



# DSM Dyneema | The world's strongest fiber™

Golnar Motahari Pour - President DSM Dyneema

ROYAL DSM  
HEALTH NUTRITION MATERIALS



# Safe harbor statement

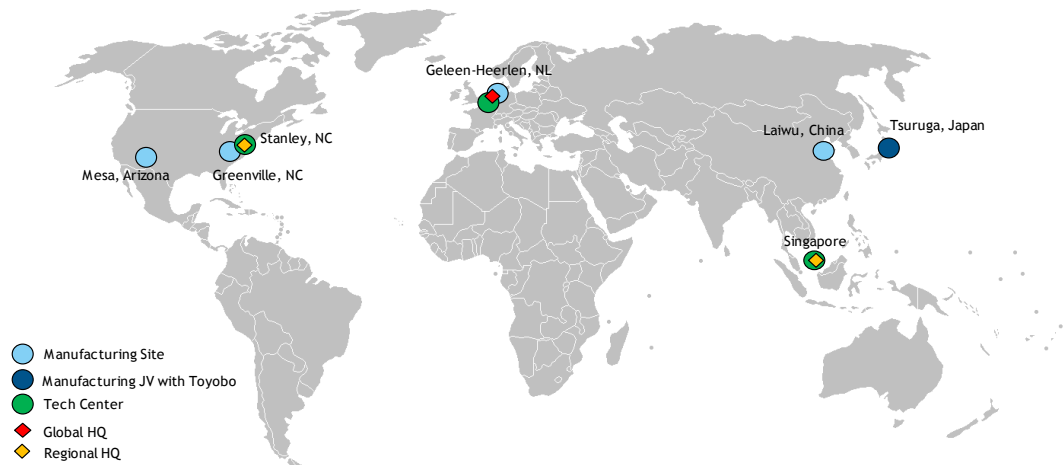
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- This presentation may contain forward-looking statements with respect to DSM's future (financial) performance and position. Such statements are based on current expectations, estimates and projections of DSM and information currently available to the company. DSM cautions readers that such statements involve certain risks and uncertainties that are difficult to predict and therefore it should be understood that many factors can cause actual performance and position to differ materially from these statements. DSM has no obligation to update the statements contained in this presentation, unless required by law.
- A more comprehensive discussion of the risk factors affecting DSM's business can be found in the company's latest Annual Report, which can be found on the company's corporate website, [www.dsm.com](http://www.dsm.com)

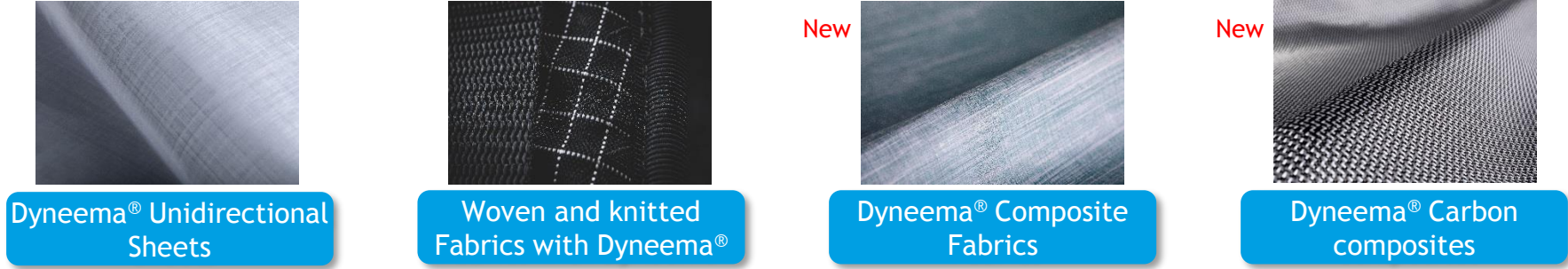
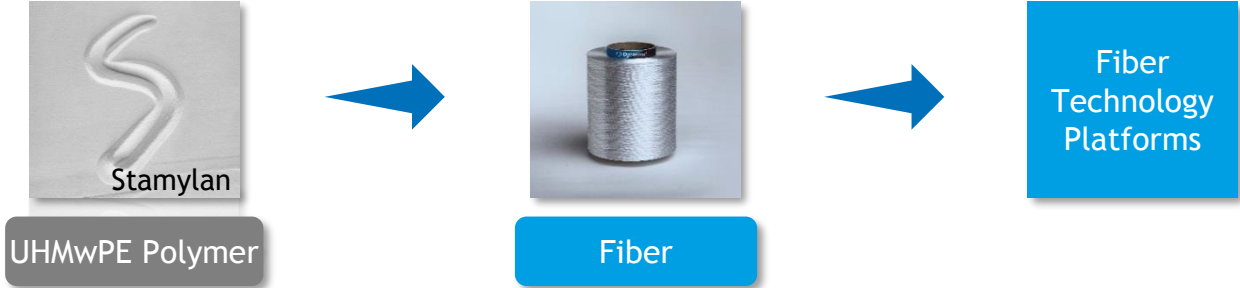
# Dyneema® | The Greenest Strength™

