

FM broadcasters take action to reduce costs and CO2 emissions



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Reduce the electricity bills

How **SmartFM** artificial intelligence helps radios to **adapt to the incoming electricity crisis?**

FM Broadcast

How to reduce the energy consumption of transmitter site?



Reduce the number of equipment on site

Peripherals such as RDS encoders, sound processors, IP decoder or stereo encoders are now integrated as a **software feature** on the transmitter.

No additional hardware is then required

Consumption is then reduced by about 50 W per device.

Increase the transmitter efficiency

Different **hardware innovations** enable to reach **unmatched efficiency**: new LDMOS technology on RF amplifiers, high efficiency power supplies, electronic boards optimization....

Maximum potential of **up to 76% overall efficiency** has been reached.

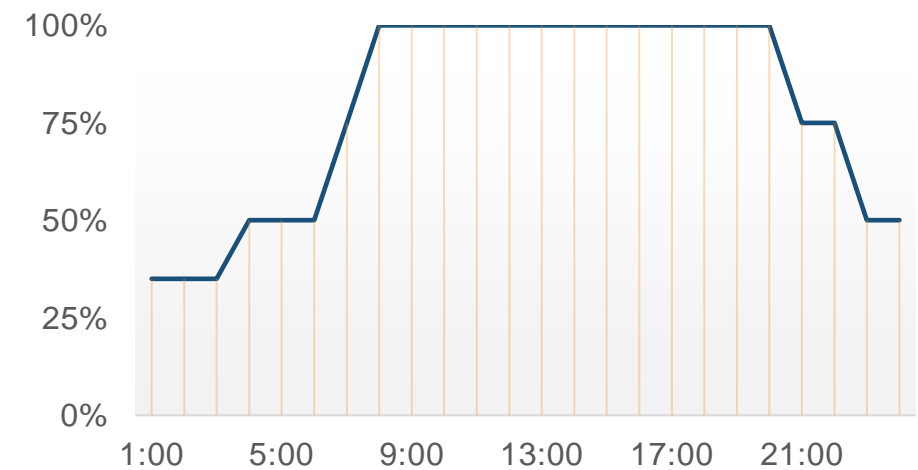
FM Broadcast

How to reduce the energy consumption of transmitter site?



**Reduce RF output power
over night**

Transmitter output over the day



Consumption cannot be **optimized** anymore without affecting listeners

To reduce the energy consumption of FM transmitters, an **innovative and disruptive approach** is necessary...



SmartFM

The first patented Artificial Intelligence
for FM transmitters



Reduce the transmission cost without
impacting the listener experience

The Concept of SmartFM

At the heart of SmartFM is the listener experience

During the early phase of development, we performed **blind survey** to **qualify the impact of RF perturbations on listeners experience**

Dozens of listeners from different ages and audio expertise

Different audio contents
(speech, classical music, Jazz, ...)

Different RF perturbations (noise, echoes, ...)

