

FUEL CELL



EXPERTS FOR
COATING,
IMPREGNATION &
DRYING



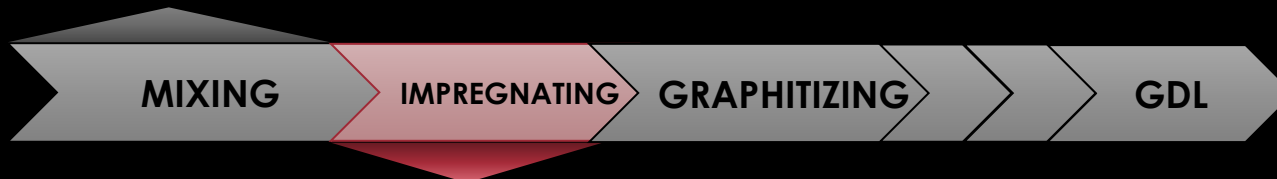
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GDL - FUEL CELL PRODUCTION

Gas Diffusion Layer

INDUSTRY PARTNERSHIPS

FMP CONSULTING



FMP COATING STATION

- Full surface impregnation with FMP Slot die
- Patented technology for outstanding performance
- Optimal & individual plant integration

CCM - FUEL CELL PRODUCTION

Catalyst Coated Membrane



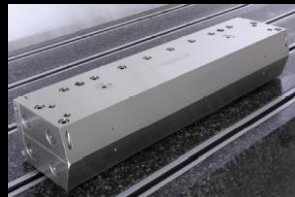
Hot air convection drying

- with FMP LamiFlow® nozzle
- with FMP CombiFlow nozzle
- One sided or double sided drying
- Floatation or roll supported dryer
- Impingement or impingement-free nozzles

FMP CONSULTING

INDUSTRY PARTNERSHIPS

FMP DRYER



FMP SLOT DIE

- CCM direct coating on membrane
- CCM indirect coating with decal transfer process
- Single-sided coating
- Double-sided coating

FMP CONSULTING

INDUSTRY PARTNERSHIPS

- Hot pressing & Decal removing for indirect CCM process

Overall PRODUCT

FMP COATING & DRYING LINE

Pilot scale for pre-series

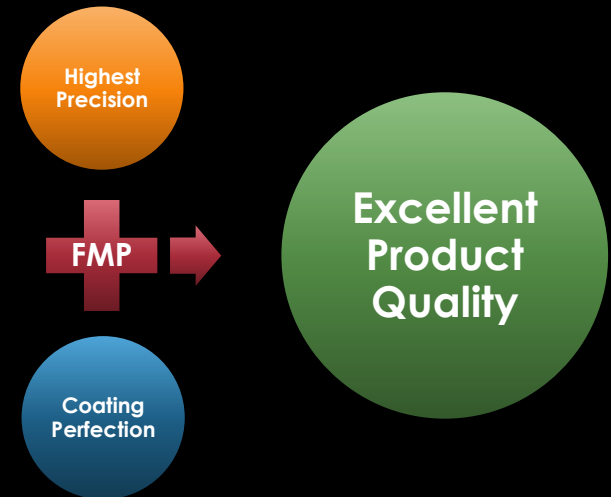
FMP Core Supplier & Consulting

Complete CCM production facility through partnerships with experts in their field

ADVANTAGES **FMP** SLOT DIE PROCESS

Our **FMP** INFINITY SLOT DIE

- Pre-metered, contactless process
- Excellent cross-web distribution
- Wide range in process flexibility
- High process scalability and reproducibility
- No air entrainment, no fluid recirculation
- Closed system, constant fluid properties
- No waste of fluid



Your Expectation

- Perfect uniform coating and impregnation
- No edge elevations
- Low to medium viscous fluid
- Medium to high solid content
- Single-sided or double-sided coating/impregnation
- Perfect adaptation to your coating/impregnation line and process

Our Solution

- High precision manufacturing with surface inspection and finish lapping
- Process optimized distribution chamber, lip geometry & specific shim layout
- Analytical and numerical optimization of the fluid flow, coating window & mechanical structure
- Patented technology for GDL process
- Perfectly matched components and customized solutions, from Feeding & Positioning system, complete Coating stations or Pilot Plant Line



GDL Impregnation with **FMP** Slot Die

"Analytical calculation methodes completed with profound process knowledge and a passion for coating technology. The FMP Slot die enables you to achieve maximum coating quality"

ADVANTAGES **FMP** GDL IMPREGNATION

FMP Slot Die Impregnation with patented technology

Up to 150% increase of web speed

Only one run necessary

Up to 50% less energy costs & production time

200% increase of production output

Excellent cross web distribution by factor 2 better

Pre-metered process

Calculable and reproduceable

Closed, gentle and clean process

No open or circulating fluid flow

No foam formation or air intake

No change in fluid properties

Fluid optimization

Without recirculation areas or dead spaces

No sedimenting of the particles in the fluid

Dipping-bath Impregnation

Low web speed

Two runs necessary for full impregnation

Low cross web distribution

No pre-metering

Open and circulating fluid flow

Foam formation and air intake

High change in fluid properties

No fluid optimization

Many recirculation areas and dead spaces

High circulating fluid flow to prevent sedimenting



FMP Slot die with patented technology

"The FMP Slot die impregnation station has outstanding performance compared to traditional dipping-bath process"

ADVANTAGES **FMP** LAMIFLOW® DRYING

Our **FMP** LamiFlow® drying nozzle

- Gentle impingement-free drying with low air velocity
- Homogenous heat distribution in cross and web direction
- Superior drying performance with high heat transfer
- High process scalability and reproducibility
- Short dryer length and compact design
- For retrofitting, expansion or new installation



