

5.9 %
less diesel per hour in Ingenio El Viejo's harvester 7031: from 44.61 to 41.98 L/h
2022 harvest

4.68 %
savings in Ingenio Taboga's harvesters, over 905 measured hours
2025-26 harvest

2.8 ×
the diesel saved at El Viejo covered 2.8 times the cost of the product
Test report

+19 %
boiler efficiency at Del Monte and Fructa
Documented case

FOR YOUR AGRO-INDUSTRIAL OPERATION


SUGARCANE


RICE AND GRAINS


TRACTORS AND TILLAGE


PROCESS BOILERS

In the field, every hour of a tractor, harvester, cane tractor, motor grader or irrigation pump costs diesel, and part of that diesel does not burn: it comes out as black smoke, fouls injectors and filters and ends up in the oil. Meca-Run works in the field and in the plant: C99 Diésel in the machinery, C-Fuel 5000 in the boilers of the sugar mill, coffee mill or dryer, and P-18 in engines and transmissions working under heavy load.

FROM THE FIELD TO THE PLANT



EQUIPMENT	CHALLENGE	MECA-RUN SOLUTION
Harvesters, loaders and harvesting equipment	High hourly consumption during harvest and peak season; dirty injectors and black smoke	C99 Diésel at every fill-up; ECO 10000 as initial cleaning
Tractors, cane tractors and tillage	Work under load, cold starts and wear of gearboxes and differentials	C99 Diésel and P-18 in the engine, gearboxes, differentials and hydraulics
Excavators, backhoes and motor graders	Farm roads, drainage and canals: heavy work and idle hours	C99 Diésel at every fill-up; P-18 in the engine and hydraulics
Cane and haul trucks	Farm roads, stops and heavy loads	C99 Diésel at every fill-up; P-18 at every oil change
Irrigation pumps and generators	Stored fuel with water, sludge and algae	ECO 10000 in the tank and C99 Diésel in continuous use
Sugar mill, coffee mill or dryer boilers	Bunker or diesel that does not turn into steam; soot and opacity	C-Fuel 5000 with a measured thermal audit
Farm tanks	Condensation water, bacteria and clogged filters	ECO 10000 (absorbs water up to 15 % of its volume)



SOIL PREPARATION



FARM ROADS



GRAIN HARVEST

INDICATORS WE MEASURE

L/h

Liters per hour of tractors, harvesters and agricultural machinery

km/L

Haul trucks and farm vehicles

lb steam/gal

Sugar mill or coffee mill boilers

Opacity · CO_2

Black smoke and tons of CO_2 avoided (EPA)

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EMISSION LIMITS FOR BOILERS · DECREE 43184-S-MINAE (IN FORCE)

Executive Decree No. 43184-S-MINAE, Regulation on atmospheric pollutant emissions from direct- and indirect-fired boilers and furnaces, dated April 18, 2022 and published in La Gaceta on May 11, 2022 (in force three months after publication, art. 38), repealed Decree 36551 and sets maximum emission values in mg/m³ (STP), on a dry basis and corrected to 5 % oxygen for boilers (arts. 9 and 14).

PARAMETER	CATEGORY A ≥ 4,700 kW · ≥ 7,500 kg steam/h	CATEGORY B 1,253 to < 4,700 kW · 2,000 to < 7,500 kg steam/h	CATEGORIES C AND D < 1,253 kW · < 2,000 kg steam/h
Total suspended particles (TSP) **Liquid fuels: diesel and bunker**	135 mg/m³	150 mg/m³	175 mg/m³
Sulfur dioxide (SO_2) **Liquid fuels**	2,500 mg/m³ (S ≤ 1.65 %) 1,515 mg/m³ if S ≤ 1.0 %	2,500 mg/m³ (S ≤ 1.65 %) 1,515 mg/m³ if S ≤ 1.0 %	2,500 mg/m³ (S ≤ 1.65 %) 1,515 mg/m³ if S ≤ 1.0 %
Nitrogen oxides (NOx) **Diesel**	200 mg/m³	200 mg/m³	220 mg/m³
Nitrogen oxides (NOx) **Bunker**	550 mg/m³	580 mg/m³	600 mg/m³

Source: Decree 43184-S-MINAE, Tables 1, 3, 5 and 6. NOx: values for fuels with up to 0.20 % nitrogen by mass; for each additional 0.10 %, add 100 mg/m³. S: sulfur content of the fuel.

