100% MADE IN ITALY

ICMA SAN GIORGIO

Advanced Compounding and Extrusion Systems

NATURAL FIBERS

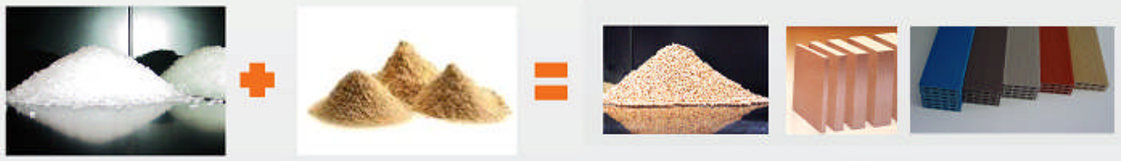
NATURAL FIBRES COMPOSITE & WPC

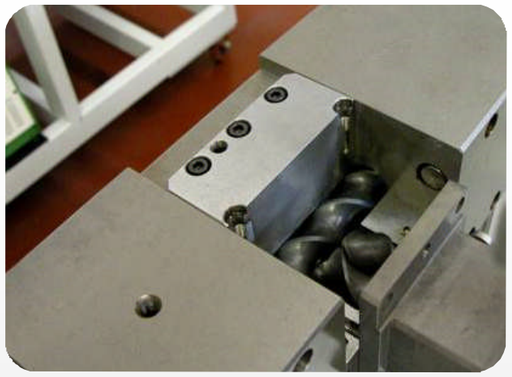
www.icmasg.it

PIONEERS IN WOOD PLASTIC COMPOSITE

- **70's**: **ICMA** patented the process technology for producing a thermoformable **WOOD-STOCK™ SHEET** for automotive interior trims made of polypropylene and wood-flour.
- **80's**: Developed a full range of **WPC COMPOUNDING** plants in order to respond to the demand from the newly borne WPC profile market in USA.
- **00's:** WPC Direct Extrusion Technology has been successfully applied to **WPC PROFILE EXTRUSION** getting huge benefits in cutting production costs with consistent output, performance and quality.

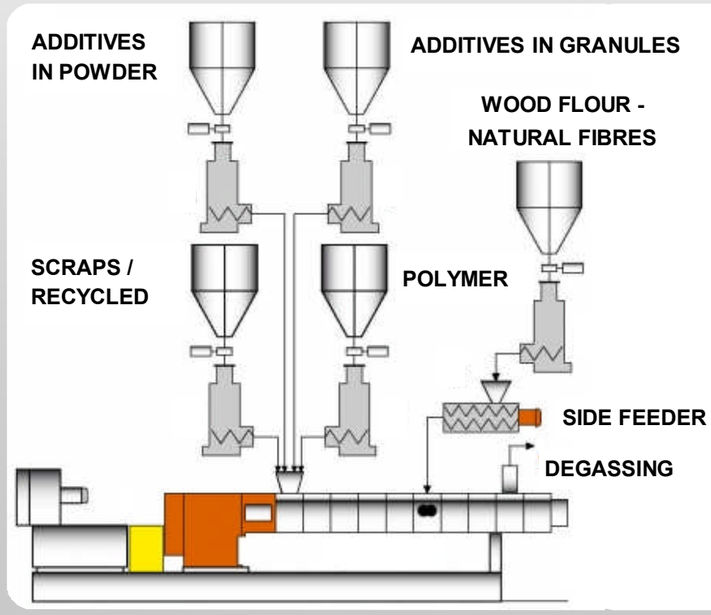
FIRST IN THE WORLD TO EXTRUDE WPC COMPOSITE





THE SPLIT FEED TECHNOLOGY

ICMA **CO-ROTATING TWIN SCREW EXTRUDER** GIVES THE UNIQUE SOLUTION OF **SPLIT FEED TECHNOLOGY** FOR THE NATURAL FIBRES.



The separation of the plasticization phase of polymer matrix from the introduction and mixing of natural filler is the basic concept of the co-rotating technology.