Only UHMwPE player with assets in 3 main continents

- Dyneema® combines:
  - Light weight with incredible strength
    - 15x stronger than steel
    - 40% stronger than aramid
  - High Abrasion and Cut resistance
  - Incredible durability
  - Ballistic performance
  - Lowest carbon footprint per unit of tenacity



# Unique integration from polymer to downstream form factors



**Strength: unique integration from polymer to downstream form factors**

# A versatile portfolio of markets

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## Life protection



## High Protective Textile



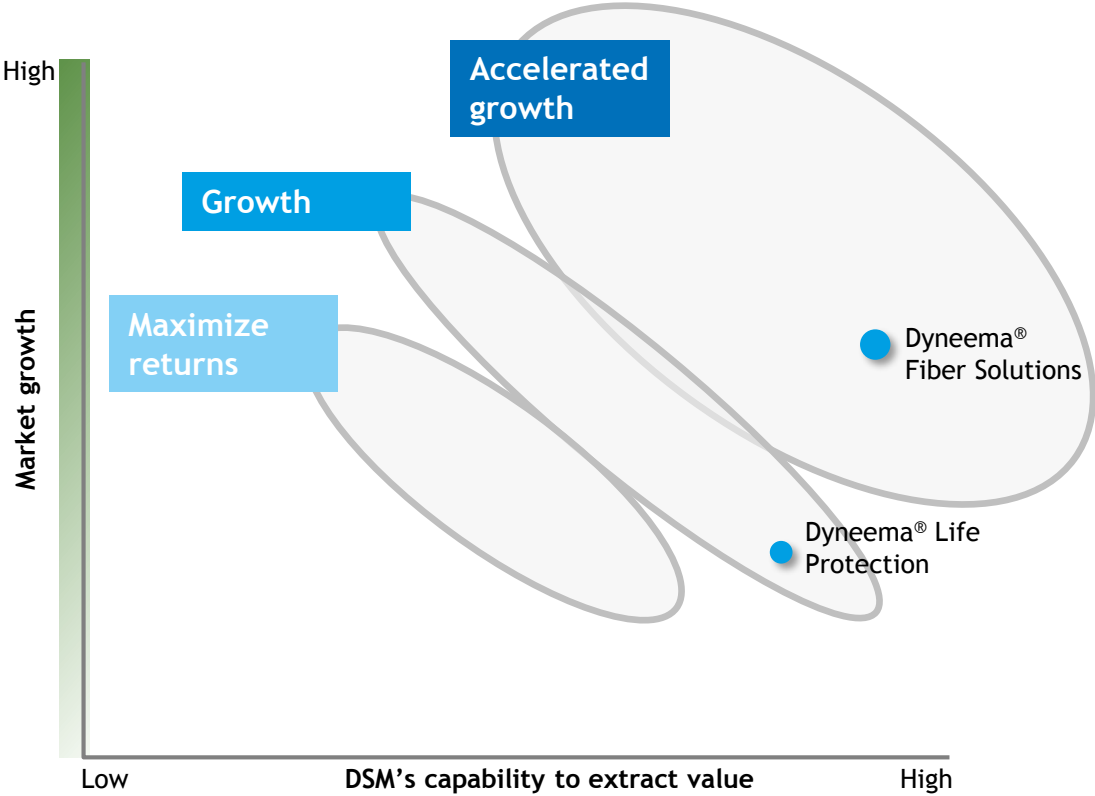
## Commercial Marine & Sport



## Performance Fabrics

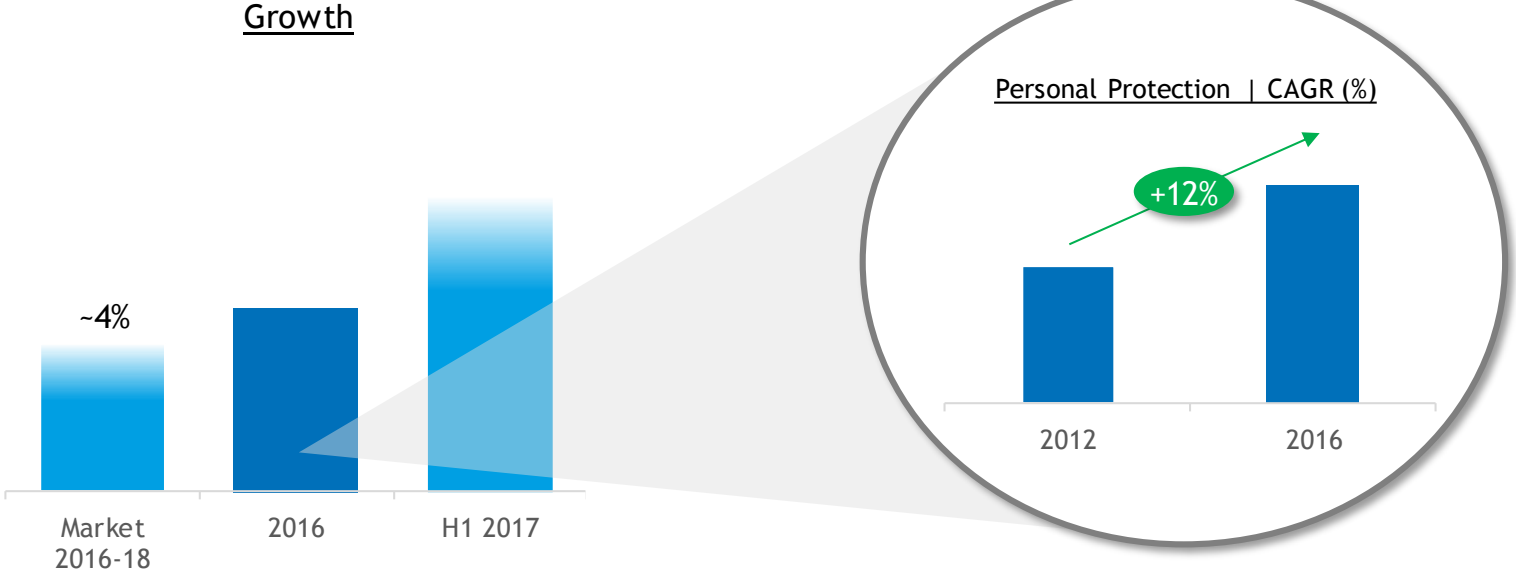


# Strategy 2018 | Growth in markets where continuous high performance is of utmost importance





# DSM Dyneema is outgrowing the market



Life Protection shifted to a higher quality and more resilient portfolio

# DSM Dyneema aims to continue its growth through strong, lightweight and sustainable solutions

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## 1 Growth through innovation (in existing markets)

- Lead in markets through unique innovative technologies
  - Dyneema® Diamond Technology for **comfortable cut protection**
  - Dyneema® Force Multiplier Technology for **outstanding ballistic performance**
  - Dyneema® Max Technology for **exceptional creep behavior**

## 2 New applications

- Capture value through new form factors
  - Dyneema® Flexible Composites for **light weight durable strength**
  - Dyneema® Synthetic Chains for **lifting and lashing**
  - Dyneema® Carbon Composites for **improved crash performance**



A police officer in a dark blue uniform with a badge and a name tag stands in a locker room. He is looking at a photograph of himself as a young boy, dressed in a suit and tie, posted on the inside of a locker door. The locker room has rows of lockers in the background, and a shelf with various items like a bottle of Edge dressing and a spray can is visible above the officer's head.

