

# MCS100FT

## FTIR Analyzer System

Everything under control with advanced, proven technology

- Certified HF limit value monitoring
- Only one analyzer for more than 12 measuring components
- Easy integration into the customer network environment
- Long maintenance interval of 6 months for many measuring components
- Type approved measurement of greenhouse gases such as  $N_2O$ ,  $CH_4$  and  $CO_2$
- Low maintenance requirements



# Complete Emissions Monitoring

With the MCS100FT, we offer an FTIR analyzer system that provides complete, continuous emissions monitoring. It detects more than 12 measuring components simultaneously, such as HF, HCl, SO<sub>2</sub>, NO, NO<sub>2</sub>, CO, NH<sub>3</sub>, N<sub>2</sub>O, CH<sub>4</sub> and Corg (VOC). The MCS100FT enables HF limit values to be monitored in accordance with legal requirements. It is equipped with an oxygen sensor as standard and can be supplemented with an integrated total hydrocarbon (FID) analyzer.

The MCS100FT is certified according to the 2001/80/EC, 2000/76/EC and TA Luft (German Technical Instructions on Air Quality Control) directives and requirements as well as for MCERT, US EPA, and GOST, and has been designed to comply with directive 2010/75/EU. With its very reliable measuring technology, its convenient operation, and low maintenance requirements, the MCS100FT FTIR provides a hassle-free solution that offers unequalled opportunities.

## EN 15267-3 and EN 14181

- QAL3 validation and adjustment using internal adjustment filters without expensive test gases – considerable time savings (approx. 1.5 instead of 6 to 7 hours) and increased availability.
- Qualified and experienced support with official inspections
- Meets the minimum requirements of standards EN 15267-3 and EN 14181 (QAL1, 2, 3)

## Reliable analysis technology

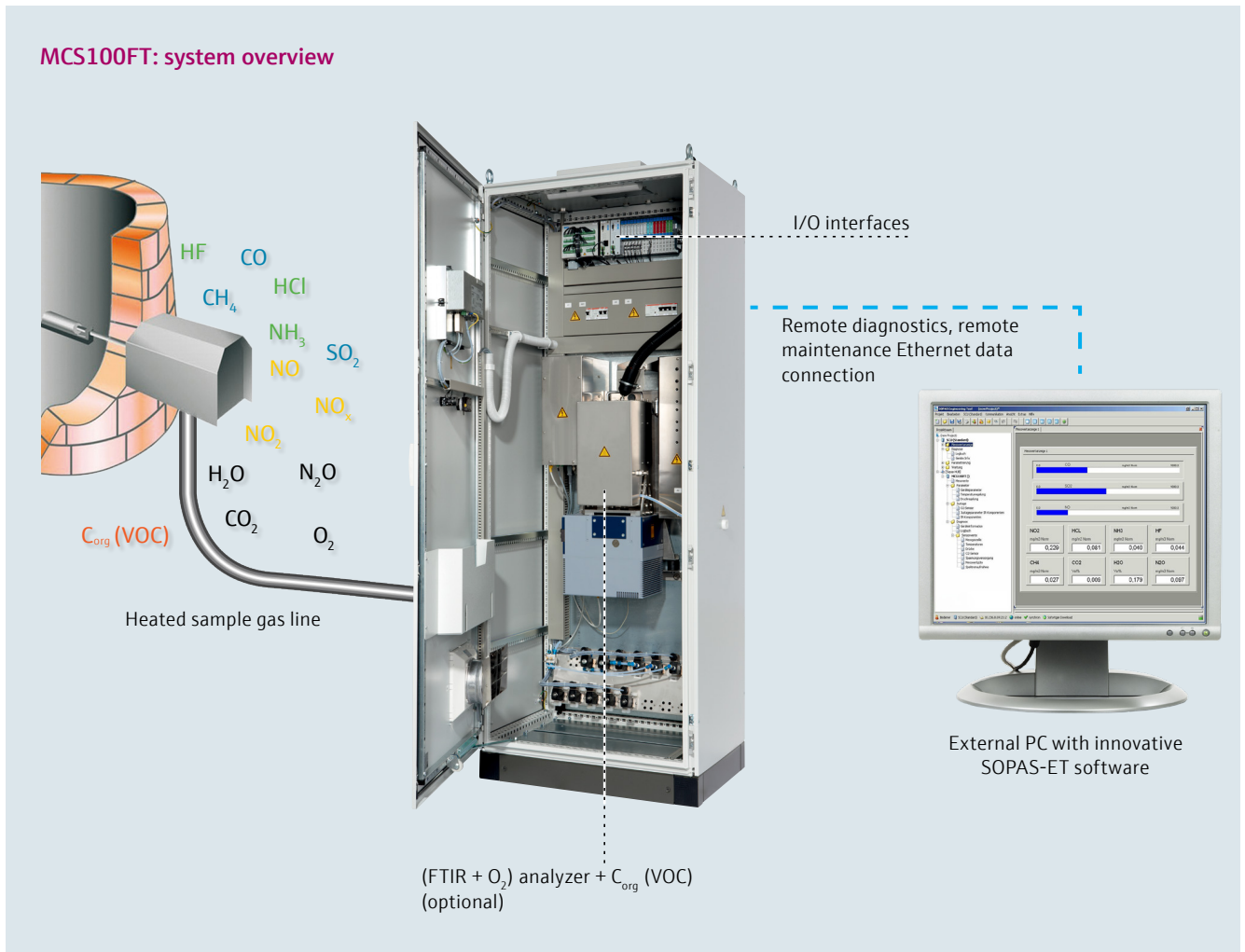
- More than 30 years of experience in spectroscopic emissions analyzer technology
- More than 2,000 installed systems
- Long-term stability of measured values thanks to automatic spectrum adjustment
- Low maintenance requirements, typical intervals of between 3 and 6 months