The concept of SmartFM

SmartFM patented algorithm to reduce the transmitter operating cost

Statistical analysis

Audio contents can be sorted by their robustness to RF perturbations

Different characteristics enable to identify the type of content

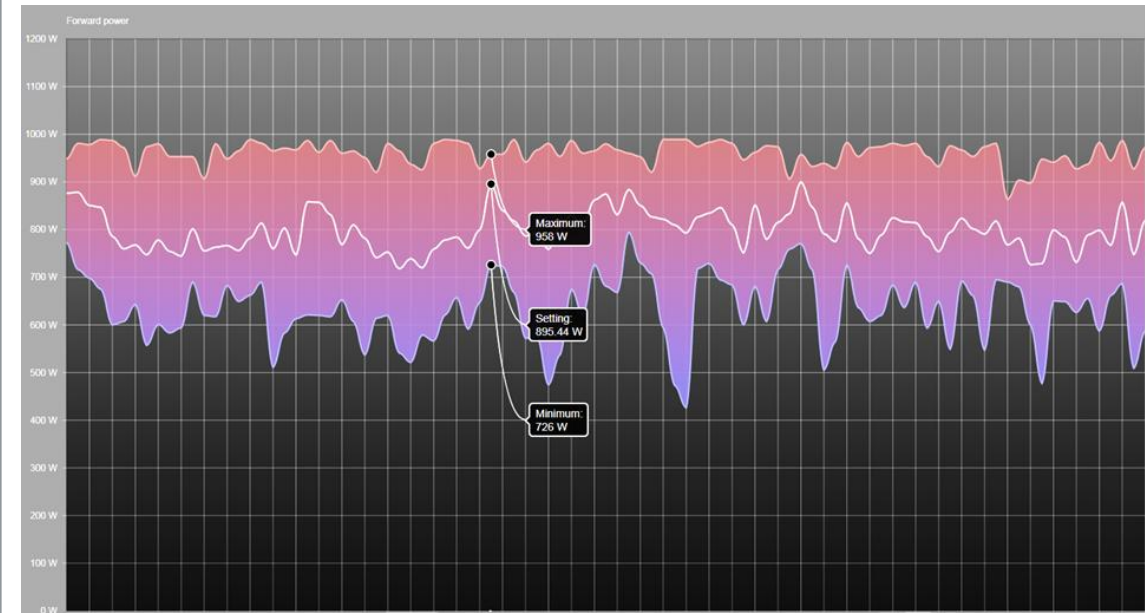
Predictive algorithm

Creation of algorithms to analyze, in real time, the audio signal

Comparison with statistical characteristics to qualify the content

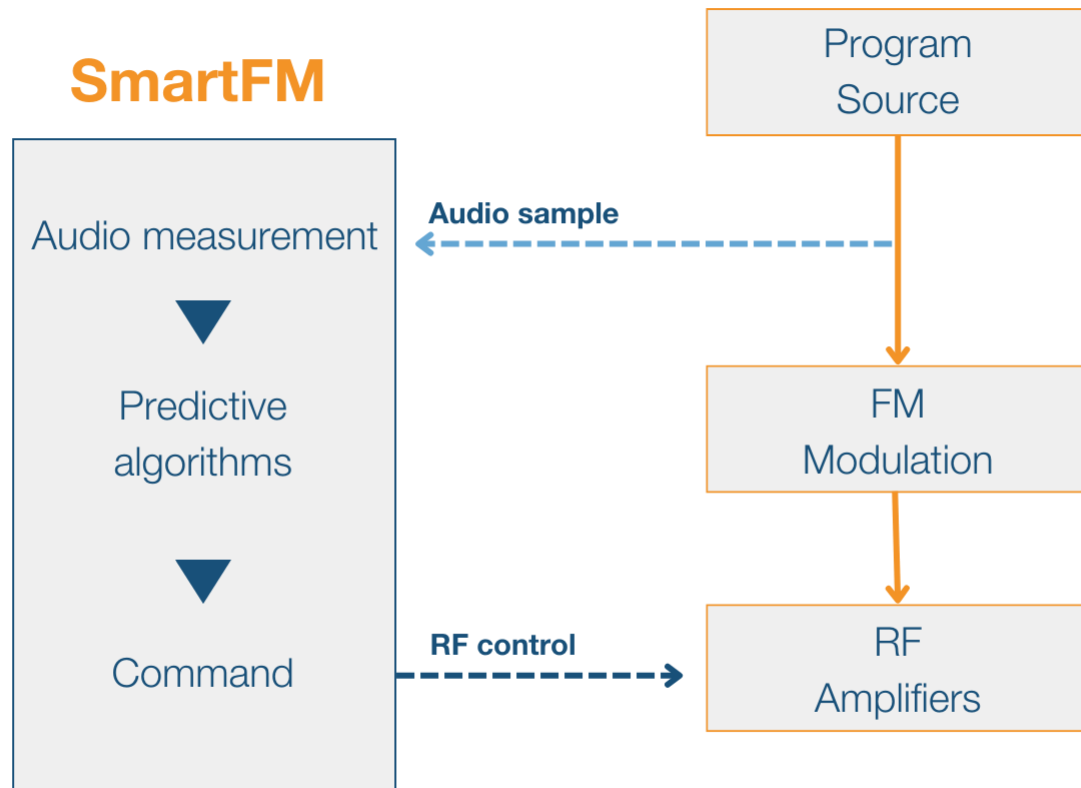
Calculation of **SmartFM gain**, the potential savings depending on signal robustness

RF adjustment in real time



The concept of SmartFM

Psycho-acoustic analysis for RF realtime adjustment



01

Measure of Audio robustness via MPX power, Loudness, audio Dynamic variations...

