

Sipes in winter tire molds can total up to
3000
with over
200+
different designs



TRADITIONALLY MANUFACTURED SIPES
Cut and Formed



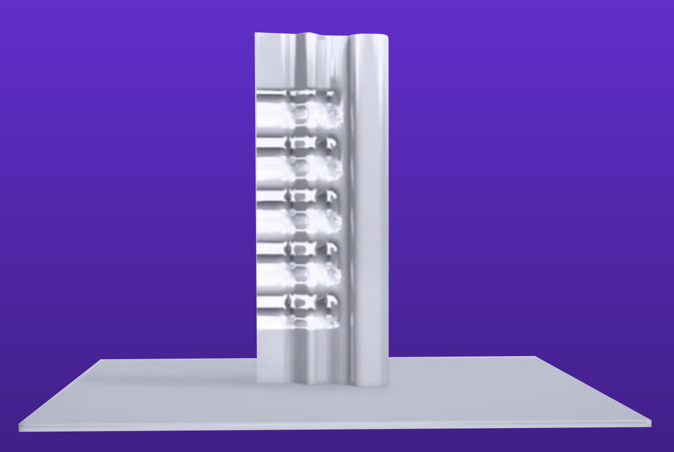
COLD BENDED SIPE

POWDER BED FUSION SIPE

SWITCHING TO ADDITIVE

By completely transforming the process used to produce parts, additive changed manufacturing at Michelin. There is no longer any need to go through several preliminary steps, nor assemble different components to obtain the desired part.

Sipes are produced in a single step with:
- Limitless personalization options
- Significant weight and waste reduction
- Minimal post processing
- Fast throughput from proof concept to realization



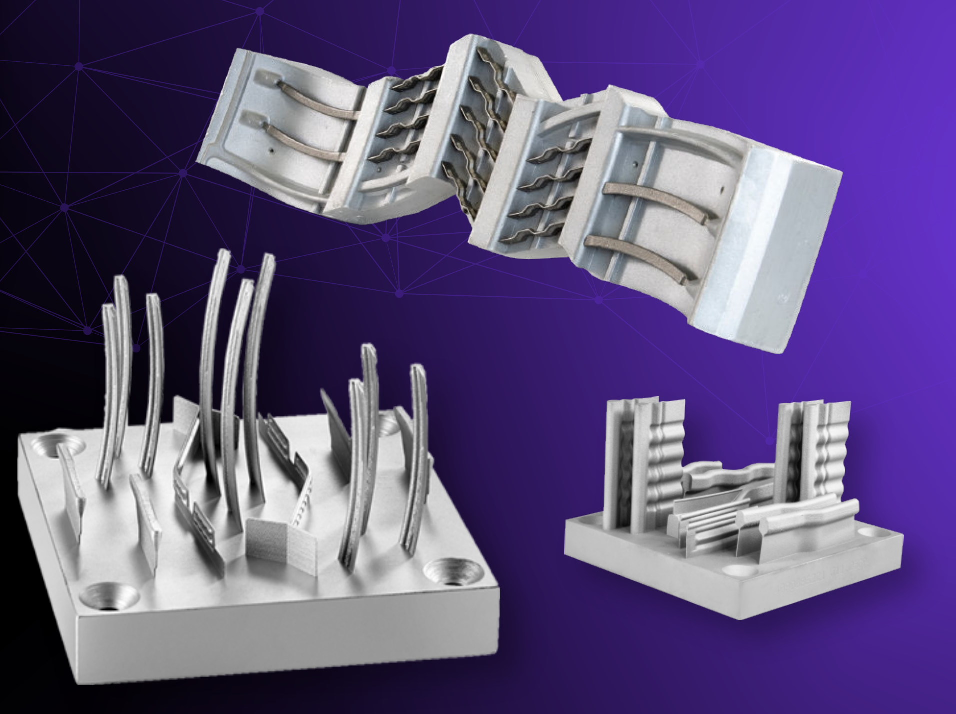
ADDITIVE MANUFACTURED SIPES
Built up Layer by Layer