## Control of HF limit values

- Actual monitoring of strict HF limit values from 0 to 1 mg/m<sup>3</sup> or 0 to 2 mg/m<sup>3</sup>
- Analysis specially optimized for HF, from sampling to the sample gas cell
- Short response time of approx. 170 s, even with a sample gas line up to 35 m in length
- Certified HF monitoring in a multi-component analyzer approach

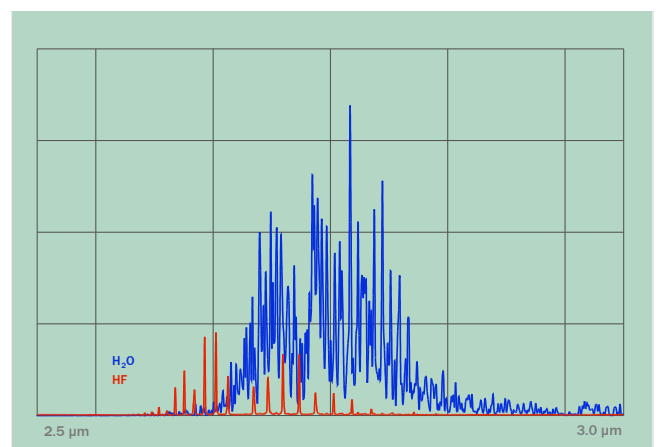


## Comprehensive analyzer system: from gas sampling to data evaluation and emission management



### FTIR measurement principle

Infrared spectroscopy according to the Fourier transformation (FTIR) principle ensures high measurement accuracy – especially in combination with the proven sample gas cell. Accurate gas concentrations from the selected gas components are determined from very fast spectrum measurement using chemometric models. The cube corner technique used by the interferometer delivers very reliable and stable measurement results. The principle also involves a RockSolid spectrometer with high spectral resolution and high measuring speed, which is unaffected by vibration and temperature and is permanently adjusted.



# MCS100FT: everything under control with advanced, proven technology



## Product description

The FTIR measuring principle allows the simultaneous determination of more than 12 measuring components, tailor-made for the particular requirements of the customer. The MCS100FT FTIR analyzer system with its heated measuring cell enables the monitoring of hydrogen fluoride as requested by legislation.

