



**ITALIMPIANTI ORAFI**<sup>TM</sup>  
GENERAL CATALOGUE spa

# WHO WE ARE



## ITALIMPIANTI ORAFI GROUP spa



### TERA AUTOMATION

Automation and robot integration for the precious metal industry



### MAXIMECCANICA

Graphite consumables production and CNC machining



### CLM CONSULTING

Laboratory and LBMA certification consulting



### ECOMET REFINING

Consulting and know-how transfer for e-waste treatment plants



### GALLORINI ALLOYS

Master alloy production and consulting for melting

# WHAT WE DO



**Italmimpianti Orafi is the largest manufacturer of precious metal machinery in the world with over 50 years of experience.**

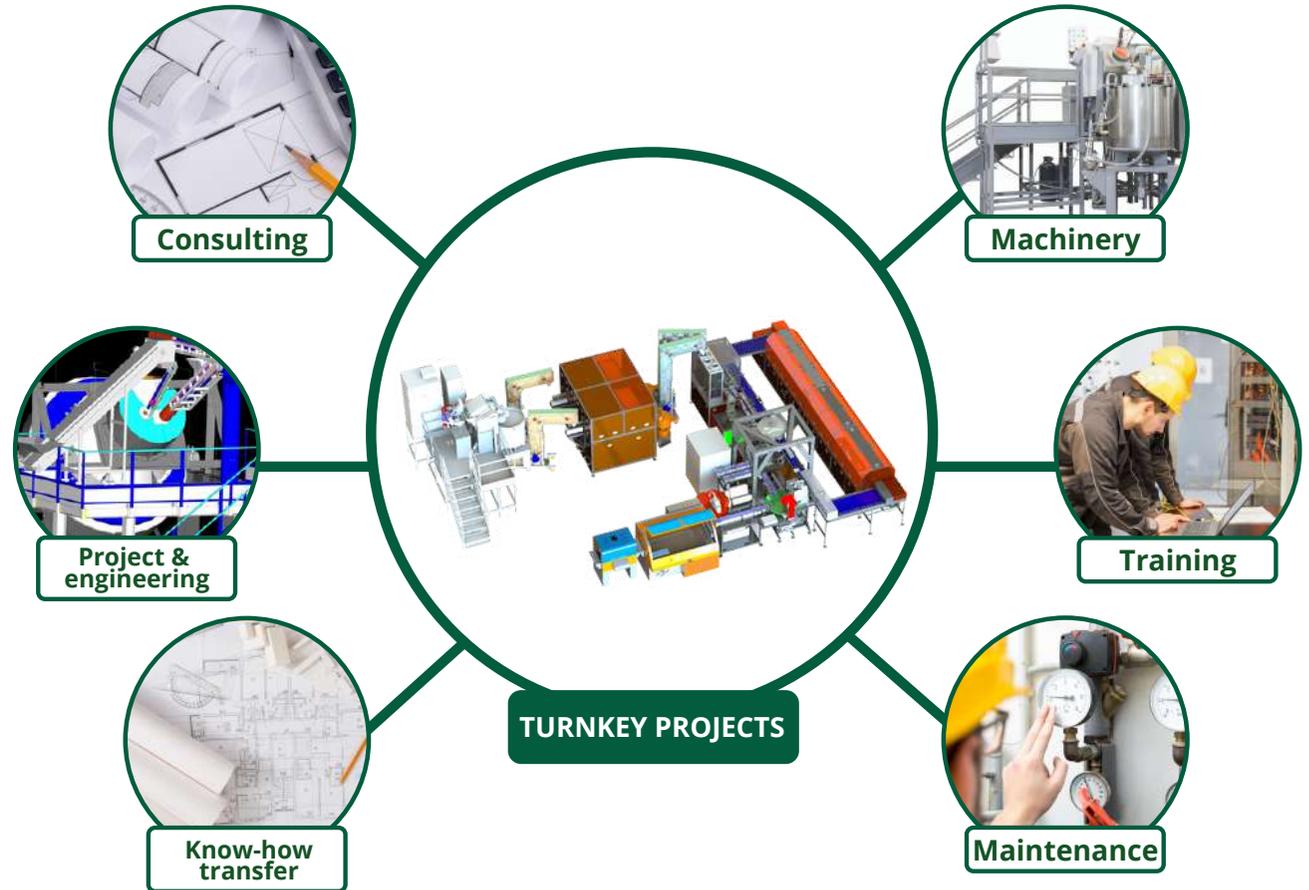
The pre-sales and after-sales consulting services allow Italmimpianti Orafi to be the best choice to follow each project, independently from its size, from A to Z.