# Life Protection

Highest ballistic protection with 30% reduced weight  
Highest comfort and flexibility

# 1 Lightweight protection for people and vehicles



Vehicle armoring

Insert

Helmet

Plate carrier

Fragment protection

Unidirectional sheet

Unidirectional sheet

Unidirectional sheet

Composite Fabric

Knitted Fabric

Police & VIP cars

French & German  
police  
Defense

Defense

Police & Defense

Defense

**Dyneema® Force Multiplier Technology for outstanding ballistic performance**





# Commercial Marine & Sports

Lightest weight for highest strength  
Reduced system and installation cost  
Increased worker's safety

# 1 More durable, lighter weight and safer solutions to industrial markets



Seismic ropes

Stiffness & durability



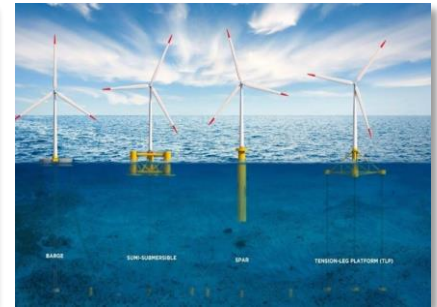
Lifting Slings for Wind Farms

Safe and fast installation



Deepwater Installation Crane Rope

Highest level of fatigue and mechanical performance



Mooring lines for Floating Wind farms (piloting)

Low weight & durability

High growth opportunities by steel substitution



A close-up photograph of a person wearing a blue protective suit and light blue gloves. The person is working on a dark grey or black interior panel of a vehicle, possibly a door or a trunk. The person's hands are positioned to hold a thin, vertical metal rod or wire. The background is slightly blurred, showing the interior of the vehicle and a red taillight on the right side. The overall scene suggests a professional automotive repair or maintenance task.

# High Protective Textiles

Enhanced cut protection with continued comfort

# 1 Dyneema® Diamond Technology | Highest Comfortable Cut Protection



Key industries: Glass & metal handling, Pulp & Paper, Automotive



Exploring new markets

**Dyneema® Diamond Technology for highest comfortable cut protection**





# Performance Fabrics

High durability

Increased protection

Heat and sweat management



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# Dyneema® Composite Fabrics and Dyneema® Denim | New form factors opening new markets



Breathable jackets

Composite Fabric



Ultra lightweight Backpacks

Composite Fabric



Durable & Motorcycle Denim

Fabric, Dyneema® Denim



Ultra lightweight tents

Composite Fabric



Abrasion resistant sports garments

Knit, Fabric

Industrial validation for Dyneema® Composite Fabrics in progress...



Technology can be tailored for strength and modulus in multiple directions



# Synthetic Chains

Massive leap forward  
in lifting and lashing technology

# Synthetic Chain for lifting and lashing based on Dyneema® Max Technology



IP Protected  
Technology based  
on Max Technology

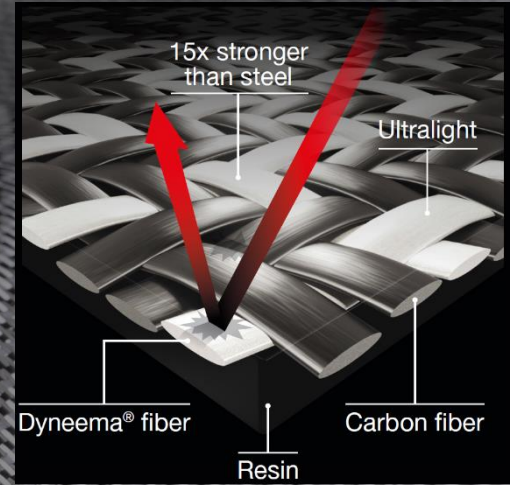


Proprietary design  
(Möbius twist)



- 6-8 time lighter than steel
- Rapid installation, less damage, simplify process, less injuries, better ergonomics, no noise