## At a glance

- Approved HF measuring range of 0 ... 3 mg/m<sup>3</sup>
- Automatic spectrum adjustment via AutoVAL for reliable measuring values
- Operation via touchscreen
- Sample gas transport by an ejector without moving parts

## Your benefits

- Proper HF limit value monitoring
- Only one analyzer for more than 12 measuring components
- Easy integration into the customer network environment

## Fields of application

- Emission monitoring in waste incineration plants
- Effective HF limit value monitoring, e.g. in aluminum production

The MCS100FT is equipped with an oxygen sensor as standard and can be supplemented with a total hydrocarbon analyzer. With its reliable measuring technology, its easy operation and low maintenance requirements, the MCS100FT provides a solution that offers unequalled opportunities.

- Approved according to EN 15267-3
- Remote control and diagnosis via software SOPAS ET
- Automatic adjustment of analyzer
- Automatic backflushing and filter cleaning of sampling unit
- Long maintenance interval of 6 months for many measuring components
- Type approved measurement of greenhouse gases such as N<sub>2</sub>O, CH<sub>4</sub> and CO<sub>2</sub>
- Low maintenance requirements

- Monitoring of gaseous emission of cement plants or power station



## More Information online

For more information, enter the link or scan the QR code to get direct access to technical data, operating instructions, software, application examples, and much more.

[www.endress.com/mcs100ft](http://www.endress.com/mcs100ft)



# Technical data

The exact device specifications and performance data of the product may deviate from the information provided here, and depend on the application in which the product is being used and the relevant customer specifications.