Your Expectation

- No defects (cracks, waves)
- Homogenous temperature profile in cross and web direction
- High production speed
- High drying performance
- Top and bottom coating drying
- Flexible, adjustable and optimal drying technology
- Perfect adaptation to your process, dryer or lab- and production line

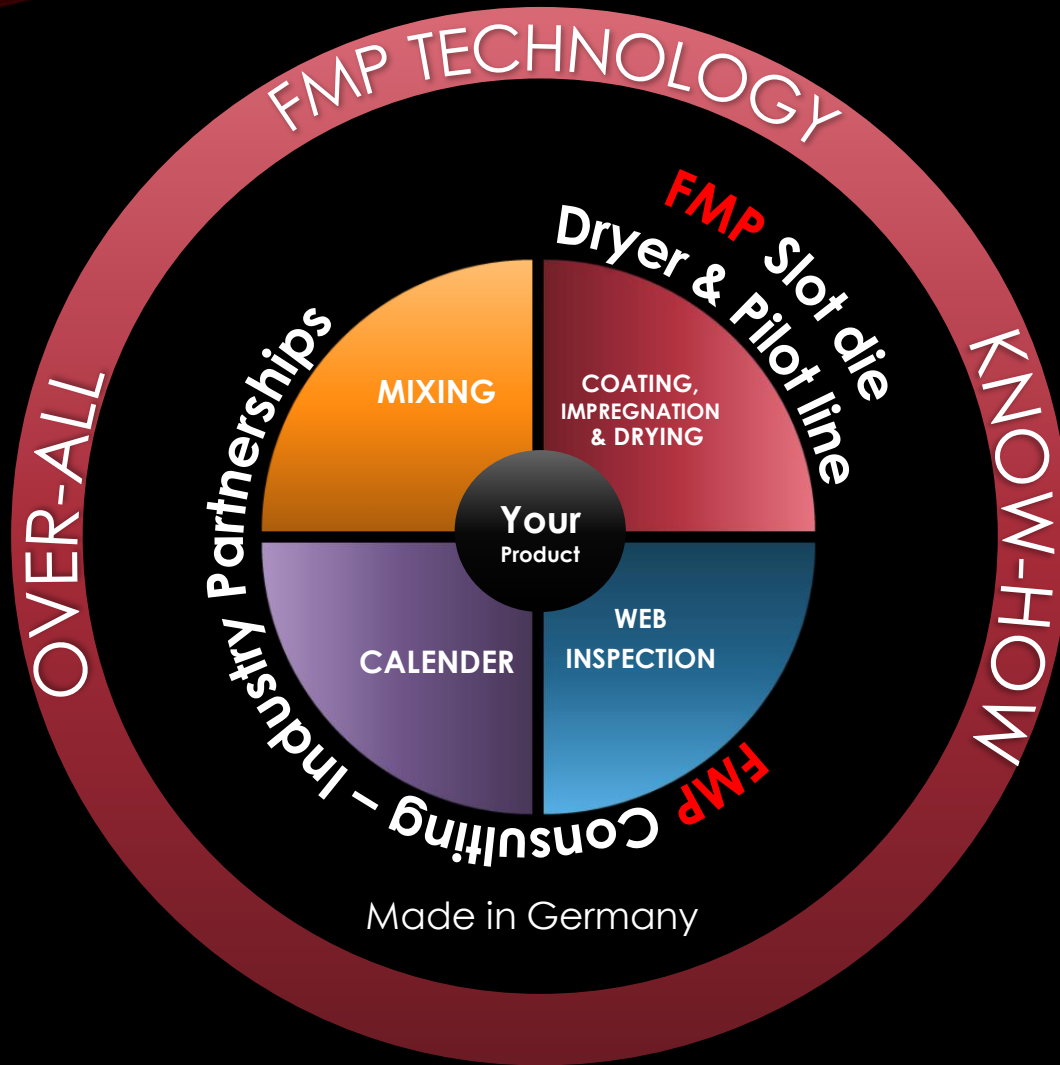
Our Solution

- Gentle impingement-free drying with low air velocity
- Uniform air flow due to patented homogenous distribution system
- High heat transfer with perfect airflow and air extraction
- Analytical and numerical optimization of the drying process and the air flow
- Flotation or roll support dryer design
- Patented FMP CombiFlow nozzle with flexible impingement-free and impingement drying in one nozzle
- Customized design solutions, we deliver dryer nozzles or complete dryer



"The patented FMP impingement-free LamiFlow® dryer nozzle. Use the best performance for your CCM production."

"FMP Flotation dryer with LamiFlow® dryer nozzles."



YOUR EXPERTS FOR EVERY STEP

FMP TECHNOLOGY – TOGETHER WE ACHIEVE YOUR GOALS

Our added value for you - a promise we keep

- High-qualified company with great engineering know-how and lots of practical experience in coating and drying.
- We are backing you up everywhere and anytime. Our goal is to create with you a long-term partnership-based relationship.
- We are pleased to support you from the very first idea to the final product. In the laboratory or in production, you can count on us.
- We supply you with single components, stand-alone modules or complete pilot scale lines. We are open minded for the best solution.
- Every customer counts - Your new ideas are taken seriously by us. With individual solutions and special designs you are right with us.
- We supply solid machines with excellent components. Our solutions in coating and drying are perfectly designed and have premium quality. Your product is worth it to us.

JUST CONTACT US



FMP Technology GmbH | Am Weichselgarten 34 | 91058 Erlangen | Germany

<https://www.fmp-technology.com>



LinkedIn

<https://www.linkedin.com/company/fmp-technology>



E-Mail

vertrieb@fmp-technology.com



Phone

+49 9131-932868-0