KEY COMPLIANCE AND OPERATING REQUIREMENTS

- **Opacity (art. 9):** in normal operation, smoke must not exceed 20 % (grade 1 on the Ringelmann scale); up to 40 % (grade 2) is allowed for only 5 minutes per hour, during start-up or tube cleaning. Meeting the opacity limit does not exempt the plant from particle sampling.
- **Fuel analysis (art. 15):** with bunker fuel, the operational report must include the laboratory analysis of sulfur and nitrogen in the fuel used during monitoring. Diesel is exempt.
- **Alternate fuel use (art. 23):** one operational report for each fuel used in the period, no more than one month apart.
- **Reporting frequency (art. 26):** categories A and B, every six months (before June 30 and November 30); categories C and D, once a year (before November 30), on the Ministry of Health's REACAH platform.
- **If a limit is exceeded (arts. 31 and 32):** a signed corrective action plan and a second report within a maximum of 20 business days. Without reports or an executed plan, the Ministry of Health will not renew the Health Operating Permit.
- **C-Fuel 5000:** a measurable action for your plan: in the Florida Products (FIFCO) bunker boiler, particles dropped from 138 to 44 mg/m³, below even the category A limit. Each boiler's result is demonstrated with its laboratory report.

MECA-RUN LINE FOR AGRO-INDUSTRY

C99 Diésel is the core treatment for the machinery. ECO 10000 starts the program, P-18 protects engines and transmissions and C-Fuel 5000 serves the plant's boilers.



C99 DIÉSEL AGROINDUSTRIA

Combustion catalyst for agricultural machinery

Complete combustion in tractors, harvesters, cane tractors, farm trucks and agricultural machinery: fewer liters per hour, less black smoke and clean engines. Separates water and curbs bacteria in farm tanks.

USE: Tractors, cane tractors, harvesters, loaders, farm excavators and motor graders, haul trucks, irrigation pumps and generators.

DOSAGE: 1:5,000 at every fill-up (10 ml per 50 L; 1 L per 5,000 L). Farm main tank or per unit.

PACK SIZES: 250 ml · Other pack sizes and contracts: Sales Department 8930-9507



ECO 10000 AGROINDUSTRIA

Deep cleaning of the fuel system

Program kick-off: restores injectors, EGR and turbo without disassembly; removes water, sludge, bacteria and algae from the tank. Frees stuck injection pumps.

USE: Initial fleet cleaning and corrective treatment.

DOSAGE: 1:500 (1 L per 500 L) as initial cleaning; every ~30,000 km in heavy vehicles, optional.

PACK SIZES: 250 ml · Other pack sizes and contracts: Sales Department 8930-9507



P-18 AGROINDUSTRIA

Anti-friction for engines and transmissions

A protective layer bonded to the metal: protects at cold start, extends oil life by up to 50 % and restores compression.

USE: Engines, gearboxes, differentials and hydraulics.

DOSAGE: 4 % of the oil volume; then ½ dose at each change.

PACK SIZES: 250 ml · Other pack sizes and contracts: Sales Department 8930-9507



C-FUEL 5000

Catalyst for bunker fuel, diesel and kerosene · flagship product

More steam per gallon: complete combustion, a stack with less black smoke and lower opacity, less slag and carbon. Dissolves sludge in tanks (≈ 4 months) and separates water and bacteria.

USE: Boilers, furnaces, burners and generators running on bunker fuel or diesel.

DOSAGE: 1:5,000 at every fuel delivery (1 L per 5,000 L).

SIZES: 250 ml · 1 L · 5 L

DOSAGE: The 1:5,000 ratio (1 liter per 5,000 liters of fuel) applies to the C99 and C-Fuel 5000 lines; the exact dose for each application is given in its technical data sheet. ECO 10000 is dosed at 1:500 (1 liter per 500 liters) for fleets, marine, heavy machinery and industrial equipment.

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TRACTOR, TRAILER AND LOADER TIRES

OKO Off Road, from the same distributor, seals from the inside holes of up to 10 mm caused by nails, rods or sharp stones while the equipment keeps working, in tractor, trailer and farm machinery tires. See the OKO Off Road and Heavy Duty catalog.