**Understanding the customer's needs** by proposing appropriate and technologically advanced solutions, carefully following every step of the production process, from the realization of the project to installation, testing and commissioning: these are essential requirements for those looking for a **valid business partner**.

# TURNKEY PLANT SOLUTIONS

The **"turnkey" formula** is the perfect solution for those starting activities related to the recovery of precious metals and for those who want to add a production branch or simply upgrade their existing plants.

To date, **some of the best known and largest refineries in the world have chosen the "turnkey" package**, relying on Italimpianti Orafi to design and build the units to their specific requirements.



# PRECIOUS METAL ASSAY

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# FIRE ASSAY UNITS



BENCH  
DRILL



ELECTRONIC  
SCALE



ANTI-VIBRATING  
TABLE



CUPELLATION  
FURNACE



CUPEL TREATMENT  
UNITS



PARTING  
HOOD



FUME  
SCRUBBER



*Our precious metal assay plants have been supplied to the most important  
International Chambers of Commerce and to the main **LBMA companies** in the world*

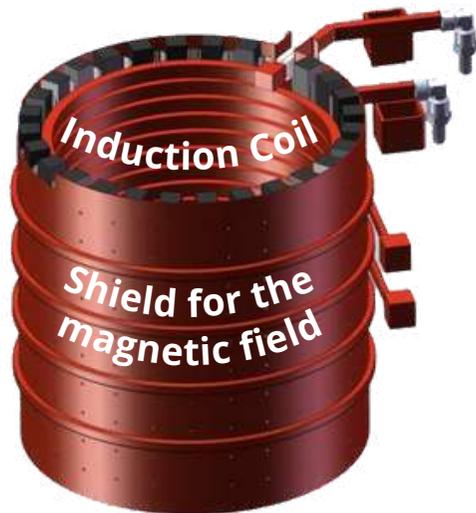
# MELTING



# MELTING UNITS

Italimpianti Orafi supplies melting furnaces with manual extraction and furnaces with mechanical/hydraulic tilting device equipped with a **SPECIAL TILTING SYSTEM**, able to keep the pouring/pouring point fixed, thus ensuring a simpler and more regular process.

All the units can be provided with **FLUX CONCENTRATORS**, the latest technology to maximise the power efficiency, contemporary decreasing operators exposure to free electromagnetic fields.



