Power Systems Research

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PSR-JCB Construction Webinar

November 30th, 2020

PSR-JCB Construction Industry Trends Webinar

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Global Market Research

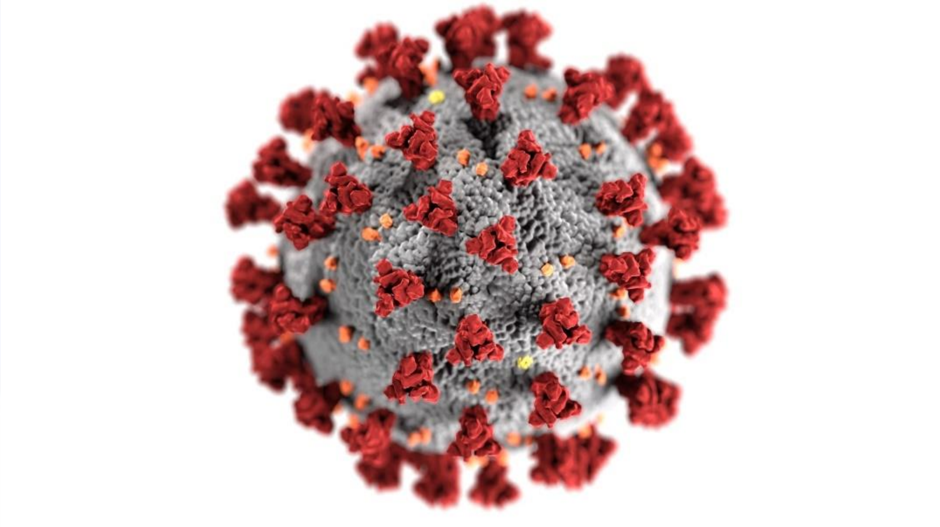
industry data & forecasting

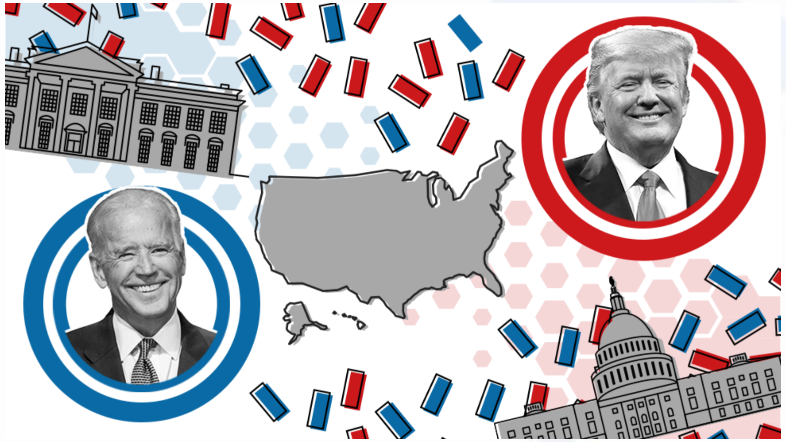
Utilized by engine manufacturers, OEMs, component and parts suppliers, associations, financial analysts, publications and more.

JCB
POWER SYSTEMS
Powerful Possibilities

JCB is one of the world's largest construction equipment brand by volume, It produces a wide range of construction equipment including its own engines. It is family owned and this year celebrated is 75th Anniversary.

PSR-JCB Construction Industry Trends Webinar





PSR-JCB Construction Industry Trends Webinar Agenda

Propulsion Solutions for The Construction Industry
Daniel Jackson, JCB Power Systems Ltd, OEM Engine Sales and Applications Manager

Europe Construction Forecast.
Christopher Bamforth, Power Systems Research – European Market Analyst

North & South America Construction Forecast.
Lorena Violante, Power Systems Research – Senior Market Research Consultant

Q&A.
Emiliano Marzoli, Power Systems Research – Manager of European Operations

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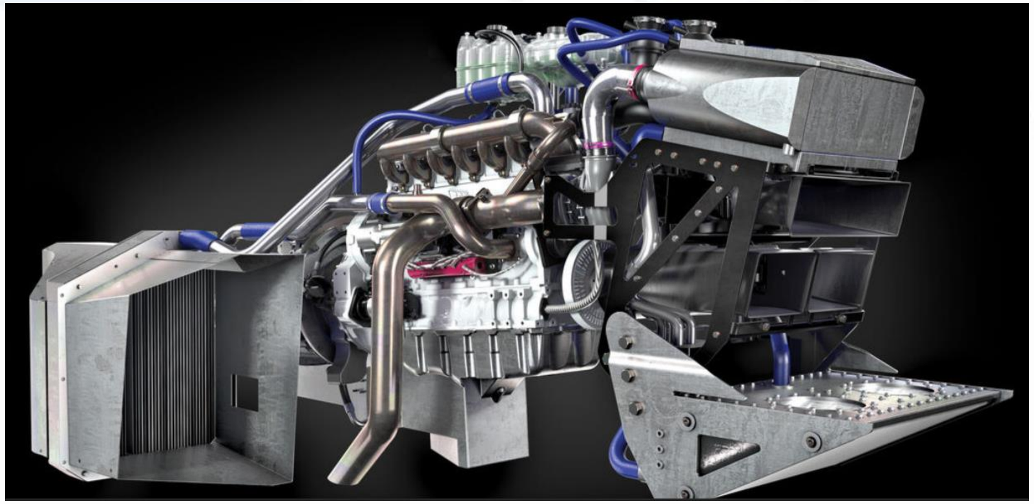
Agenda

- Who we are?
- COVID-19
- EU Markets
- NA/SA Markets
- Propulsion Solutions
- Operational Solutions



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The JCB Engine Story

A Father's Dream

2009 - OEM Sales Commenced

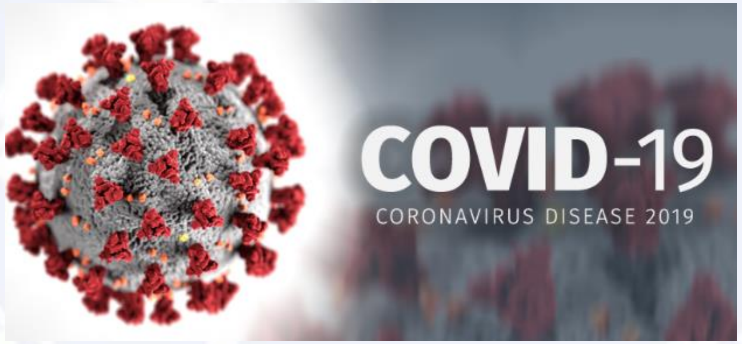
A Son's Reality

- **2000** – Start of '444' engine program
- **2004** – Launch T2 Mech.
- **2006** – Launch T3 Common Rail
- **2008** – Launch T3 Mech.
- **2010** – Launch BS3
- **2012** – Launch 6 Cylinder; Launch T4i
- **2014** – Launch T4f
- **2016** – 400,000th engine
- **2017** – Open JCB Machining center
- **2018** – 430 engine launch
- **2019** – #WFT 150mph
- **2020** – +56kW Stage V

