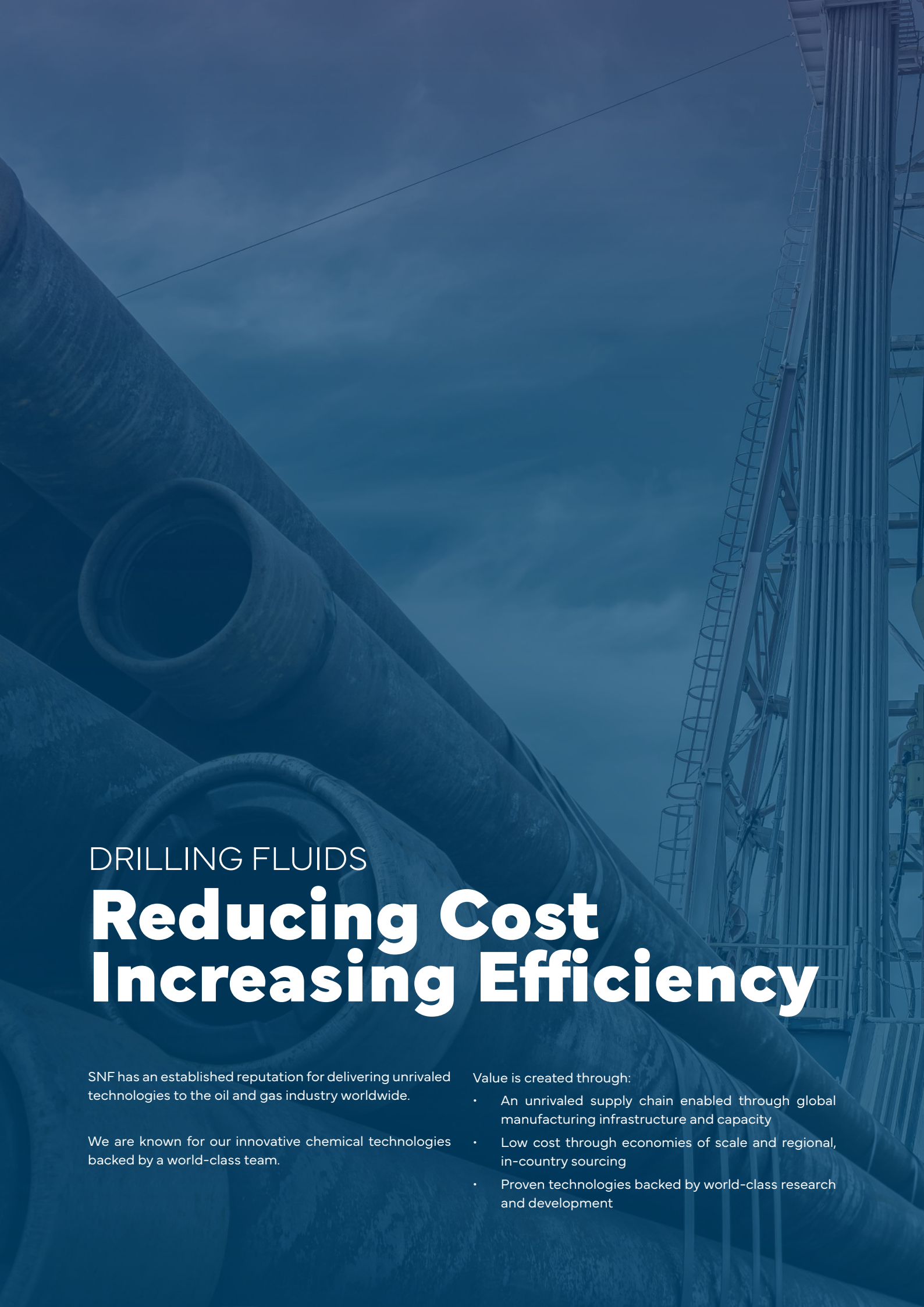




SNF
WATER SCIENCE

Oilfield Performance Chemicals
**DRILLING
& CEMENTING**



DRILLING FLUIDS

Reducing Cost Increasing Efficiency

SNF has an established reputation for delivering unrivaled technologies to the oil and gas industry worldwide.

We are known for our innovative chemical technologies backed by a world-class team.

Value is created through:

- An unrivaled supply chain enabled through global manufacturing infrastructure and capacity
- Low cost through economies of scale and regional, in-country sourcing
- Proven technologies backed by world-class research and development

WATER-BASED MUD ADDITIVES

Fluid loss control agents

SNF offers polymers for various conditions and requirements such as high-temperature stability and salt tolerance.

CONDITIONS	NAME	CHEMISTRY	PHYSICAL FORM	TEMPERATURE	SALINITY
Moderate to high temperature	HYPERDRILL AF 250	Anionic Polymer	Powder	Up to 325°F	Low
	HYPERDRILL AF 250 PLUS	Anionic Polymer	Powder	Up to 300°F	Freshwater

Clay Stabilizers (Shale Inhibitors)

SNF offers full range of polymers with various molecular weights and ionicities for use in most field conditions and types of clays.

