MECA-RUN

CATALOG · INDUSTRY & ENERGY 2026

BUNKER BOILERS · GENERATORS · FURNACES

MORE STEAM PER GALLON OF BUNKER FUEL

C-Fuel 5000 · French physical-action combustion catalyst · 100 % organic.
Lower energy OPEX and lower boiler emissions, with zero CAPEX and a measured thermal audit under a confidentiality agreement.

Technologie & fabrication Française

+6 %	**+16 %**	**+19 %**	**–69 %**
more steam per gallon of bunker fuel at Nestlé-Gerber: from 95.9 to 101.7 lb	more product per gallon at Cargill	boiler efficiency at Del Monte and Fructa	particles in the bunker boiler at Florida Products (FIFCO): from 138 to 44 mg/m³
Documented case	*Documented case*	*Documented case*	*Emissions audit*

FOR YOUR COMBUSTION EQUIPMENT



BUNKER BOILERS



GENERATORS



PROCESS PLANTS



STATIONARY ENGINES

Bunker fuel that does not burn goes up the stack as soot, slag and black smoke: between 5 % and 15 % of the fuel your plant buys never turns into steam. C-Fuel 5000 recovers that energy at a dose of 1 liter per 5,000 liters, without modifying the boiler or stopping production.

Mobile +506 8930-9507 · WhatsApp +506 8377-9999 · Tel. +506 4002-2546 · info@mecarun.cr · www.mecarun.cr

THE PLANT'S ENERGY CHALLENGE



Bunker fuel and on-site diesel are among the heaviest OPEX items in Costa Rican industry. At the same time, Executive Decree 43184-S-MINAE limits boiler opacity to 20 %, along with particles and NOx; the 2025-2035 NDC calls for converting industrial boilers; and ISO 14001, ISO 50001 and Carbon Neutrality programs require measurable reductions. C-Fuel 5000 works on both fronts at once: more energy per gallon and lower emissions.

PROBLEM IN THE BOILER	EFFECT ON OPERATIONS	WHAT C-FUEL 5000 DOES
Incomplete combustion	More bunker fuel per pound of steam; soot in tubes and ducts	Finer droplets and a faster flame: complete combustion
Slag and carbon deposits	Lower heat transfer, cleanings and shutdowns	Keeps burner tubes, nozzles and injectors clean
Sludge and water in tanks	Clogged filters, damaged pumps, wasted fuel	Dissolves sludge and agglomerations (≈ 4 months) and separates water
Opacity, particles, SO_2	Risk to the operational report and the health operating permit	−69 % particles and −42 % SO_2 measured in an audit
Backup generators	Dirty injectors and degraded fuel in the tank	More kWh per liter and tanks protected from algae and water

INDICATORS WE MEASURE

lb steam/gal
Pounds or tons of steam per gallon of bunker fuel

kWh/L
Energy generated per liter in generators

°C · CO_2 · O_2
Flue gas analysis and stack temperature

mg/m³ · %
Particles, SO_2, NOx and stack opacity

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 INDUSTRY

C-Fuel 5000 is the core treatment for boilers and furnaces. The rest of the line protects the plant's generators, forklifts and internal fleet.



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



C99 DIESEL

Combustion catalyst for diesel engines · flagship product

Complete combustion: more km per liter, less black smoke and less soot. Cleans injectors, pump, EGR, particulate filter and turbo; separates water and curbs bacteria in the tank.

USE: Trucks, buses, tractors, machinery, generators.

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

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



ECO 10000

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

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

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.

C-FUEL 5000 TECHNICAL APPLICATION PROTOCOL

1	**Baseline**	Combustion analysis before dosing (stack temperature, CO_2 and O_2) at a fixed boiler temperature.
2	**Dosing**	Into the main tank at every delivery, or into the day tank with a dosing unit, with the fuel in motion.
3	**Verification**	After the mixing time, repeat the analysis: stack temperature rises by about 50 °C.
4	**Burner adjustment**	Injector 25–30 % smaller and air-fuel ratio adjusted: CO_2 12–13 %, low CO and O_2 5–6 %.
5	**Result**	Once stack temperature returns to its initial value, the difference in consumption is the savings percentage.