TIRE SIPE DEVELOPMENT TIME REDUCED

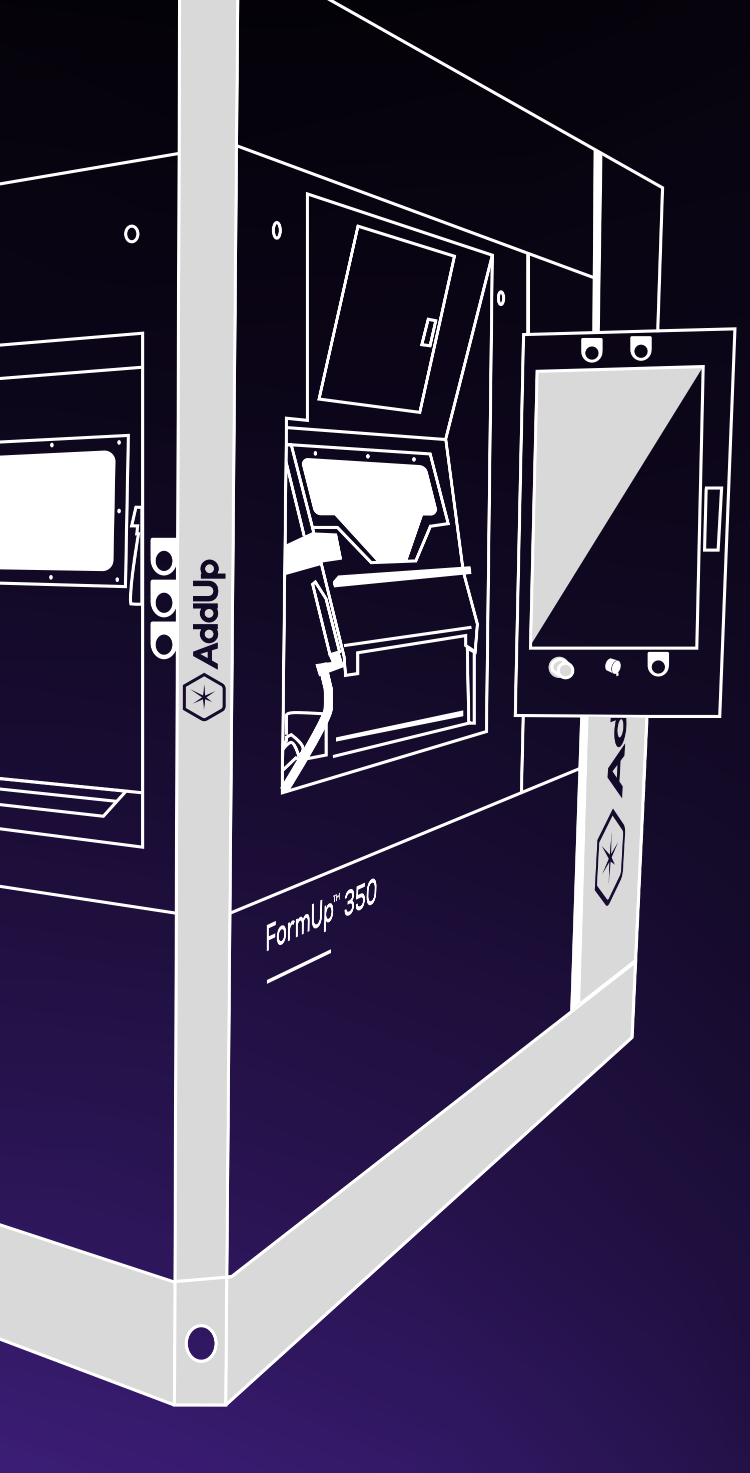
FROM **9 WEEKS** → TO **2 WEEKS**

ENABLING BREAKTHROUGH PERFORMANCE GAINS

TODAY, MICHELIN PRODUCES
1,000,000+
TIRE SIPES PER YEAR
IN SERIAL PRODUCTION



ON FORMUP 350 L-PBF MACHINES IN EUROPE AND USA



BENEFITS OF THE FORMUP 350

The FormUp 350 has a 350 x 350mm build space and produces the industry leading surface finish, offering unparalleled throughput.

Our machines are modular and scalable to create high quality and fine featured parts while adhering to the highest level of safety standards. Reduce cycle time and improve part performance by leverage our expertise to reimagine your industrial needs.

- PERFORMANCE GAIN
- COST SAVINGS
- REPEATABILITY
- BUILT FOR INDUSTRY

EXPLORE LIMITLESS POSSIBILITIES

LEARN MORE

FormUp® 350

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