Transfer energy at the exact point without misspending it to heat the filler

Shorten the natural filler **residence** time avoiding its degradation

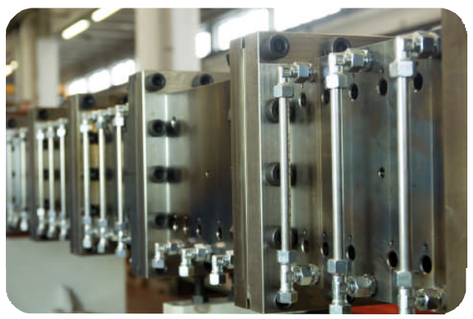
Take the advantage of co-rotating high efficiency degassing system to **allow an high humidity content**

Minimise the wearing action of filler on extruder metal parts

These are the basic concept from which arise numbers of advantages specific of this technology.

ICMA IS TEAM MEMBER OF THE EUROPEAN RESEARCH PROGRAMME UltraFibre WITH THE OBJECT TO IMPROVE THE COMPOUNDABILITY OF NATURAL FIBRES IN THE PLASTIC MATRIX

"UltraFibre is supported by funding under the Seventh Framework Programme of the European Union. Project no: FP7 243456"



Modular construction of screw and barrel

Allow a drastic reduction in maintenance cost.

PRODUCTS MADE BY WPC

INJECTION MOULDING

WPC and NFPC COMPOUNDING

WPC AND NFPC COMPOUNDING

- **ICMA's** WPC lines are designed to produce compounds either for extrusion or injection moulding application.
- **ICMA's** co-rotating extruders can produce the highest output rates in industry (up to 5,000 kg / hours)

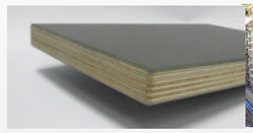
ICMA provides complete turn-key plants including raw material storage and handling, fully automatic gravimetric system, dedicated pelletizing system, finished product handling storage and packing

WOOD-STOCK™ SHEET

Main application for automotive industry other several application in construction and furniture industry.

It is a **GREEN PRODUCT** because reduced the quantity of plastics by half and fibres is made from waste of wood working. Recycled plastic could be used too.

Alternative natural fibres: rice husk, nut shell, hemp, flax, oil palm fibres or/and whatever is available locally.

