UTTO Lubricants: Complete performance for transmission, hydraulic systems and wet brakes

Eason Yang / Leandro Laurentino
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Yang Chao (Eason Yang)
Industrial Products R&D Manager

- **Fifteen years** of experience in lubricant technology and holds over **twenty patents.**
- Responsibilities includes **R&D** of wide range of products including **Industrial lubricants, MWF, Driveline lubricants.etc;**
- Under the leadership of Yang Chao, Richful R&D team has developed various industrial oil packages, **ATF**, **ETF**, and **UTTO** additive packages, all of which have achieved industry-leading standards.

THF Speaker

Leandro Laurentino
Richful Technical Manager for LATAM

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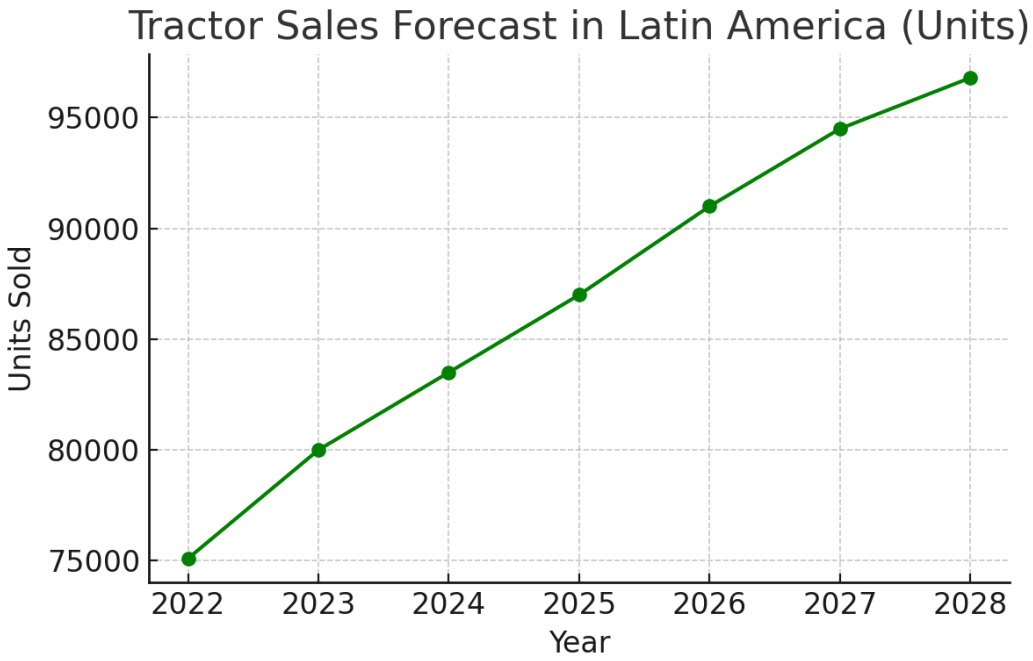
Tractor Market Summary – Latin America

- ≈ 75,100 units sold in 2022 → projected 96,800 by 2028 (CAGR: 4.3%)
- Market revenue: US$ 3.7B (2023) → US$ 5.8B (2030)
- Growth drivers: credit access, high demand, mechanization



Market Breakdown by HP Segment

- 50–100 hp: Largest volume segment in 2022, valued for its versatility in mixed crops
- >100 hp: highest revenue contributor (36.8% in 2023) It also grows in the high-power segment in South America, driven by sugar cane and soybeans.
- <40 hp: Smaller tractors make up a large portion of the compact tractor market, a segment that had revenues of US$756.7 million in 2024 and is expected to grow at a CAGR of 7.5% through 2030