Mobile +506 8930-9507 · WhatsApp +506 8377-9999 · Tel. +506 4002-2546 · info@mecarun.cr · www.mecarun.cr

RESULTS IN COSTA RICAN INDUSTRY

+6 %
NESTLÉ · GERBER PLANT
From 95.9 to 101.7 pounds of steam per gallon of bunker fuel.

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

+19 %
DEL MONTE · FRUCTA
Overall boiler efficiency.

−69 %
FLORIDA PRODUCTS · FIFCO
Particles from 138 to 44 mg/m³ and −42 % SO_2: a tool for ISO 14001.

10 %
IREX · CHIQUITA
Savings and efficiency in the boilers of a soap and ingredients plant.

−61 %
INDUSTRIAL CASE 2
Particles from 253 to 98 mg/m³ and −51 % SO_2 in a bunker boiler.

VALIDATED TECHNOLOGY

Meca-Run works on boilers at food-grade, agro-industrial, packaging and critical infrastructure plants, including Nestlé-Gerber (three 600 HP boilers), Cargill, Smurfit Kappa and Coopemontecillos, and was awarded a public tender to reduce emissions at RECOPE's Asphalt Plant. More than 14 years of measured results in Costa Rica.

SECTORS WHERE IT APPLIES

Food and beverages · dairy · sugar mills and agro-industry · paper and packaging · textiles · chemicals and soaps · canneries · hospitals and hotels with boilers · power generation and backup plants.

EXAMPLE: PLANT USING 150,000 L OF BUNKER FUEL PER MONTH

ITEM	RESULT WITH A 15 % BASE SAVINGS
C-Fuel 5000 required (1:5,000)	30 L per month
Bunker fuel you no longer buy	22,500 L per month

Illustrative figures based on public data. The actual result is measured against your boiler's baseline.

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 THERMAL AUDIT

1	**Confidentiality agreement** **Week 1**	We sign an NDA before receiving any consumption, steam or production data. Your metrics stay protected.
2	**Diagnosis and baseline** **Weeks 1–2**	Review of the boiler, burner and tanks; flue gas analysis and recording of pounds of steam per gallon (or kWh per liter).
3	**30-day audit** **30 days**	C-Fuel 5000 dosing, burner adjustment and measurement with the same method.
4	**Guarantee** **Close-out**	If the audit does not show a KPI increase that pays for the product, Meca-Run covers 100 % of its cost.
5	**Success bonus** **Close-out**	If successful, the additional net savings are shared 50/50 during the trial period.
6	**Corporate contract** **12 months**	Annual volume rate through which the plant keeps most of the savings, with scheduled delivery and technical support.



BOILERS



ENGINE ROOM



POWER BACKUP

REPORTS FOR YOUR MANAGEMENT SYSTEM

- **ISO 50001:** energy baseline and performance indicator (lb of steam per gallon or kWh per liter).
- **ISO 14001 and Carbon Neutrality:** tons of CO_2 avoided and reduction of particles, SO_2 and opacity.
- **Ministry of Health:** data for the boiler operational report on the REACAH platform (Decree 43184-S-MINAE).

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

Juan Carlos Gutiérrez Sales Manager · 8930-9507 · jgutierrez@mecarun.cr

Main line (506) 4002-2546 · WhatsApp 8377-9999 · info@mecarun.cr · www.mecarun.cr · Heredia, Costa Rica

Sources: *Results reported by customers in Costa Rica (Nestlé-Gerber, Cargill, Del Monte, Fructa, Florida Products-FIFCO, Irex, Chiquita, Coopemontecillos); Decree 43184-S-MINAE; NDC 2025-2035. Every boiler is different: each implementation starts with a baseline and a measured audit.*