02

Calculation of SFM Gain based on Embedded Artificial Intelligence models

03

Adjustment of RF output power with SFM Gain & SFM Strategy

Reduce energy bills with SmartFM

Savings scenarios with 10x10kW transmitters over 10 years

Transmitter

10x Egreso FM 10kW
with efficiency up to 76%

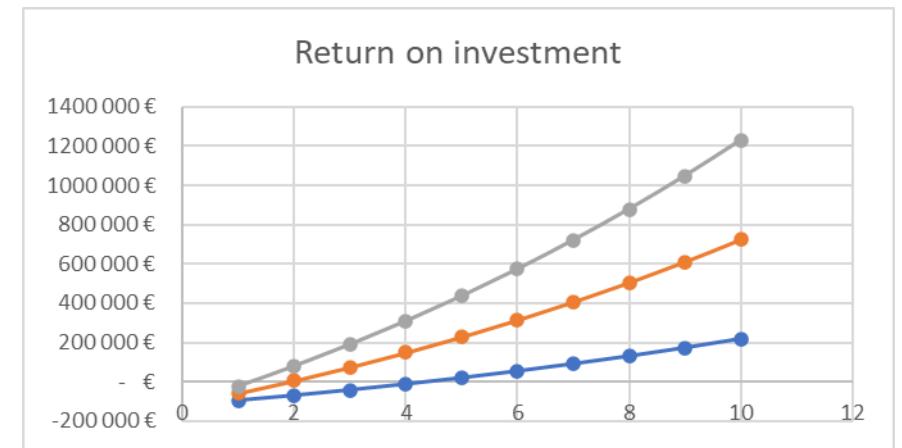


Consumption savings

	Per year
Limited	180MWh
Typical	300MWh
High	490MWh

Electricity Savings

	Over 1 year	Over 10 years
Limited	36 000 €	440 000 €
Typical	60 000 €	730 000 €
High	97 000 €	1 170 000 €



With SmartFM, Reduce your carbon footprint

Savings estimation with 1x10kW FM transmitters over 1 year in Italy

ELECTRICITY CONSUMPTION

Old transmitters (65% efficiency)
Ecreso FM with SmartFM

135 000 kWh
88 000 kWh

SAVINGS

46 000kWh

CO₂ REDUCTION

Old transmitters (65% efficiency)
Ecreso FM with SmartFM

54 tons
35 tons

SAVINGS

19 tons

Reduce electricity costs with SmartFM



By up to
40%

Patented A.I. WorldCast Technology

Widely deployed in Germany

Additional savings on carbon footprint (heat dissipation, cooling, lifetime...)

Challenges in deploying SmartFM

For large broadcasters



Uplink has trusted WorldCast and SmartFM to save energy
First FM network operator for public (Deutschland Radio) and private radios in Germany

The audio content type is mostly talk and classical music with restrictive broadcasting policy (MPX power below 0dB)

Uplink is an early adopter of SmartFM

400+ Ecreso FM transmitters runs with SmartFM.

800 Ecreso FM transmitters will run with SmartFM in 2023

With SmartFM, they save 15 – 20% on energy consumption

The Concept of SmartFM

3 years of development paired with 5 years of on field tests, refinement, and broadcasters validation



Deploying SmartFM

ECRESO TRANSMITTERS

SmartFM is compatible with all Ecreso transmitters delivered since 2010

More than 14 000 transmitters are eligible by software upgrade over the world

FOR OTHER BRANDS

SmartFM is a patented technology. Joint development with WorldCast may enable the other manufacturers to integrate SmartFM based on their design capabilities

Deploying SmartFM

Activate SmartFM algorithm

Define the best SmartFM strategy for your broadcasting

WORLDCAST SYSTEMS **ECRESO FM 1KW** SAVE CANCEL 🔍 👤 📄

RF LOCAL INTERLOCK SmartFM SmartFM standar 100W - 98MHz

Configuration

Enable SmartFM

Status: Activated ●

Strategy:

- 1-STANDARD
- 2-STANDARD+
- 3-OVERLAP
- 4-BOOST
- 5-EXTREME

Min 65 %
Max 110 %
Current 100 %

Credit Management

Lifetime Credits: 6

Year Estimation: 63
Remaining Credits: 994
Remaining Days: 5730

[Add SmartFM Credits](#)

[Export Data](#)

Actual Benefits

Lifetime Savings	0 €
	1 kWh
	0 kg CO ₂
Lifetime Boost	4 Wh

Potential Benefits / Year

Estimated Savings	1 €
	5 kWh
	3 kg CO ₂
Estimated Boost	46 Wh

SMARTFM
Artificial intelligence for radio

SmartFM is a worldwide patented technology developed by WorldCast Systems

History

Savings over the past 12 months

Savings over the past 31 days

Boost over the past 12 months

Boost over the past 31 days

Credits used over the past 12 months

Credits used over the past 31 days

THANK YOU
for your attention.

HVALA!

Contact us

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