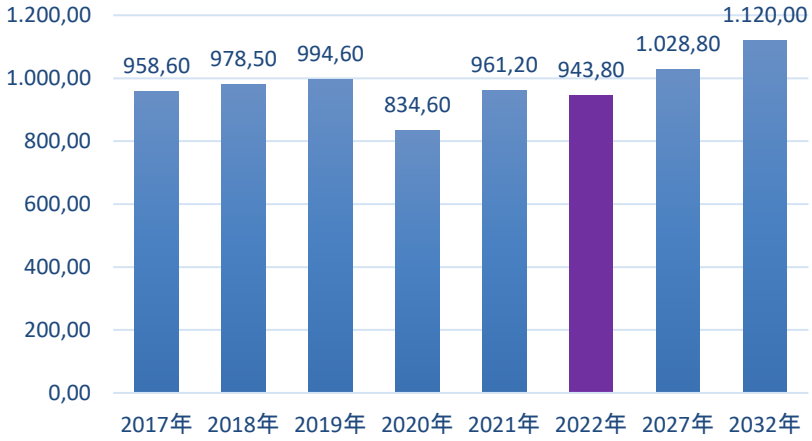
Key Country Markets in LATAM

- Brazil: 40%+ of regional revenue
- Argentina: strong local production
- Mexico, Colombia: growing demand supported by policy

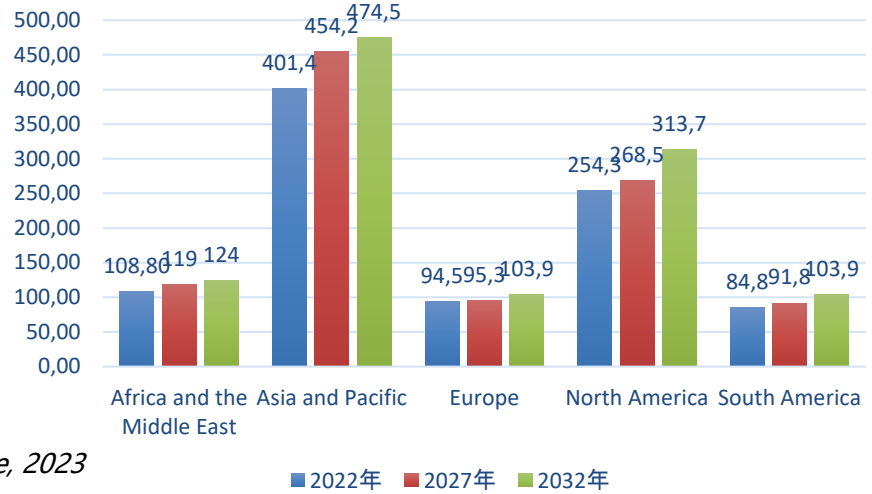
Global THF Market

- The global THF market capacity reached 943 Ktonnes in 2022 and is expected to reach 1028.8 Ktonnes in 2027 and 1120 Ktonnes in 2032
- From the regional perspective, the Asia-Pacific and North America markets have a large overall capacity and a fast growth rate. In 2022, the Asia-Pacific market was 401.4 Ktonnes, for about 42.5% of the global market.