Complete Propulsion Solution

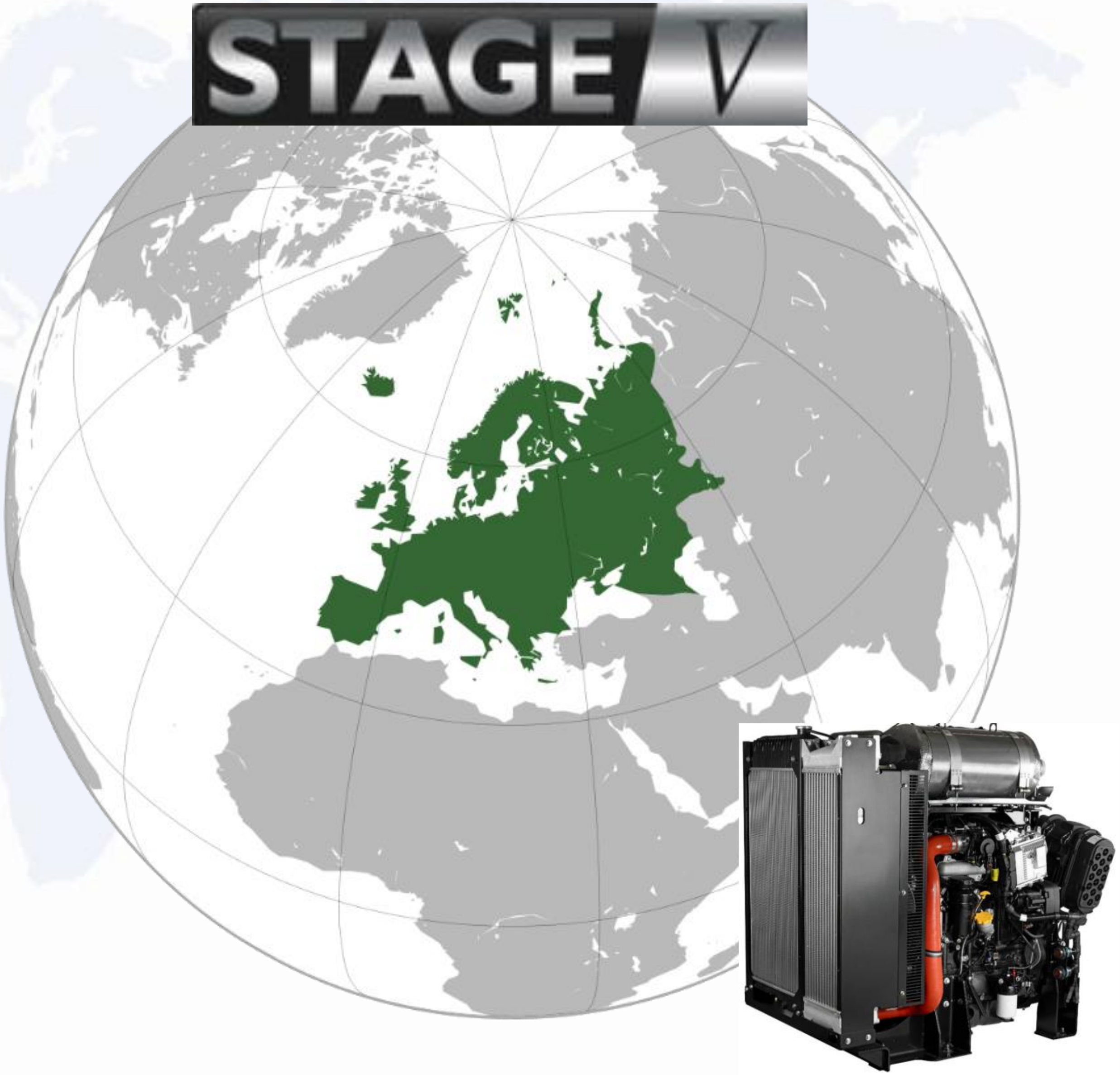
COVID-19

- Effects
  - Every level
  - Structure and process
  - Still ongoing
- Actions
  - Safe working practices
  - Reductions and efficiency
  - External help
- Outcomes
  - Need for data
  - Respond in the right way
  - Solution providers & partnerships
- Future and lessons learnt
  - The new face to face
  - Engineering support
  - Telematics
  - Ability to respond



European Engine Market

- Brexit
    - No deal likely
    - Be ready
    - Tariffs
- Stage V
    - Main development driver
    - DPF standard
    - Selection is key
- Driver for Alternative Fuels
    - At the centre of development
    - Plenty of option, no single solution for all
- Stage V uptake for GDrive
    - Commodity market
- Flexible, complete solutions
    - Control and functionality focus
    - Engine manufactures support