## MCS100FT

Measured values	CH <sub>4</sub> , CO, CO <sub>2</sub> , C <sub>org</sub> , HCl, HF, H <sub>2</sub> O, NH <sub>3</sub> , NO, NO <sub>2</sub> , N <sub>2</sub> O, O <sub>2</sub> , SO <sub>2</sub> , NO <sub>x</sub> , C <sub>3</sub> H <sub>8</sub> , C <sub>2</sub> H <sub>6</sub>
Performance tested measurands	CH <sub>4</sub> , CO, CO <sub>2</sub> , C <sub>org</sub> , HCl, HF, H <sub>2</sub> O, NH <sub>3</sub> , NO, NO <sub>2</sub> , N <sub>2</sub> O, O <sub>2</sub> , SO <sub>2</sub>
Measurement principle	FTIR spectroscopy, flame ionization detection, Zirconium dioxide sensor
Sample size	≤ 300 l/h (79.25 gal/h)
Measuring ranges	
CH <sub>4</sub>	0 ... 70 ppm / 0 ... 210 ppm
CO	0 ... 60 ppm / 0 ... 1.200 ppm
CO <sub>2</sub>	0 ... 25 Vol.-%
C <sub>org</sub>	0 ... 7,5 ppm / 0 ... 75 ppm
HCl	0 ... 10 ppm / 0 ... 100 ppm
HF	0 ... 3 ppm / 0 ... 10 ppm
H <sub>2</sub> O	0 ... 40 Vol.-%
NH <sub>3</sub>	0 ... 13 ppm / 0 ... 65 ppm
NO	0 ... 150 ppm / 0 ... 1.500 ppm
NO <sub>2</sub>	0 ... 25 ppm / 0 ... 250 ppm
N <sub>2</sub> O	0 ... 25 ppm / 0 ... 250 ppm
O <sub>2</sub>	0 ... 21 Vol.-%
SO <sub>2</sub>	0 ... 25 ppm / 0 ... 525 ppm
NO <sub>x</sub>	0 ... 100 ppm / 0 ... 1.000 ppm
C <sub>3</sub> H <sub>8</sub>	0 ... 25 ppm
C <sub>2</sub> H <sub>6</sub>	0 ... 40 ppm
	Other measuring ranges and components on request Measuring ranges depend on application and device version
Certified measuring ranges	
CH <sub>4</sub>	0 ... 50 mg/m <sup>3</sup> / 0 ... 150 mg/m <sup>3</sup> (0 ... 0.00078 lb/ft <sup>3</sup> / 0 ... 0.00234 lb/ft <sup>3</sup> )
CO	0 ... 75 mg/m <sup>3</sup> / 0 ... 300 mg/m <sup>3</sup> / 0 ... 1.500 mg/m <sup>3</sup> (0 ... 0.00117 lb/ft <sup>3</sup> / 0 ... 0.00468 lb/ft <sup>3</sup> / 0 ... 0.0234 lb/ft <sup>3</sup> )
CO <sub>2</sub>	0 ... 25 Vol.-%
C <sub>org</sub>	0 ... 15 mg/m <sup>3</sup> / 0 ... 50 mg/m <sup>3</sup> / 0 ... 150 mg/m <sup>3</sup> / 0 ... 500 mg/m <sup>3</sup> (0 ... 0.00023 lb/ft <sup>3</sup> / 0 ... 0.00078 lb/ft <sup>3</sup> / 0 ... 0.00234 lb/ft <sup>3</sup> / 0 ... 0.00781 lb/ft <sup>3</sup> )
HCl	0 ... 15 mg/m <sup>3</sup> / 0 ... 90 mg/m <sup>3</sup> / 0 ... 150 mg/m <sup>3</sup> (0 ... 0.00023 lb/ft <sup>3</sup> / 0 ... 0.00140 lb/ft <sup>3</sup> / 0 ... 0.00234 lb/ft <sup>3</sup> )
HF	0 ... 3 mg/m <sup>3</sup> / 0 ... 10 mg/m <sup>3</sup> (0 ... 0.00005 lb/ft <sup>3</sup> / 0 ... 0.00016 lb/ft <sup>3</sup> )
H <sub>2</sub> O	0 ... 40 Vol.-%
NH <sub>3</sub>	0 ... 10 mg/m <sup>3</sup> / 0 ... 50 mg/m <sup>3</sup> (0 ... 0.00016 lb/ft <sup>3</sup> / 0 ... 0.00078 lb/ft <sup>3</sup> )
NO	0 ... 200 mg/m <sup>3</sup> / 0 ... 400 mg/m <sup>3</sup> / 0 ... 2.000 mg/m <sup>3</sup> (0 ... 0.00312 lb/ft <sup>3</sup> / 0 ... 0.00624 lb/ft <sup>3</sup> / 0 ... 0.0312 lb/ft <sup>3</sup> )
NO <sub>2</sub>	0 ... 100 mg/m <sup>3</sup> / 0 ... 500 mg/m <sup>3</sup> (0 ... 0.00156 lb/ft <sup>3</sup> / 0 ... 0.00781 lb/ft <sup>3</sup> )
N <sub>2</sub> O	0 ... 50 mg/m <sup>3</sup> / 0 ... 500 mg/m <sup>3</sup> (0 ... 0.00078 lb/ft <sup>3</sup> / 0 ... 0.00781 lb/ft <sup>3</sup> )
O <sub>2</sub>	0 ... 21 Vol.-%
SO <sub>2</sub>	0 ... 75 mg/m <sup>3</sup> / 0 ... 300 mg/m <sup>3</sup> / 0 ... 1.500 mg/m <sup>3</sup> (0 ... 0.00117 lb/ft <sup>3</sup> / 0 ... 0.00468 lb/ft <sup>3</sup> / 0 ... 0.0234 lb/ft <sup>3</sup> )