NAME	CHEMISTRY	PHYSICAL FORM	MOLECULAR WEIGHT
HYPERDRILL NF 262 B	Nonionic polymer	Beads	Low
HYPERDRILL CP 956 B	Low cationic polymer	Beads	Low
HYPERDRILL CP 157	Polyamine polymer	Liquid	Very low
HYPERDRILL AE 853	Anionic polymer	Liquid emulsion	High
HYPERDRILL AF 207	Anionic polymer	Powder	High
HYPERDRILL NE 823 F	Nonionic polymer	Liquid emulsion	High
HYPERDRILL AF 207 RD	Anionic polymer	Powder	High

Viscosifiers

SNF has designed chemical solutions to help target the desired technical properties for different types of conditions.

NAME	CHEMISTRY	PHYSICAL FORM	TEMPERATURE	SALINITY
HYPERDRILL AE 853	Anionic polymer	Liquid	Up to 300°F	Moderate
HYPERDRILL AF 207	Anionic polymer	Powder	Up to 300°F	Moderate

Deflocculating Agents (Thinners, Dispersants)

SNF proposes a variety of polymers for the use of clay / water-based muds in both powder and liquid versions. These products are specially designed for low, medium, and high-temperature conditions that prevent the high-temperature gelation of muds by deflocculating bentonite, making the fluid pumpable with low static shear strength.

NAME	CHEMISTRY	PHYSICAL FORM	TEMPERATURE	SALINITY
HYPERDRILL DF 2010	Acrylate polymer	Liquid	Up to 250°F	Low to moderate
HYPERDRILL DF 2020	Sulfonated polymer	Liquid	Up to 300°F	Moderate to high

Lost Circulation Materials (LCM)

Using a superabsorbent based polymer is a technical solution to partially or permanently plug a zone and provide consolidation of weak formations created during the drilling phase.

NAME	CHEMISTRY	SALINITY CONDITIONS	PHYSICAL FORM
HYPERDRILL AP 200 A	Superabsorbent polymer	Fresh water	Powder
HYPERDRILL AP 238*	Superabsorbent polymer	Low to high salinity	Powder

** Can also be proposed as fluidized polymer suspension (or FPS) in an oil phase. Both products can be proposed in various particule size distributions.*

Bentonite Extenders

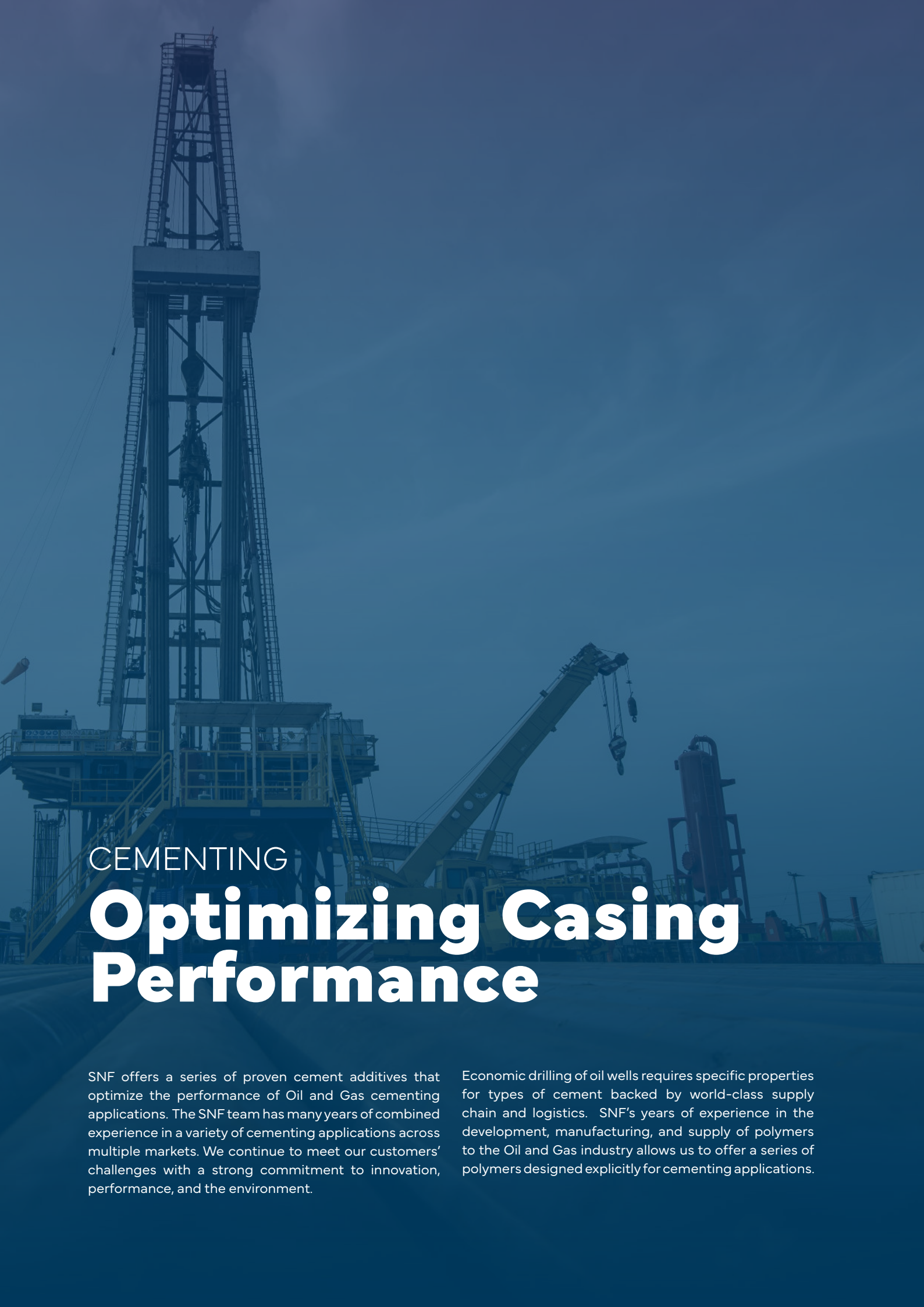
Bentonite extenders are extending agents with superior solubility, which generates quick viscosity with minimal bentonite addition. SNF offers polyacrylamide-based polymers that are known to be as effective in a freshwater environment.