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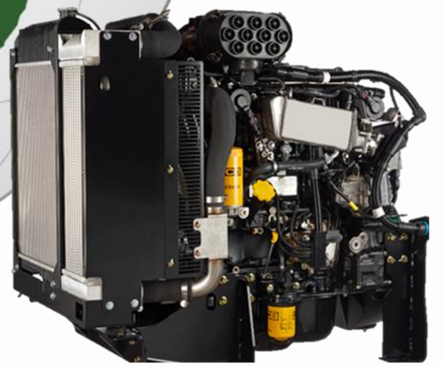
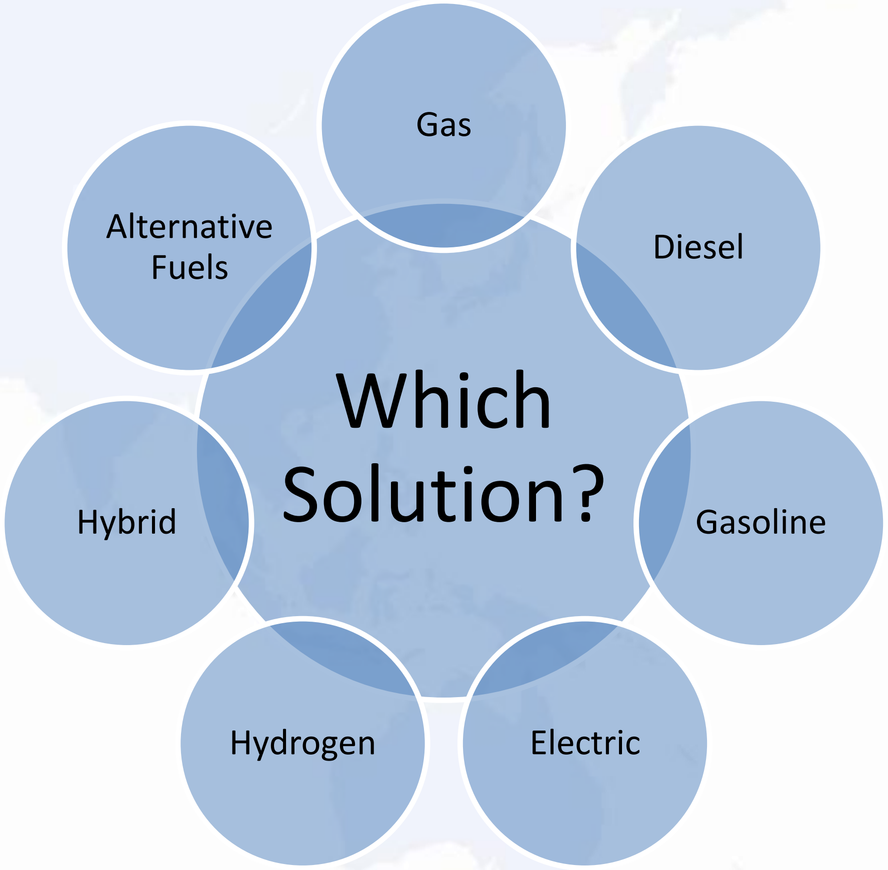
NA/SA Engine Markets

- Tier 4 now - Tier 5?
  - Technology is well known
  - New administration on the way – Effects?
- S/A - very different
  - Instability
  - Need in-country manufacture
  - Lower technology requirements
  - Fuel quality and infrastructure
- Spark Ignition
  - Prominent use
  - Lower cost and route to LPG and CNG
- Continued growth
  - Large growth market
  - Power gen need
  - Local tender driving fleet updates
- Specific products
  - Development of EPA/CARB certified



Propulsion Solutions

- Sustainable solutions
    - Most are in the race
    - Expectation for production
- Biggest development driver after emission compliance
    - Focus shift from Emission compliance
    - Different applications, different solutions
- No one size fits all
    - Natural fits
    - Further development for higher power nodes
    - Integration support and design partnerships
- More than just an engine change
    - Need to be robust and sustainable
    - Diesel is not dead



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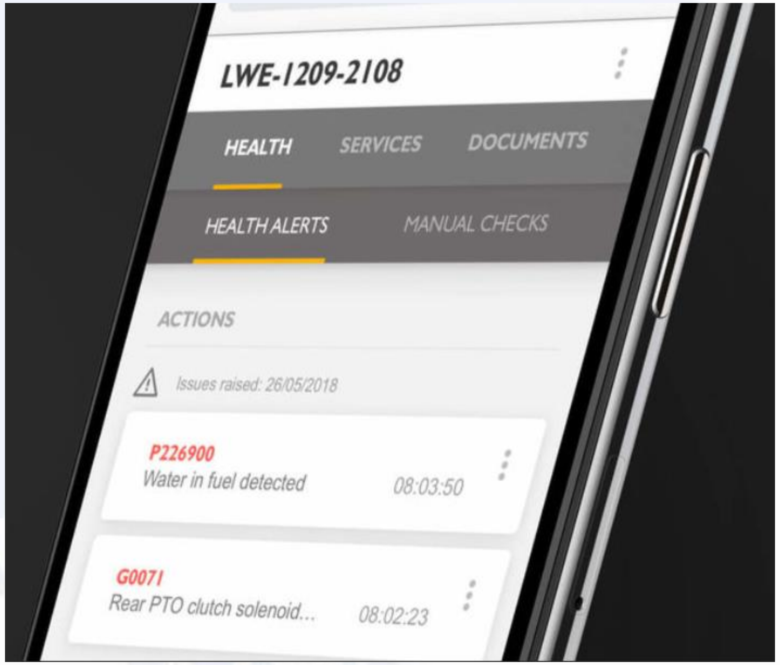
Operational Solutions

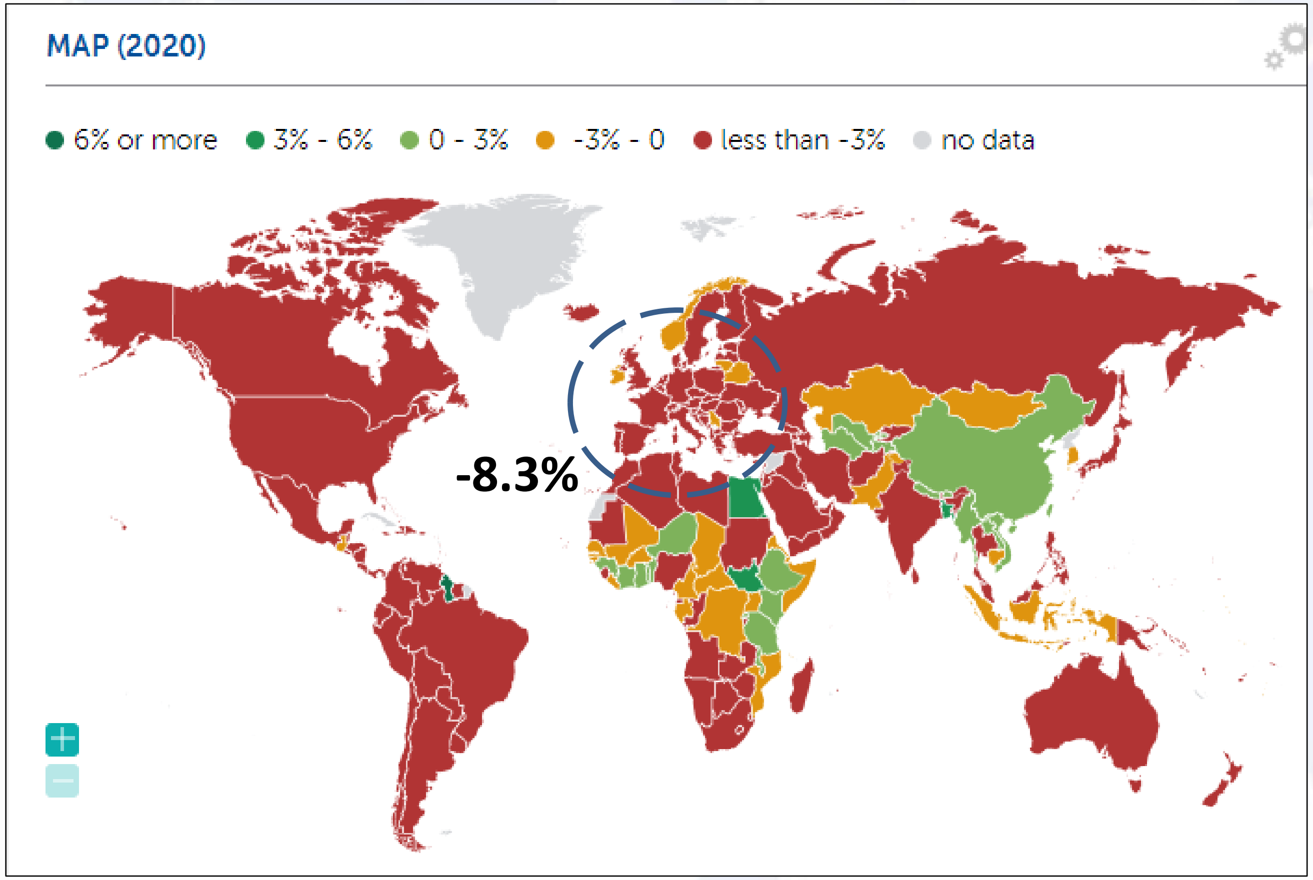
- Video conferencing
  - Here to stay
- Telematics
  - Essential engine data
  - Better support
- Augmented Reality –AR
  - Better interface
  - Sales benefits
- Virtual exhibitions
  - Virtual access
  - Cost reduction