Response time	≤ 200 s FID: ≤ 45 s
Sensitivity drift	< 3 % of measuring range full scale per maintenance interval FID: < 2 % of measuring range full scale per week
Zero point drift	< 3 % of measuring range full scale per maintenance interval FID: < 2 % of measuring range full scale per week
Detection limit	< 2 % of measuring range full scale
Process temperature	≤ +1.300 °C (2372°F)
Sample temperature	≤ +220 °C (428°F)
Process pressure	900 hPa ... 1.100 hPa (13.05 psi ... 15.95 psi)
Ambient temperature	+5 °C ... +35 °C (+41°F ... +95°F) With cooling device: +5 °C ... +50 °C (+41°F ... +122°F)
Storage temperature	-20 °C ... +60 °C (-4°F ... +140°F)
Ambient pressure	900 hPa ... 1.100 hPa (13.05 psi ... 15.95 psi)
Ambient humidity	≤ 80 %; non-condensing
Conformities	2000/76/EC 2001/80/EC 27. BImSchV EN 15267 EN 14181
Electrical safety	CE
Enclosure rating	IP 43 Optional: IP 54
Analog outputs	0/4 ... 22 mA, 500 Ω Number depends on system configuration; electrically isolated; max. 32 outputs
Analog inputs	0/4 ... 22 mA, 100 Ω Number depends on system configuration; electrically isolated; max. 32 inputs
Digital outputs	48 V AC, 0,5 A, 35 W / 48 V DC, 0,5 A, 24 W Number depends on system configuration; electrically isolated; max. 64 outputs
Digital inputs	3,9 V, 4,5 mA, 0,55 W Number depends on system configuration; max. 64 inputs
Interfaces	RS-422/-485 Ethernet
Bus protocol	Ethernet TCP/IP MODBUS OPC
Indication	LC display Status LEDs: "Power", "Maintenance" and "Fault"
Input	Touchscreen
Operation	Via LC-display or software SOPAS ET Several operating levels, password-protected
Dimensions (W x H x D)	806 mm x 2,165 mm x 605 mm (31.73 in x 85.24 in x 23.82 in) 1,096 mm x 2,165 mm x 605 mm (43.15 in x 85.24 in x 23.82 in) (with cooling device)
Weight	260 kg (573,20 lbs)
Electrical connection	
Power consumption	Analyzer cabinet < 1,000 W: Sample gas line, heated 95 W/m (28.96 W/ft) Gas sampling probe 450 W Heated probe tube 450 W
Auxiliaries	