THF（Hydraulic and Transmission Fluid）Demand, Ktonnes

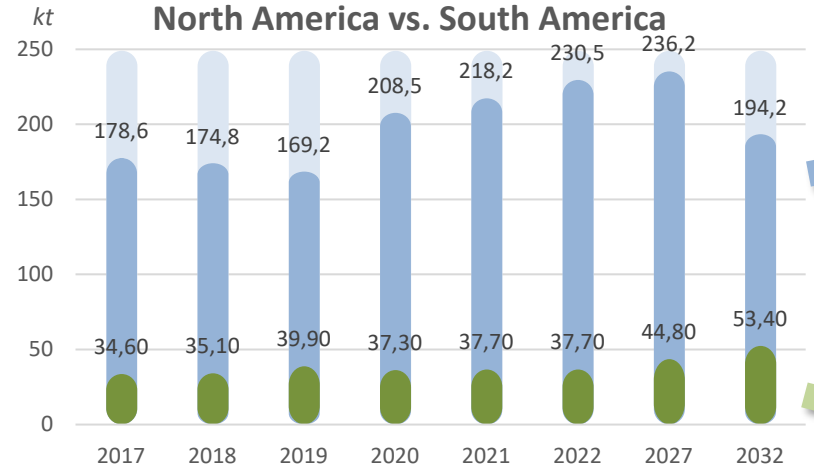


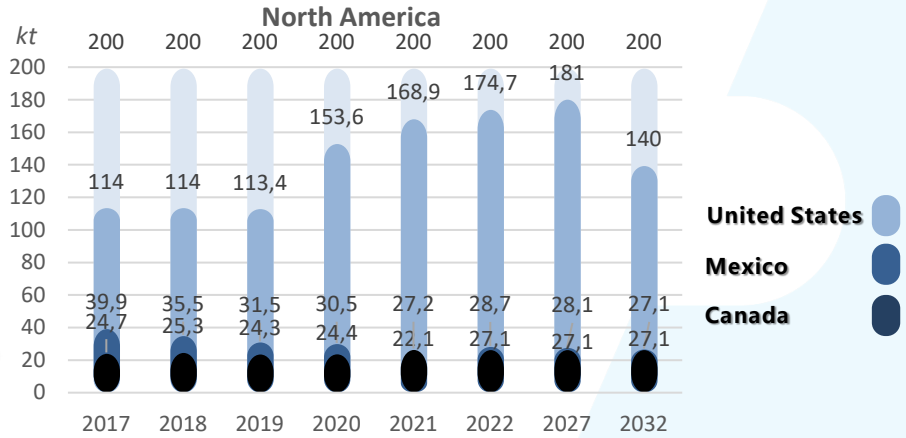
THF（Hydraulic and Transmission Fluid）Demand (Different Area）, Ktonnes