Summary

- COVID is ongoing - effects causing review of operational processes and structure
- EU market driving alternatives, North America providing growth and South America maintaining lower technology solutions
- Alternatives race is on, no one size fits all and application dependant. Infrastructure will be key along with integration support
- Video conferencing and virtual exhibitions are become the norm. Use of technology to support product selection and service
- Exciting time, while diesel is not dead, focus is on removing the true source of emissions in Off Highway sector. A future of Powerful Possibilities.

Europe – Economic Outlook



Source: IMF.com

GDP GROWTH%	2019	2020 Fcst	2021 Fcst
Germany	0.6%	-6.0%	4.2%
France	1.5%	-9.8%	6.0%
Italy	0.3%	-10.6%	5.2%
Spain	2.0%	-12.8%	7.2%
United Kingdom	1.5%	-9.8%	5.9%
EURO AREA	**1.3%**	**-8.3%**	**5.2%**

- COVID 2nd wave - 2020 slow recovery
- 2021 won´t reach 2019 levels
- European Parliament and EU countries - recovery plan and stimulus package (€15 billion)
- Early debates on EU leveling the playing field for foreign subsidies
- Uncertainty; Brexit – US elections

Europe – Construction Industry Outlook

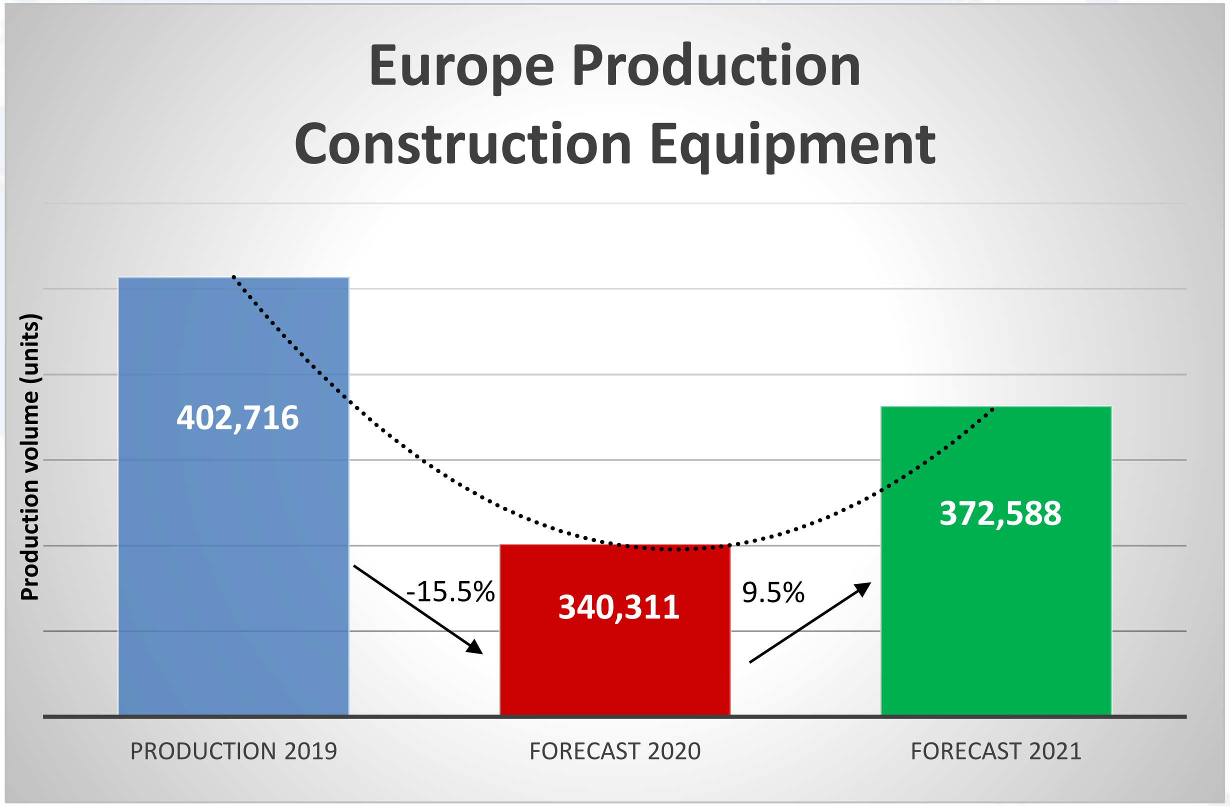
- Construction machinery was very strong and was expected to continue growing pre-crisis
- Companies focused on cutting cost and increase liquidity
- Construction 2020: -20% vs 2019