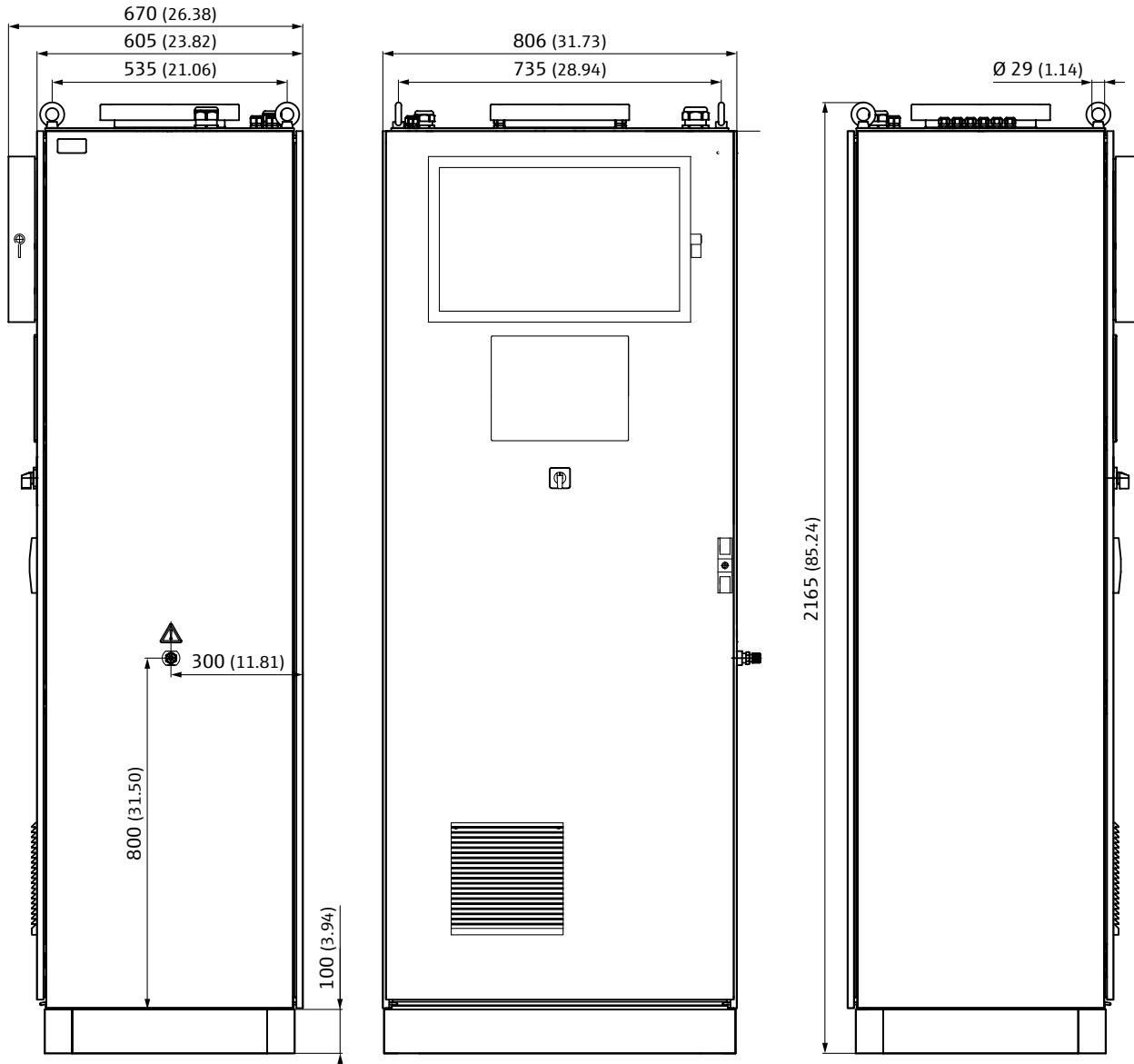
Zero gas (FTIR/FID)::	≤ 300 l/h ... ≤ 350 l/h (79.25 gal/h ... ≤ 92.46 gal/h) Instrument air; 3±0.2 bar; particle size max. 1 µm; oil content max. 0.1 mg/m <sup>3</sup> ; pressure dew point max. -30 °C (-22 °F)
Zero gas (O <sub>2</sub> ):	≤ 350 l/h (92.46 gal/h) O <sub>2</sub> in N <sub>2</sub> : 1 ... 4 Vol.-%; accuracy ±2%; 3 ±0.2 bar
Reference g (FTIR):	≤ 350 l/h (92.46 gal/h) Measuring component in N <sub>2</sub> ; 70% of measuring range full scale; 3 ±0.2 bar
Reference gas (O <sub>2</sub> ):	≤ 350 l/h (92.46 gal/h) Ambient air
Reference gas (FID):	≤ 450 l/h (118.88 gal/h) Propane in synthetic air; 75% of measuring range full scale; 3 ±0.2 bar
Instrument air:	≤ 2.000 l/h (528.34 gal/h) Instrument air: 5 ... 7 bar; particle size max. 1 µm; oil content max. 0.1 mg/m <sup>3</sup> ; pressure dew point max. -30 °C (-22 °F)
Fuel gas:	≤ 4,8 l/h (1.27 gal/h) Hydrogen: 5.0 or higher; 3 ±0.2
Combustion air:	≤ 30 l/h (7.93 gal/h) Instrument air; 3±0.2 bar; particle size max. 1 µm; oil content max. 0.1 mg/m <sup>3</sup> ; pressure dew point max. -30 °C (-22 °F)
Sample connections	Sample gas inlet: DN 4/6 Exhaust gas outlet: DN 8/10
Auxiliary connections	Test gas: DN 4/6 Fuel gas: DN 4/6 Instrument air: DN 6/8
Corrective functions	Internal adjustment unit (option)
Test functions	Internal zero point check
Options	Integrated total hydrocarbon analyzer

# Ordering information

Our regional sales organization will help you to select the optimum device configuration.

## Dimensional drawings

MCS100FT (dimensions in mm (inch))









[www.addresses.endress.com](http://www.addresses.endress.com)

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Eco-friendly produced and printed on paper  
from sustainable forestry.

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