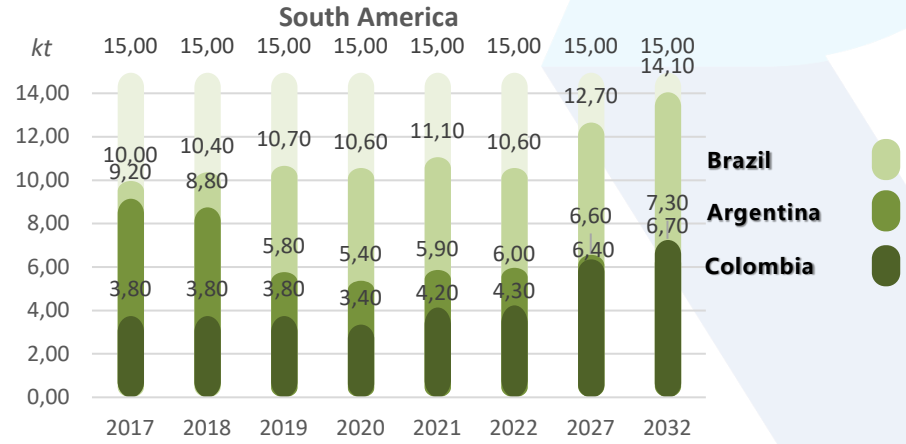


Data source：Kline, 2023

THF Market Volume – North and South America





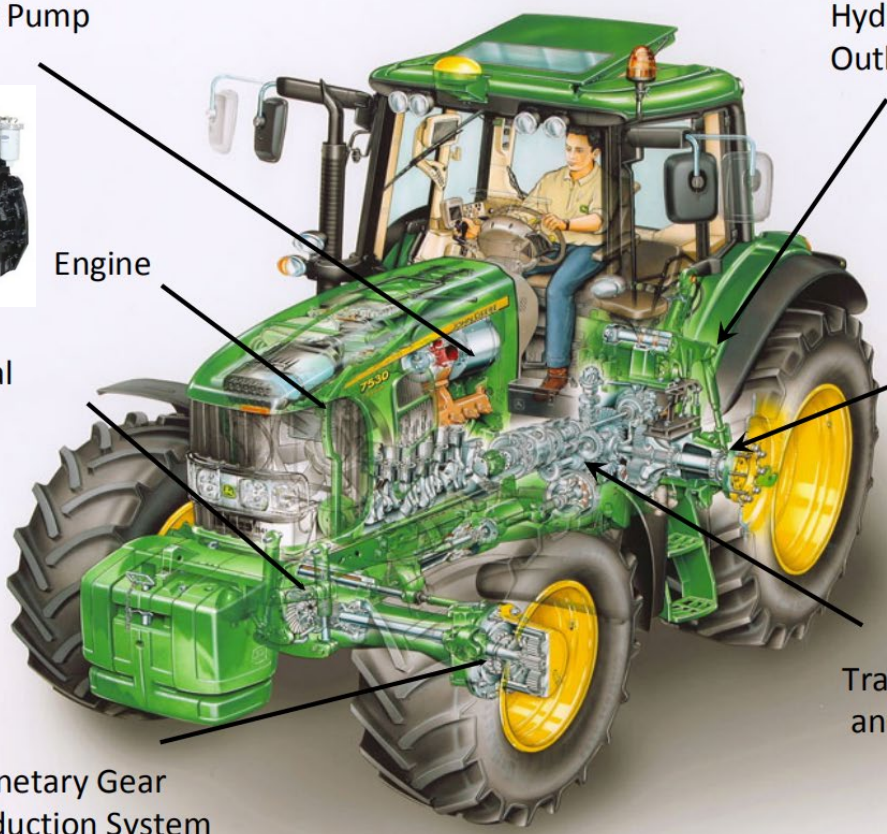


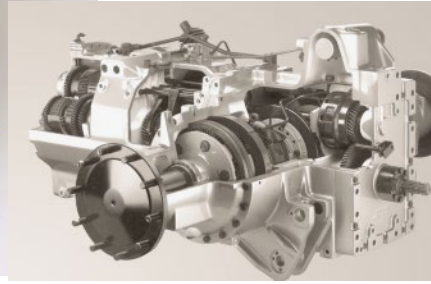
Data source: Kline, 2023

Market Implications

- Positive growth across all segments and power ranges
- Formulations compatibility with local base oils is a differentiator
- OEM collaboration and targeted regional approach are key
- Focused approach by region and HP class recommended

THF (STOU&UTTO）





THF are a balance of properties

- ✓ Good compatibility with *moisture*, but must not cause corrosion
- ✓ Must meet the *friction characteristics* of both transmission clutches and wet brakes, the excellent balance of *dynamic and static friction coefficient*
- ✓ Need to ensure good low-temperature *viscosity* also provide adequate protection at high temperatures ;
- ✓ Need to meet *the EP performance for gears and the anti-wear requirements* of various pumps
- ✓ Excellent resistance to *foaming, rust and oxidation*
- ✓ Need to be suitable for a *wide range of equipment*