Higher density of the magnetic energy in the area inside the induction coil



Shorter melting cycle time



Higher energy efficiency



Higher magnetic stirring efficiency



# MELTING FURNACES

## Static & hydraulic tilting units

**MELTING FURNACE WITH MANUAL EXTRACTION**  
From 5 to 12 kW

**MELTING FURNACE WITH MECHANICAL/ELECTRICAL TILTING**  
From 15 kW to 30 kW

**MELTING FURNACE WITH HYDRAULIC TILTING**  
from 35 kW to 500 kW

**MELTING ROTARY FURNACE WITH HYDRAULIC TILTING**  
From 20 kW to 250 kW



# MELTING FURNACES

Vacuum melting units for Pt, Pd and PGM alloys

Production capacity: from 1 kg to 20 Kg Platinum



HORIZONTAL AXIS



VERTICAL AXIS



# MELTING FURNACES

## CONTINUOUS CASTING FURNACES

From 8,5 kW to 25 kW



# MELTING PLANTS



## Induction melting plants for the production of grains

Production capacity: from 15 to 500 kg/batch

### CONVENTIONAL GOLD & SILVER GRAIN PRODUCTION SYSTEMS

From 30 to 100 kW



# MELTING PLANTS

Induction melting plants for the production of master alloys

GRAIN PRODUCTION SYSTEMS UNDER PROTECTIVE ATMOSPHERE

From 6 kW to 100 kW



# GRAIN PROCESSING PLANTS

Grain drying, sorting and dosing machines



**T-DRYRAY**  
Drying machine  
for metal grains

**T-LIFT**  
Conveyor belt for  
metal grains transfer

**T-SCREENING**  
Metal grain  
sorting machine

**T-DOSING**  
Dosing machine  
for metal grains

**T-FILL & SEAL**  
Metal grain dosing &  
packing machine



# ATOMIZATION PLANTS

## Atomization plants for metal alloys

Production capacity: from 2 kg to 500 kg/batch

### WATER ATOMIZATION PLANTS



### GAS ATOMIZATION PLANTS



# TUNNEL FURNACES

Induction tunnel furnaces for the production of precious metal ingots



## T-Barmaster One

Up to 1 Kg ingots



## T-Barmaster 400

Up to 400 oz Gold bars



## T-Barmaster 1000

Up to 1000 oz Silver bars



# INGOT AND GRAIN PROCESSING

Robot integration and automation for the  
precious metal industry

**ROBOT  
INTEGRATION**  
Ingot and grain manipulation



**INGOT STAMPING  
AND SERIALIZING**



**INGOT LASER  
MARKING**



**INGOT AND GRAIN  
PACKAGING**



**INGOT DATA CAPTURING  
VISION SYSTEMS**



Discover also our  