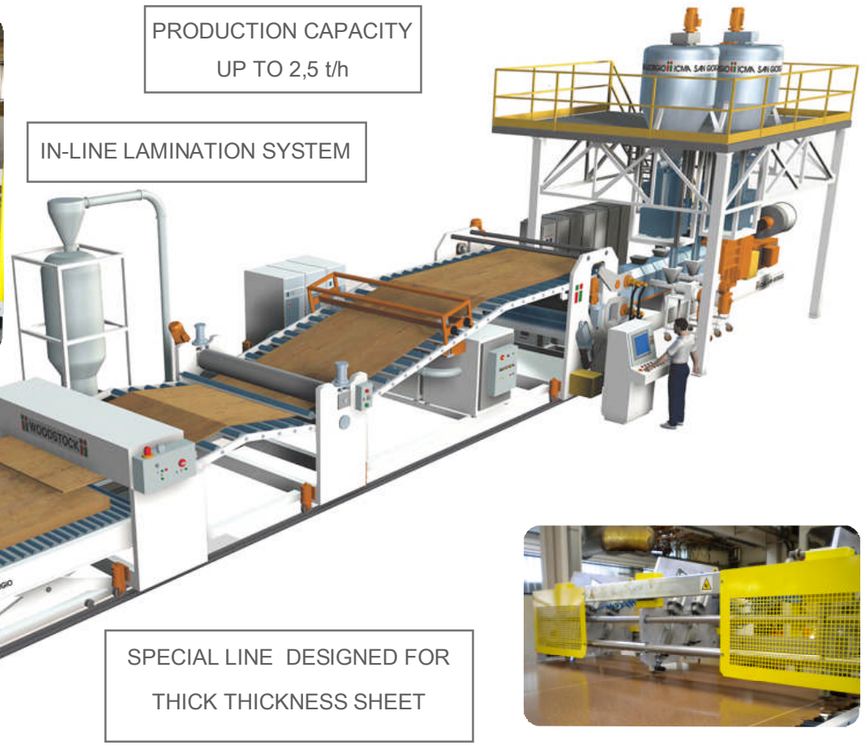


WPC WOOD-STOCK™ SHEET

PRODUCTION CAPACITY

UP TO 2,5 t/h

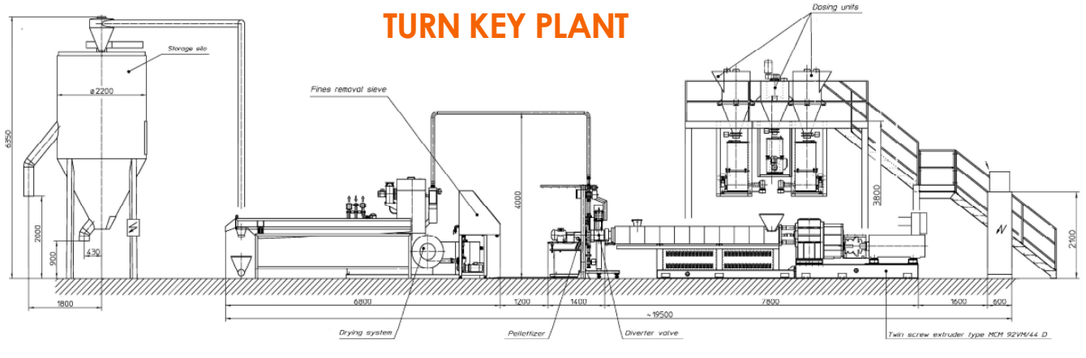
IN-LINE LAMINATION SYSTEM

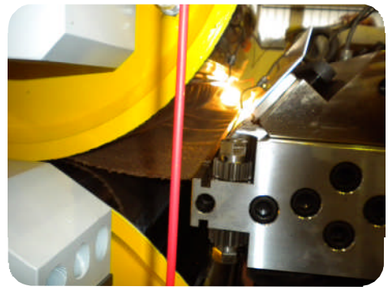


SPECIAL LINE DESIGNED FOR

THICK THICKNESS SHEET

TURN KEY PLANT





THE TRUE
DIRECT EXTRUSION TECHNOLOGY

WPC PROFILE DIRECT EXTRUSION

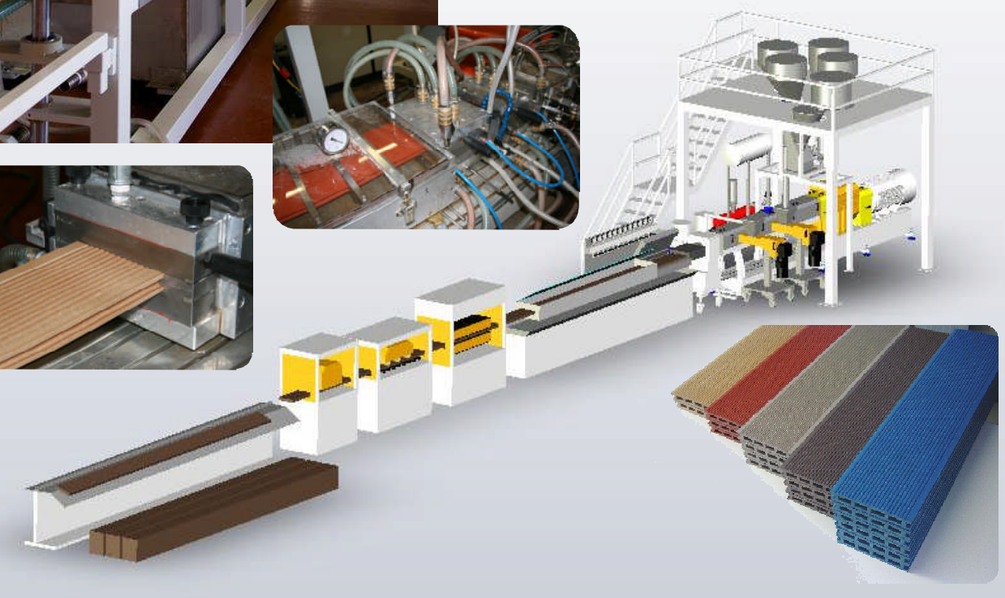
Lines delivered as a turn key project at best performances available on the market.

Customised profile shape for a variety of applications.

Option of co-extrusion die head for a functional skin layer (CAPSTOCK)

Dedicated unit for surface finishing: embossing, brushing and drilling system for siding profile fixing holes

Ancillaries to complete the installation: water chiller, air compressor etc.