  2021: -10% to -15% vs 2019
- Eastern Europe performance remains poor; Western Europe tougher situation (Italy, France, and Spain)

Europe – Construction Equipment

Top Construction Equipment Produced:

1. **Excavators**
2. **Plate Compactors**
3. **Wheel Loaders**



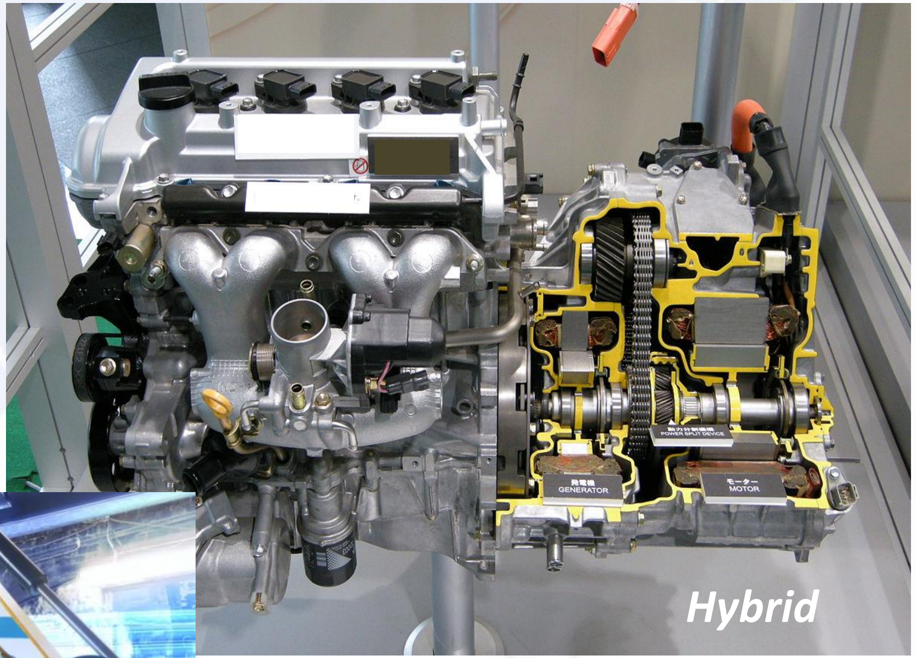
Source: OLink™ Production – Forecast Database

Europe – Construction Alternate Drives

- Small applications → electric
- Larger applications → alternative fuels

- Real world prototype testing

- Government, institutions, OEMs working together



Hybrid

JCB 19C-1E Electric Mini Excavator

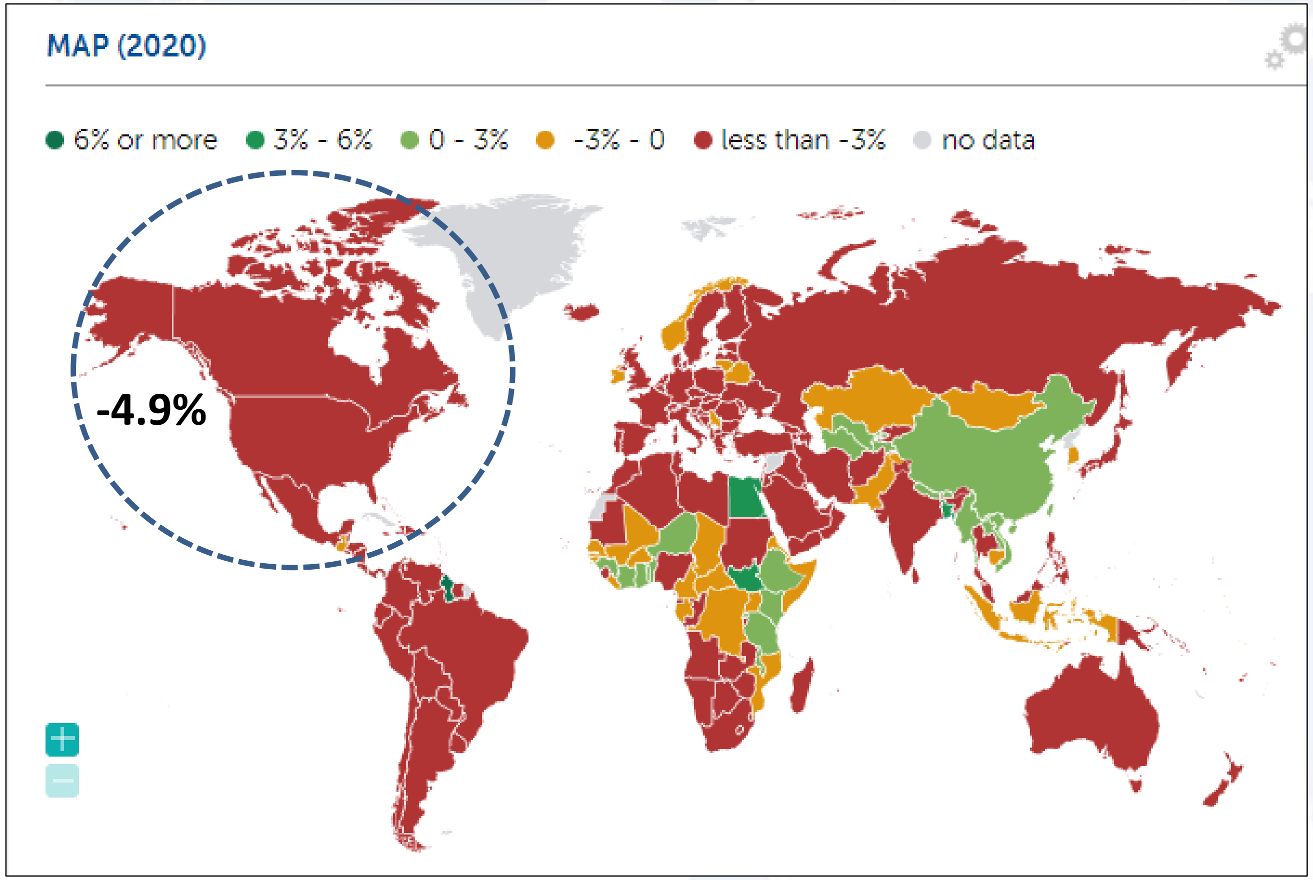
Europe – OEM Happenings

- **Wacker Neuson**
  - Zero emissions focus
- **JCB**
  - Mini electrics
  - Long standing customers
- **Caterpillar**
  - First elevated sprocket electric drive
  - Tough 3rd quarter
- **Atlas Copco**
  - Held an extraordinary general meeting for all shareholders