**PRODUCTION DATA STORAGE AND MANAGING SYSTEM**



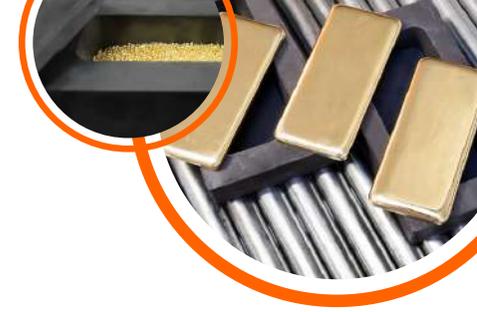
ITALIMPIANTI ORAFI

A collaboration with

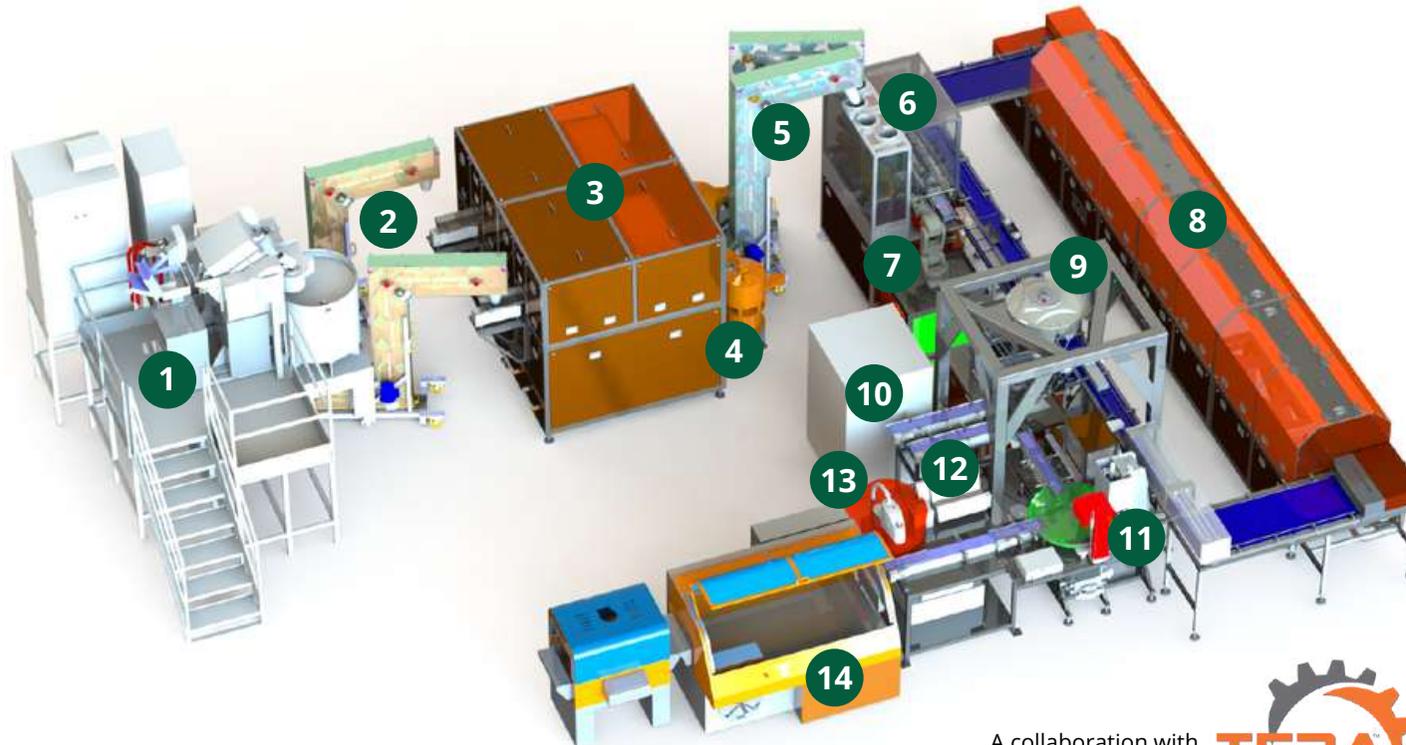


# INGOT PRODUCTION LINE

World's first automated line for the continuous production of precious metal ingots



T-LINE  
Customizable plant



- 1 - Grain production plant
- 2 - Bucket conveyor belts for wet grains
- 3 - Grain drying system
- 4 - Grain sorting machine
- 5 - Bucket conveyor belts for dried grains
- 6 - Grain dosing system
- 7 - Grain and ingot mold cover handling robot
- 8 - Ingot casting tunnel furnace
- 9 - Delta robot for ingot handling + ingot weighing station
- 10 - Ingot brushing machine
- 11 - Ingot stamping and serializing machine
- 12 - Ingot certificate printer
- 13 - SCARA robot for certificate and ingot handling
- 14 - Ingot packaging machine



# CASTING

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# VACUUM MELTING & CASTING UNITS



VACUUM CASTING MACHINES  
From 1,5 kg to 8 kg/batch



# REFINING

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# GOLD & SILVER REFINING UNITS



## Inquartation and *aqua regia* in a single unit

Production range: from 8 kg to 150 kg (8 hours - by aqua regia) per unit

IAO/BR  
**TITANIUM SERIES**  
 —VERSATILE. DURABLE. HEAVY-DUTY.—

### BENEFITS

- **High chemical resistance:** titanium is resistant to the corrosion of aqua regia and nitric acid
- **Long-lasting life:** titanium doesn't suffer thermal shocks and remains unscratched.
- **High flexibility:** it allows both aqua regia and inquartation processes.
- **Reduction of reaction time,** thanks to the possibility of adding heating jacket.
- **Easy maintenance and cleaning.**
- **Smaller footprint and lower investment.**



In order to give the maximum quality and flexibility to our customers, we have added a **special in-house facility specialized in titanium welding.** Like all our machines, these units are **fully produced in-house.**



# GOLD REFINING UNITS

by *aqua regia* process  
Production capacity: from 3 to 500 kg/batch

"Single" version      PP TUMBLERS      "Twin" version      VERTICAL AXIS PP REACTORS      GLASS REACTORS