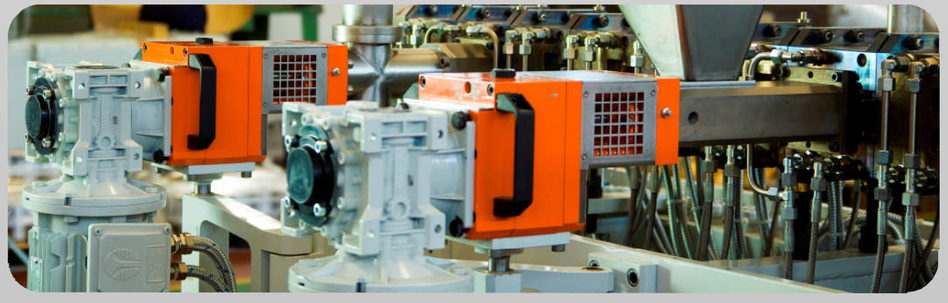


CUT PRODUCTION COST = SHORT R.O.I.

ICMA DIRECT EXTRUSION SYSTEM, PRODUCES IN ONE STEP THE WPC PROFILES WITH UNIQUE ADVANTAGE ON CUTTING PRODUCTION COST:

- No need of material pre-mixing/agglomeration or ready made granules
- Higher moisture content acceptable (No need of fibres dryer)
- Formulations adjustable in-line with loss in weight metering units
- Energy savings (one step + split feed)
- Higher mechanical characteristic due to better fibres/plastic mixing
- Limited material degradation due to only one heat/shear history and shorter fibres residence time
- Lower maintenance cost due to the limited screws and barrel wearing thanks to the split feed technology
- Less maintenance cost due to modular construction of screws and barrel
- Lower maintenance/management cost due to smaller extruder size
- Substantial cost savings (energy, manpower, logistic, management …)
- Less space needed (space renting savings)
- Simple logistic management
- Maintain a proprietary know how with in-house manufacturing process

MODULAR CONSTRUCTION OF SCREW AND BARREL

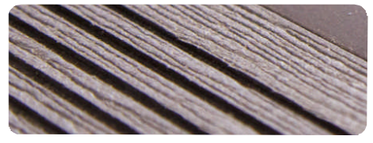


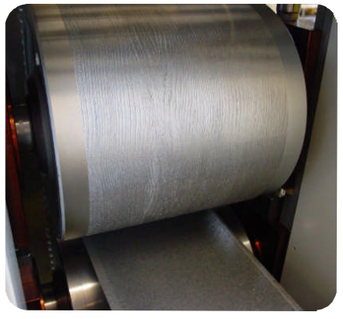
SPECIFIC VENTING PORT

SIDE FEEDER

SURFACE FINISHING OPTION :

Natural, Embossed,
Brushed, Aged





CUSTOMER SUPPORT

HELP DESK

Our goal is to keep customers operating at peak efficiency.

Our service team operates our HELP DESK 16 hours/day.

TRAINING SERVICE

Over our forty years experience in the compounding industry and a continuous R&D activity, we have developed a unique technical & process knowledge.

We condensed such knowledge in training seminars on co-rotating technology.

Our seminars extend beyond basic operations to processing knowledge that can make a difference in a competitive marketplace.

SPARE PARTS SERVICE

We offer a deep inventory of the most important extruder parts for rapid, "off the shelf" delivery.

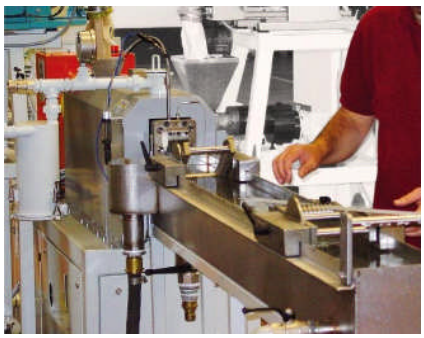
We provide in-house support and manufacturing capability for screws elements, barrels sections and other important mechanical components such as gear boxes to help guarantee quality control.

R&D / LAB SUPPORT

Our experienced laboratory personnel and versatile equipment help customers solve a variety of research and development challenges, including both pilot and pre-production testing.

Our lab facility includes a pilot line with a twin-screw co-rotating extruder MCM/25HT for running preliminary suitability and processing tests on a variety of materials and compounds.

Second-phase pre-production testing is performed on our industrial extrusion lines. The line are, equipped with a full-sized twin-screw co-rotating extruder MCM/60HT and MCM/42HP suitable for verification of specific production parameters on extruded pellets or flat sheets or laminated in-line sheets or profile, with a combination of different materials.



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