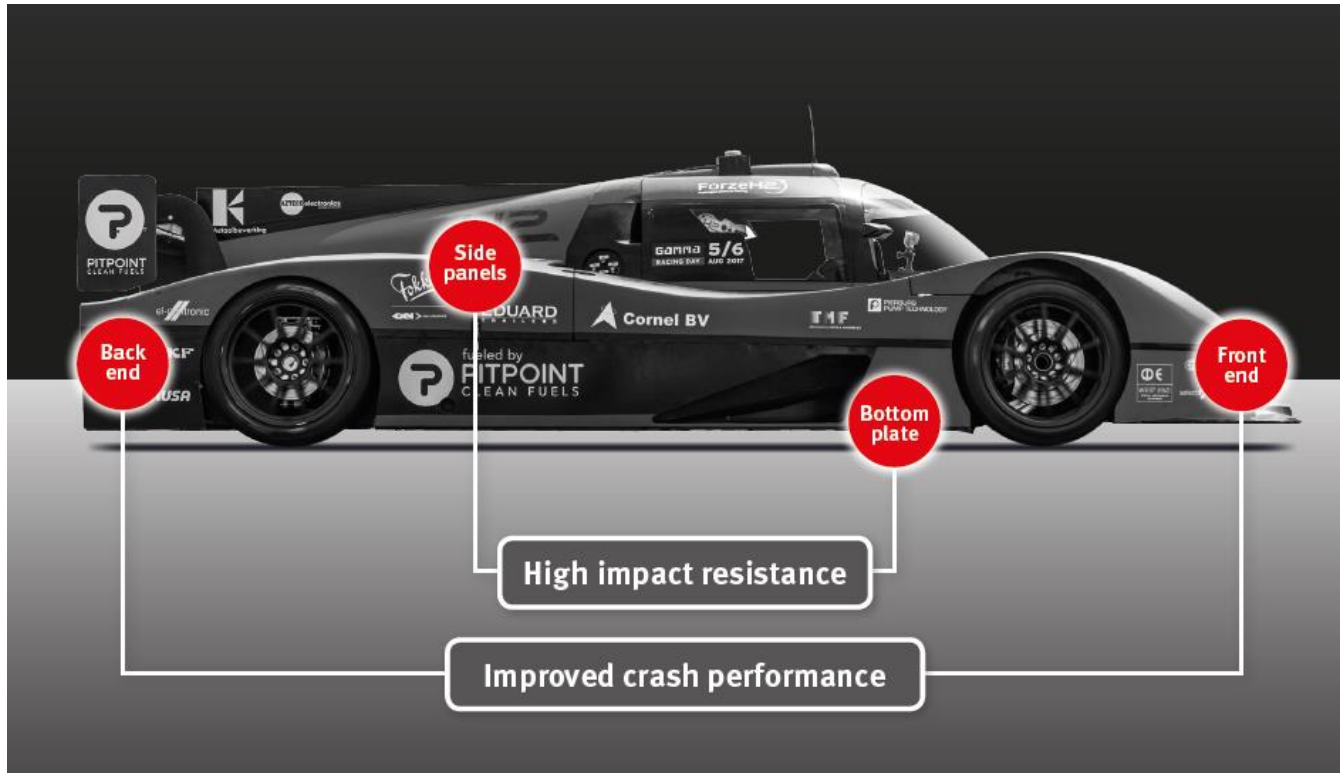




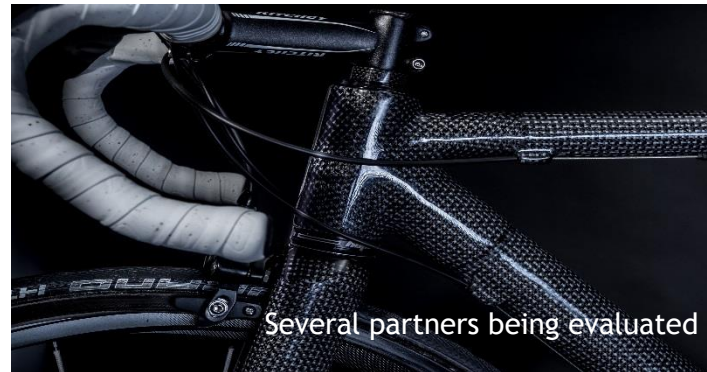
## DYNEEMA® CARBON HYBRID COMPOSITE

Increases impact and energy absorption by up to 100%  
Removing the Risk of Shattering  
Vibration Dampening

## 2 TU Delft Forze VII Hydrogen racing car



## 2 Dyneema® Carbon Composites



Developing key partnerships



# Innovation will continue to drive growth

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- DSM Dyneema's unique technologies will continue to:



Enable higher performance, sustainable materials



Spur solutions that can substitute steel and aramids



Drive innovative solutions that are lighter and stronger



Create new applications and segments for the world's strongest fiber™

DSM Dyneema is well-set to outgrow existing markets and create new segments





**BRIGHT SCIENCE. BRIGHTER LIVING.™**