# GOLD REFINING UNITS

by electrolysis process

Production capacity: from 8 to 240 kg/unit



## GOLD ELECTROLYSIS REFINING PLANTS



# SILVER REFINING UNITS

by chemical process and inquartation

Production capacity: from 30 to 300 kg/batch and above

STAINLESS STEEL COMPACT  
INQUARTATION UNIT



STAINLESS STEEL VERTICAL  
AXIS INQUARTATION REACTOR



STAINLESS STEEL TUMBLER AND  
CHEMICAL REFINING UNIT



# SILVER REFINING UNITS

by electrolysis process

Production capacity: from 15 to 420 kg/day per unit

SILVER ELECTROLYSIS REFINING PLANTS





# PLATINUM & PALLADIUM REFINING UNITS

## PLATINUM & PALLADIUM COMPACT REFINING PLANT

2 and 5 kg/cycle



## PLATINUM & PALLADIUM SALTS

special plant for recovery and reduction  
of PGM salts from solutions



## CALCINATION PLANT

for thermal reduction of PGM salts

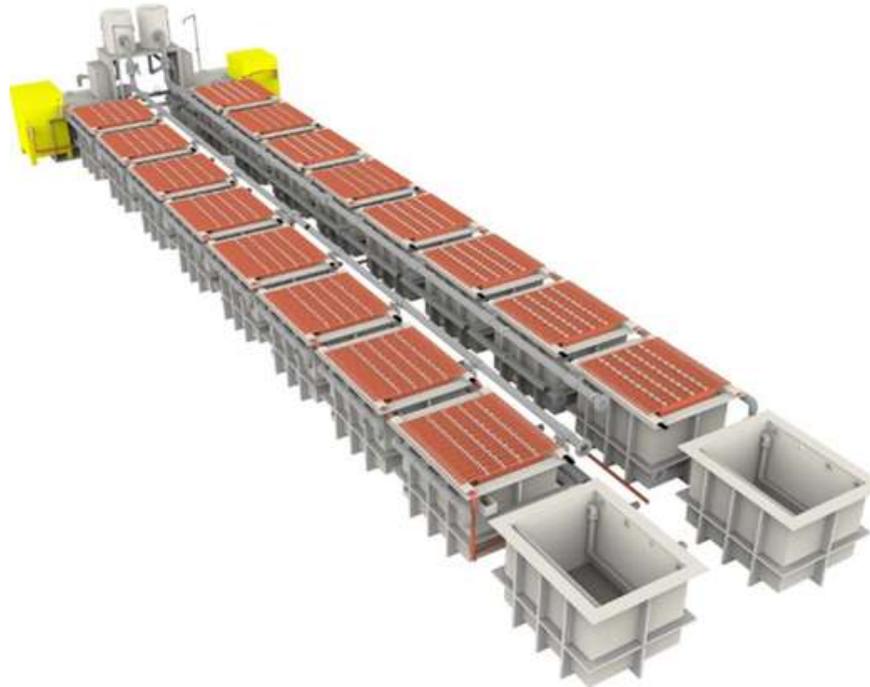


# COPPER REFINING UNITS

by electrolysis process



**COPPER REFINING PLANT**  
Example of a 16 refining cells set-up





# ELECTRO-WINNING REFINING UNITS

for silver, gold and copper

**CUSTOMIZED ELECTRO-WINNING PLANTS**  
for recovery and refining of gold, silver and copper



# **GALVANIC SOLUTION & SALT PRODUCTION PLANTS**

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# GALVANIC SOLUTION & SALT PRODUCTION PLANTS

TECHNOLOGY & KNOW-HOW TRANSFER

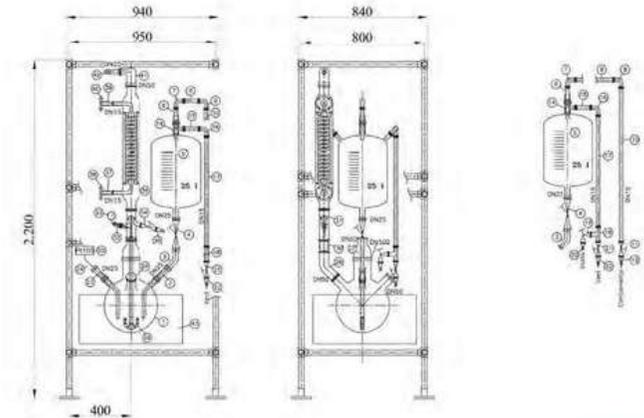
GALVANIC CYANIDE SALTS



SILVER NITRATE SALTS



RHODIUM SULPHATE SOLUTION



# PRECIOUS ASH TREATMENT

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# PRECIOUS ASH TREATMENT PLANTS