- **Liebherr**
  - New generation dump trucks Stg V
  - Partnership with VA Erzberg

- **Volvo**
  - Very good Q3 orders intake up 40%
  - Launch of new F generation
  - Early adoption of autonomous transport

North America – Economic Outlook



Source: IMF.com

GDP	2020	2021 FCST
United States	-4.3%	3.1%
Canada	-7.1%	5.5%
Mexico	-9.0%	3.5%
NORTH AMERICA	**-4.9%**	**4.5%**

- U-Shaped economic recovery - slow
- COVID-19 gradual control
- Governments economic stimulus programs vary
  - U.S. $2.2 trillion stimulus package
  - Canada $2.2 Bill businesses; $5.8 Bill health
  - Mexico 0.2% GDP (healthcare) 0.5% GDP (businesses & households)

North America – Construction Industry Outlook

- Governments bids and infrastructure investments on hold/cancelled

- Construction is an essential sector for economic health
  - Lockdowns not at 100%
  - New ways of working

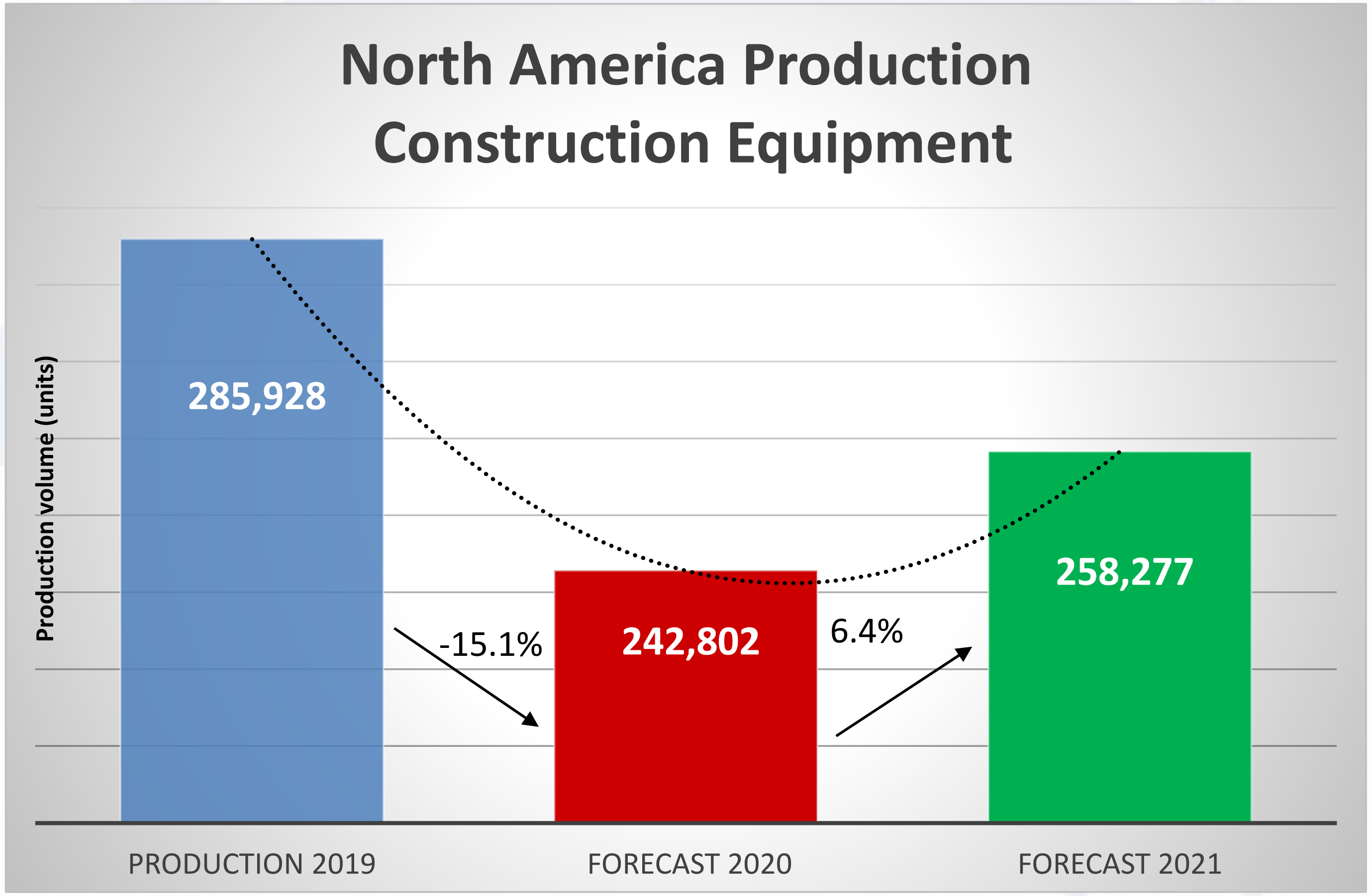
- Canada: weak, non-residential -8.5% residential +1.6%; recovery by 2023
- U. S. : down by 8% ; recovery by 2023
- Mexico: down by 19%; uncertainty and no expected growth

North America – Construction Equipment




Top Construction Equipment Produced:

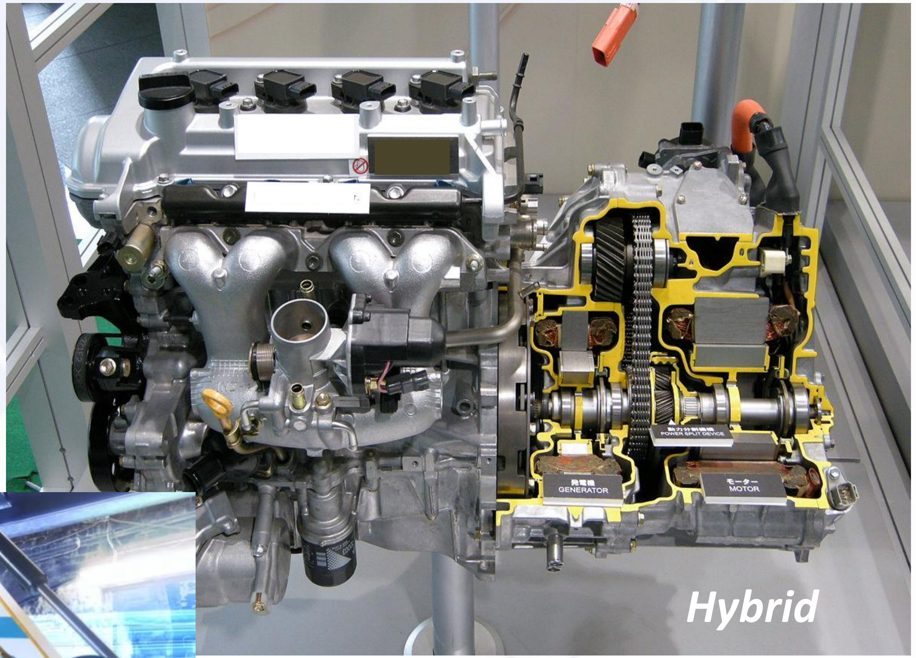
1. **Skid Steer Loaders**
2. **Mixers**
3. **Finishing Equipment**
4. **Wheel Loaders**