MEASURED RESULTS IN SUGAR MILLS

5.9 %
INGENIO EL VIEJO · 2022 HARVEST
Harvester 7031: from 44.61 to 41.98 L/h. The diesel no longer consumed covered 2.8 times the cost of the product.

4.68 %
INGENIO TABOGA · 2025-26 HARVEST
Harvesters with C99 over 905 measured hours; up to 5.89 % in unit 101-24.

+16 %
CARGILL
Pounds of processed product per gallon of fuel.

+19 %
DEL MONTE · FRUCTA
Overall boiler efficiency.

10 %
IREX · CHIQUITA
Savings and efficiency in plant boilers.

–69 %
FLORIDA PRODUCTS · FIFCO
Stack particles from 138 to 44 mg/m³ and −42 % SO_2.

INGENIO EL VIEJO · HARVESTER 7031 · 2022 HARVEST	RESULT
Consumption before treatment	44.61 L/h
Consumption with C99 Diésel	41.98 L/h
Consumption reduction	5.9 %
Diesel saved versus product cost	2.8 times

VALIDATED TECHNOLOGY

Meca-Run works with sugar mills, agro-industry and food plants in Costa Rica, including Ingenio El Viejo, Ingenio Taboga, Coopemontecillos, Cargill, Del Monte, Fructa and Chiquita. More than 14 years of measured results.

SIZES AND QUOTES

250 ml containers; C-Fuel 5000 also in 1 L and 5 L. Other pack sizes and contracts: Sales Department 8930-9507 · Juan Carlos Gutiérrez · jgutierrez@mecarun.cr.

ZERO-RISK FIELD TEST

1	**Diagnosis and NDA** **Week 1**	Technical visit to the farm or sugar mill, review of equipment, tanks and records. We sign a confidentiality agreement.
2	**Baseline** **Start of season**	Liters per hour of each tractor, harvester or test unit, with control units on the same front and under the same conditions.
3	**Measured test** **Season**	ECO 10000 to start and C99 Diésel at every fill-up, recorded by hour meter.
4	**Success bonus** **Close-out**	If the validated net savings exceed the cost of the product, the surplus is shared 50/50 during the test. If not, the risk is ours.
5	**Season contract** **Annual**	Volume rate, scheduled delivery to the main tank and a report of L/h and CO_2 avoided for ISO 14001, ISO 50001 and Carbon Neutrality.



SUGARCANE



TILLAGE



GRAINS

DATA FOR YOUR INVENTORY AND THE COUNTRY'S GOALS

- **Black carbon (NDC 2025-2035):** Costa Rica committed to reducing black carbon by 20 % by 2030, compared with 2021, in public transport (EN-3), freight transport (EN-6) and industry (EN-12). Black smoke from the exhaust and the stack is black carbon: burning fuel better helps reduce it.
- **Bunker boilers (NDC, EN-13):** conversion of 10 % of category A and B industrial boilers by 2027, 20 % by 2030 and 30 % by 2035. As long as your boiler keeps running on bunker fuel, C-Fuel 5000 helps you burn it better and document the improvement.
- **IMN 2026 emission factors (16th edition):** diesel 2.613 kg of CO_2 per liter; gasoline 2.231; bunker 3.101. Every liter your operation stops consuming, measured before and after, reduces the CO_2 in your inventory in the same proportion.
- **Law 7447 on the Rational Use of Energy:** private companies that consume more than 360,000 liters of petroleum products per year must implement a mandatory rational energy use program (art. 4). Meca-Run contributes a measurable action to that program.
- **National Carbon Neutrality Program 2.0 (Decree 41122-MINAE):** we provide measured before-and-after consumption and emissions data for your greenhouse gas inventory and reduction plan. Recognition is granted by the accredited verification body.

The planet thanks you, and so does your engine

No benzene. No toluene. Less opacity. Longer engine life.

MECA-RUN LATINOAMÉRICA · Apuqueña Car, S.A. · Exclusive representative for Central and Latin America

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Sources: *Test reports from Ingenio El Viejo (Mar 2022) and Ingenio Taboga (Dec 2025 – Feb 2026); results reported by customers in Costa Rica (Cargill, Del Monte, Fructa, Irex, Chiquita, Florida Products-FIFCO, Coopemontecillos); EPA diesel emission factor. Every operation is different: each implementation starts with a baseline and a measured test.*