**MECHANICAL  
TREATMENT**

**GAS SMELTING  
FURNACE**

**GAS INCINERATION  
PLANT**

**PYROLYSIS  
INCINERATION  
FURNACE**

**INDUCTION  
INCINERATION UNIT**



# ROTARY SMELTING FURNACES



ROTARY INDUCTION  
SMELTING FURNACE



ROTARY GAS SMELTING  
FURNACE - TBRC TYPE



# WATER TREATMENT

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# WASTE WATER TREATMENT PLANTS



**MICROFILTRATION  
PLANTS**



**SELECTIVE RESIN PLANTS**  
for precious metal recovery



**WASTE WATER  
NEUTRALIZATION PLANT**



**EVAPORATION  
PLANT**





# WATER DEMINERALIZATION PLANTS

**DEMINERALIZED WATER PRODUCTION PLANT**  
semi-automatic



**DEMINERALIZED WATER PRODUCTION PLANT**  
automatic



# FUME TREATMENT

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# FUME TREATMENT

for the treatment of gaseous effluents

SCRUBBERS FOR  
ACID FUMES

CUSTOMIZED SCRUBBERS  
FOR NITROUS FUMES

BAG FILTERS  
FOR DUST



# E-WASTE TREATMENT

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# E-WASTE TREATMENT PLANTS

SMELTING



REFINING



# CHAINS & JEWELLERY





# JEWELLERY PRODUCTION MACHINES

Annealing furnaces for the thermal treatment of precious and non-precious metals

STATIC FURNACES FOR ANNEALING AND DEOXYDATION

CONTINUOUS  
ANNEALING FURNACE  
FOR WIRES



# JEWELLERY PRODUCTION MACHINES

Belt furnaces for chains soldering and annealing steps



## BELT FURNACES



# JEWELLERY PRODUCTION MACHINES

Hollowing plants for chains and jewellery

HOLLOWING UNITS  
for iron and copper core



# GALVANIC PLANTS

Plating plants for jewellery and fashion articles



MANUAL  
PLATING PLANT



SEMI-AUTOMATIC  
PLATING PLANT



FULLY AUTOMATIC  
PLATING PLANT





# GALVANIC SOLUTIONS

NEW!

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## Rhodium plating by Italmimpianti Orafi

**RHODIUM LUX**  
Rhodium plating solutions

**IT002**  
Rhodium recovery powder



Discover them in our





**ITALIMPIANTI ORAFI**  
GROUP spa



Employees: **over 100 people**



Annual Turnover: **30 M €**



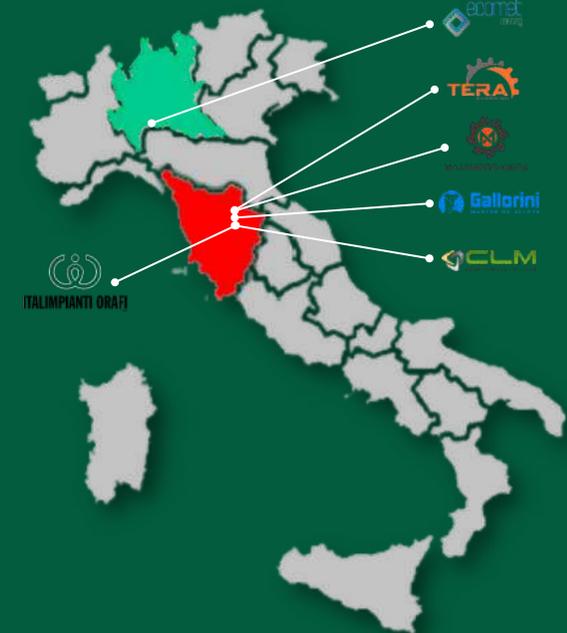
Production Area: **15.000 m<sup>2</sup>**



Offices: **1.500 m<sup>2</sup>**



**Worldwide sales network**



**ITALIMPIANTI ORAFI S.p.A.** ● Via Provinciale di Civitella 8, 52041, Badia Al Pino (AR), Italy ● +39 0575 4491 ● VAT: IT00137240511

[www.italimpianti.it](http://www.italimpianti.it)