Source: OE Link™ Production – Forecast Database

North America – Construction Alternate Drives

- Today´s alternative drives: diesel, gasoline, LPG
- Key drivers: emission and noise regulations, TCO, pollution
- OEM challenges:
  - Understand customer needs
  - End users understanding benefits
  - Offer a complete alternate drives range
- IC: HD / MD / Small equipment
- Hybrid: MD equipment
- Electric: Small equipment


Hybrid

JCB 19C-1E Electric Mini Excavator

North America – OEM Happenings

- **Caterpillar**
  - Q3 Revenue -23%
  - Strong balance sheet position
  - Supporting customers during pandemic
- **Bobcat**
  - WW Leader compact equipment
  - Next is now: new technology
- **Deere**
  - All U.S. production facilities operating
  - 2020 full year revenue -9%
  - 2020 Q4.5% above 2019 Q4
- **Multiquip**
  - Small equipment
  - Prescence NA, SA, Europe, Asia
  - Track-drive Power Buggy with pivot dump

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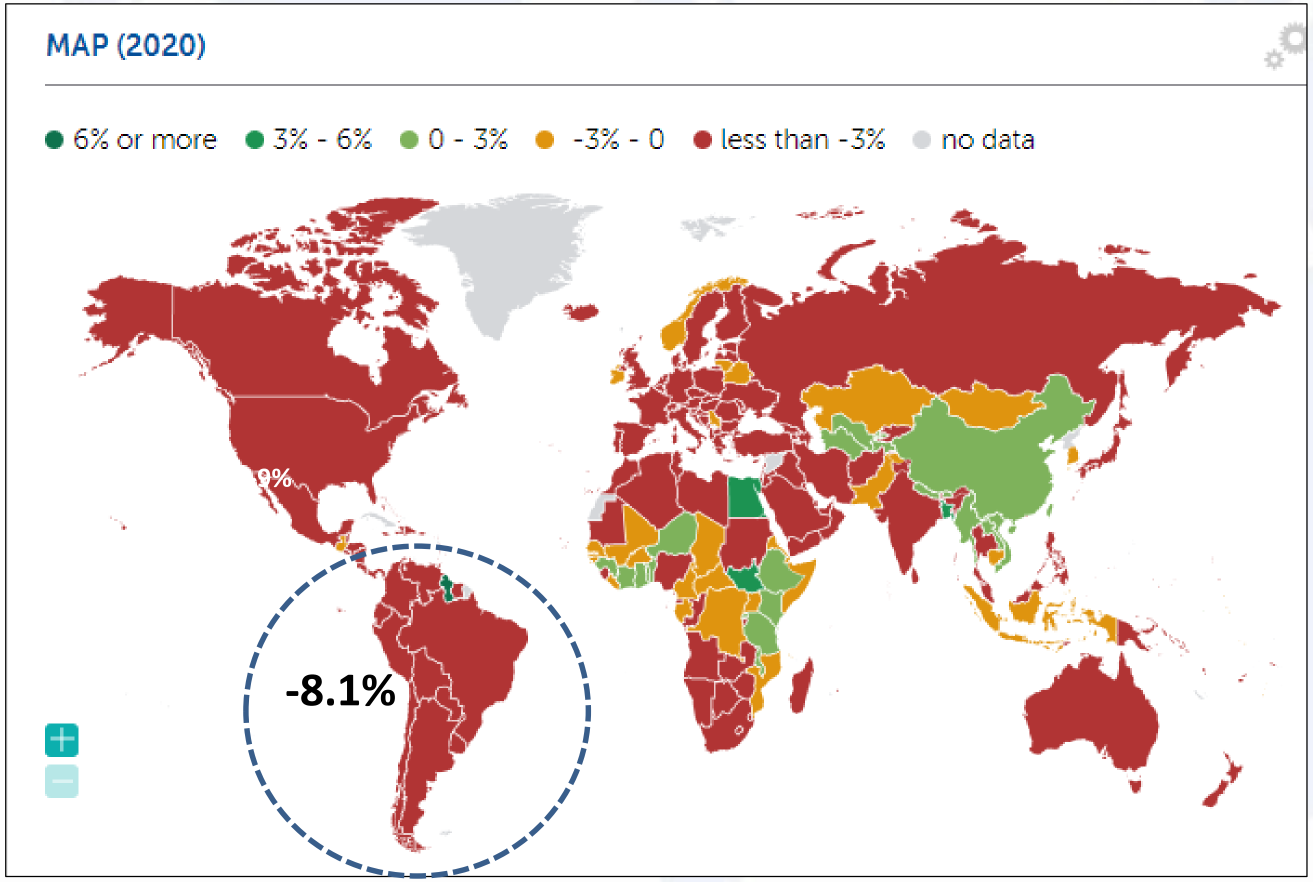
INTRO | REGIONAL OVERVIEW | TRENDS | OEM HAPPENINGS | Q&A

South America – Economic Outlook



Source: IMF.com

GDP	2020		2021 FCST
Brazil	-5.8%		2.8%
Argentina	-11.8%		4.9%
Chile	-6.0%		4.5%
Colombia	-8.2%		4.0%
SOUTH AMERICA	**-8.1%**		**3.6%**

- U-Shaped economic recovery – strong slowdown
- COVID-19 gradual control
- Governments assigned an economic stimulus package
- IMF – Emergency financial support to 17 countries (US $5.2 bill)