Slip
Setbck
Noisy

Tests

Test methods

Shift Performance

SAE#2, SSP180

Anti-corrosion

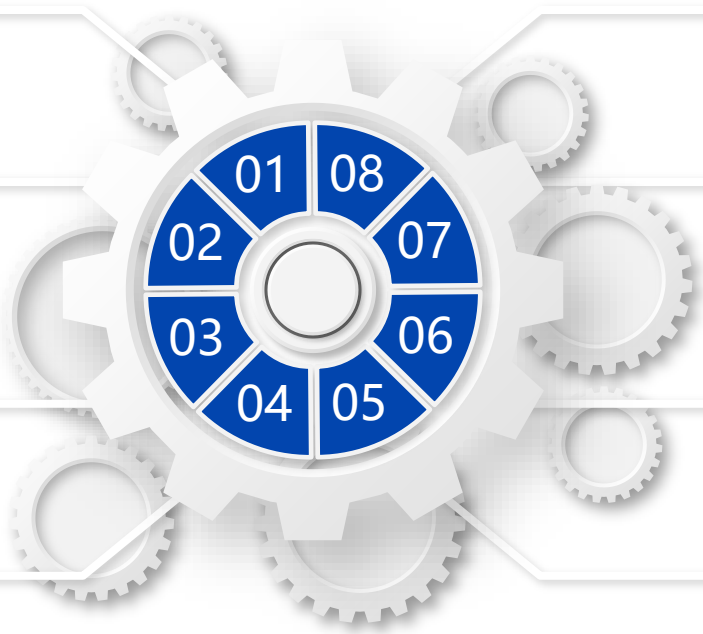
Steel rod corrosion, copper corrosion

Anti-wear

FZG Gear pitting, FE-8 bearing, Hydraulic pumps

EP

Four-ball wear spots, FZG load capacity



Anti-oxidation

ISOT,THOT,DKA,,JZ T JDQ183

Foam

Anti-foam test

Low temperature viscosity

SAE J306, GB/T17477-2012

Shear stability

KRL,JDQ102B

OEMS specifications & product standard

OEM specifications

Manufacturer	Specification
John Deere	*JDM J-20C/D*
Case New Holland	CNH MAT 3525/3540/3526 (winter)
AICO Group - Mas Ferguson	Massey Ferguson CMS M1145 M-1135/M1141(Permatran II)/M1143
Kubota	Kubota super UDT 2
Allison	Allison C-4
Ford	Ford M2C134D/M2C86-B
Parker	Denison UTTO HF-0 HF-2
Eton	Eaton Vickers (Mobile hydraulic systems -Broture 694)
China	JB/T 7282, SH/T 6034

OEMS specifications & product standard

Richful

Focus of common international OEM specifications

Massey FergusonM1145	Viscosity	Corrosion protection	Gear protection	Thermo-oxidative stability	Seal compatibility	Filtration	Clutch Friction Performance	Brake Friction Performance	Synchroniser performance	Hydraulic Pump Performance
Massey Ferguson M1145	√	√	√	√	√	√	√			√
John Deere J20C	√	√	√	√	√		√	√		√
Case MAT 3525	√	√	√	√	√		√	√	√	√
ZF(multiple)	√	√	√	√	√		√			
Ford M2C 134D**	√	√	√	√	√		√	√		√
Ford M2C 86C**	√	√	√	√	√		√	√		√
Massey Ferguson M1143**	√	√	√	√	√	√	√			√

Formulations

	Viscosity Index Improvers (VII)	Pour Point Depressant	Detergent dispersant	Antioxidants	Rust inhibitor	Antiwear agent	Extreme pressure agent	Antifoaming agent	Demulsifying agent
Viscosity Index Improvers (VII)		(+)	○	○	○	(+)	○	(--)	○
Pour Point Depressant			○	○	○	○	○	○	○
Detergent dispersant				+	+	--	--	(--)	--
Antioxidants					+	(+)	○	○	○
Rust inhibitor						--	--	○	--
Antiwear Agent							+	○	(--)
Extreme pressure agent								○	(--)
Antifoaming agent									○
Demulsifying agent									

+: cooperativity; --: antagonism; ○: no effect

THF solutions

25-70HP, MT
Dry-Brake;
JB/T 7282
SH/T 6034

N100D

70-200HP
Wet-Brake
JB/T 7282
SH/T 6034

N100D & UTTO

>200HP,PST
Wet-Brake
John Deere J20C/J20D
Allison C4 Heavy Duty
.....

UTTO

UTTO PLUS
CH-4

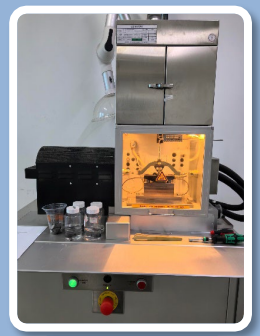
STOU

6.4 Solutions of Richful

Fluid	JDM J20C/J20D	Standard Oil	Optimal solution	Comment
JDQ96，Wet brake performance，Relative Capacity（30000cycles)	Better than reference oil	346,091	380,018	Higher = better
JDQ96，Wet brake performance，Torque Variation （30000cycles)	Better than reference oil	55,500	40,277	Lower = better
CEC L-48, Anti-oxidation, Viscosity increase ,40℃,%	≯100	20.9	0.6	Lower = better
JDQ183, TZT OXIDATION TEST, Viscosity Changed@40℃ ,%	≯100	18.2	2.3	Lower = better
JDQ94, Final Friction Coefficient During Stall Test	≥0.08	0.12	0.133	Higher = better
JDQ190, LOW SPEED SPUR GEAR WEAR TEST, Total Loss, mg	-	52	27	Lower = better

Test Equpments for THF applications

FZG



SRV

MTM2

DKA

SAE NO.2

LVFA

Volume Resistivity

Timken

FE8

Dielectric Strength

Third-party Lab

Thank you for your attention

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