NAME	CHEMISTRY	ANIONICITY LEVEL	PHYSICAL FORM
HYPERDRILL AF 251	Polyacrylamide polymer	Very high	Powder
HYPERDRILL AF 251/B	Polyacrylamide polymer	Very high	Beads

Oil-based mud additives

SNF also proposes viscosifiers for oil-based mud compositions as a latex polymer that displays high performance characteristics:

NAME	PRODUCT DESCRIPTION	PHYSICAL FORM
HYPERDRILL AE 974	Latex based polymer	Liquid
HYPERDRILL AE 975 EG	Specific version for very cold weather conditions	Liquid



CEMENTING

Optimizing Casing Performance

SNF offers a series of proven cement additives that optimize the performance of Oil and Gas cementing applications. The SNF team has many years of combined experience in a variety of cementing applications across multiple markets. We continue to meet our customers' challenges with a strong commitment to innovation, performance, and the environment.

Economic drilling of oil wells requires specific properties for types of cement backed by world-class supply chain and logistics. SNF's years of experience in the development, manufacturing, and supply of polymers to the Oil and Gas industry allows us to offer a series of polymers designed explicitly for cementing applications.

CEMENTING

Cementing Fluid Loss Additives

SNF offers a full range of chemicals for various conditions and requirements such as high-temperature stability and salt tolerance.

CONDITIONS	NAME	CHEMISTRY	PHYSICAL FORM	T°	SALINITY	VISCOSITY IMPACT
Low to high temperature	FLOSET FL 25633	Sulfonated polymer	Liquid	Up to 300°F	Moderate	No
High temperature conditions	FLOSET OF 6430	Sulfonated polymer	Powder	Up to 350°F	High	Moderate

Deflocculating (thinners, dispersants, retarders)

In SNF, we offer a variety of polymers in both powder and liquid forms for cementation. These polymers are specially designed for low, medium, and high-temperature conditions that improve cement slurries' rheological profile by breaking up cement agglomerates of the fine cement particles.

NAME	CHEMISTRY	PHYSICAL FORM	TEMPERATURE	SALINITY
FLOSET OD 2010*	Acrylate polymer	Liquid	Up to 250°F	Low to moderate
FLOSET OD 2020*	Sulfonated polymer	Liquid	Up to 300°F	Moderate to high

* Can also be proposed in powder form.

Plug and Abandonment

SNF proposes a technical solution with FLOSET GEL 500 that exhibits no viscosity at the surface, yet it forms a robust permanent plug downhole after being activated by a secondary P&A agent.

NAME	DESCRIPTION	PHYSICAL FORM
FLOSET GEL 500	Catalyzed technology	Liquid

Drilling & Cementing Services

IMPROVING WELL PERFORMANCE, REDUCING NON-PRODUCTION TIME

SNF has laboratories in the U.S., France, China, and India that are able to develop water-based drilling fluids similar to those found in the field. These formulations can be tested with a variety of SNF polymers to enhance your specific application objectives.

SNF offers assistance in testing cement recipes in both our French and US based Oil & Gas laboratories.

Whether it is fluid loss, setting time, free water & sedimentation tests, SNF has the capability to pre-screen and select the most suitable cementing additive for the customer's application.



WATER SCIENCE

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