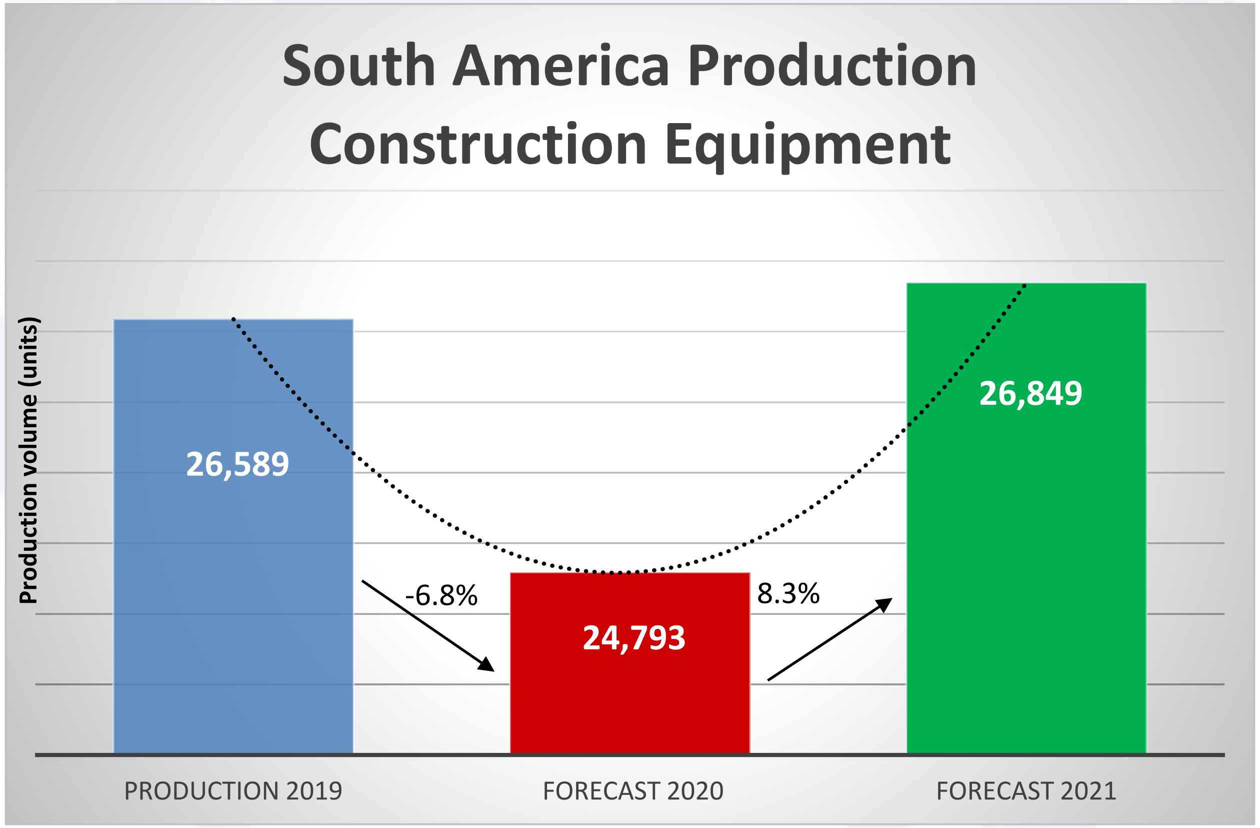
South America – Construction Industry Outlook

- **Brazil**
  - Most projects remain in progress (88%)
  - Only producer in the region – exports slight fall
  - Some bidding projects approved
- **Argentina**
  - Contraction by 23.5% in 2020, -5.4% in 2021
  - Difficult economic conditions before COVID
- **Chile**
  - Industry to decrease by 7.7% in 2020
  - Lost jobs – 40,000
- **Colombia**
  - Slowdown (-8.6%)
  - Recovery key to reactivate economy

South America – Construction Equipment

Top Construction Equipment Produced:

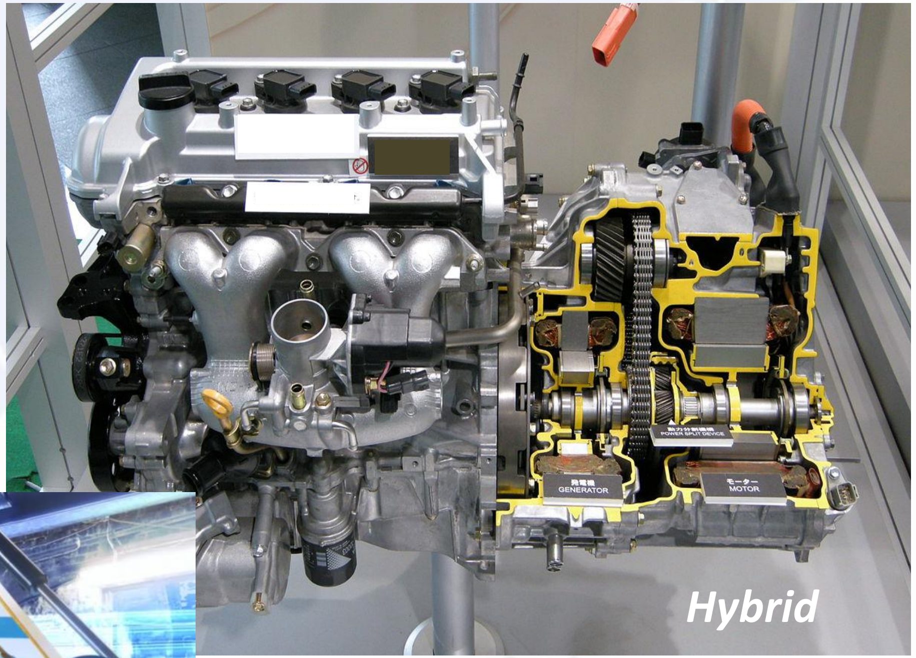
1. Tractor/Loader/Backhoes
2. Wheel Loaders and Dozers
3. Crawlers



Source: OE Link™ Production – Forecast Database

South America – Construction Alternate Drives

- Alternative drives: IC only (diesel, gasoline)
- Emission regulations not mandatory
- No other alternate drives produced or imported in the region
- OEMs challenge:
  - Understand customer needs on alternate drives



Hybrid

JCB 19C-1E Electric Mini Excavator

South America – OEM Happenings

- **Caterpillar**
  - 6 manufacturing sites
  - 1 distribution center
  - 5,000 employees
- **CNH**
  - 1 manufacturing site
  - 1,800 employees
  - Ag and Construction equipment
- **Komatsu**
  - 4 manufacturing sites
  - Aprox. 500 employees
- **Volvo**
  - 1 manufacturing site
  - 340 employees

THANK YOU!

Q&A

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