According to their design they can be horizontal or vertical for extruded profiles, only horizontal for sheets and accessories.

**HORIZONTAL PLANT**

*Flexibility:*
- Possibility of anodizing extruded profiles, sheets and accessories
- Possibility of using different clamping systems and optimizing racking times
- Easy change of lay-out of tanks with possibility of expansion

*Initial investment:*
- Lower cost than vertical plants

**VERTICAL PLANT**

*Environment:*
- Max 25% of the drag-out compared to horizontal plants
- Good recycling possibilities

*High quality*
- Uniformity of layer thickness distribution
- Optimum rinsing efficiency
- Automatic chemical replenishment and correction 24 hours/day

*High Productivity*
- Fast clamping at only one edge of the profile
- Less floor space
- Automatic process by means of PC control

*Cost control*
- Low man-hour cost

**For both horizontal and vertical it is possible to choose three lay-outs:**

- **One way anodizing:** This line has the advantage of having the loading and unloading area from the same side for top efficiency of the staff involved and foresees a large parking area and easy return of anodic bars.

- **In-line anodizing:** This line has the advantage of simple design and relatively small room needed.

- **“U” shape anodizing:** This line has the advantage of easy material flow

**MAIN FEATURES FOR ADVANCED ANODIZING PLANTS**

1. **Tanks:** they are made of steel or stainless steel, suitably lined with soft PVC or completely made of Polypropylene, 15-20 mm. thick and suitably stiffened with steel or stainless steel sections. The steel surfaces are sand-blasted and finished with acid-proof epoxy paint. Tanks for vertical anodizing plants are usually made of concrete and lined with suitable material (like polypropylene or polyethylene).

2. **Machinery:** they are housed in separated rooms to protect them from corrosive fumes, with easy access for maintenance

3. **Complete fume exhaust systems:** suction directly over tanks with hoods capable of guaranteeing an internal atmosphere free from harmful and corrosive fumes.
Possibility to add neutralising towers (scrubbers) for expulsion of fumes/gas treated to guarantee conformity with local environmental regulations governing emissions.

4. **Bridge cranes**: they are designed to provide all transfer (handling) and correct draining procedures within the times required and are suitable for operation in manual or fully automatic mode (the latter when combined with computerized systems). Semi-automatic systems are also available. Loading and unloading designed for the maximum comfort of the workers and for automatic working.

5. **Air agitation**: it maintains a constant temperature within the bath. Air agitation is carried out by low-pressure blowers which blow chilled air across the treatment and rinsing tanks through a perforated PVC or Polypropylene tube held at the bottom of the anodizing tank.

6. **Pulse rectifiers**: they are designed in accordance with the latest technologies to provide:
   - Better quality and more uniform oxide
   - Reduction of 20-30% of anodizing times
   - Energy saving of 5-7%
   - Remote control panel with computer for presetting the oxide thickness required.

7. **Cooling systems**:
   - Pre-assembled modules with plate-type heat exchanger and acid resistant pumps (stainless steel) complete with digital thermo-regulation unit.
   - Pre-assembled accumulation tank for chilled water, with circulation pumps.
   - Refrigerating unit with air or water condensation depending on climatic conditions on site.

8. **FREEAL recycling**: it is a regeneration system for sulphuric acid of anodizing tanks with removal of aluminium sulphate. Fully automatic system on one or more tanks controlled by PLC. Fully automatic regeneration cycle with tap water.

9. **TECNO 4**: it is a special computerized power supply for electro-pigmentation with DC-AC waveform: simple programming allows the achievement of completely uniform colouring even with large loads (equivalent to maximum capacity of rectifiers).

10. **Auxiliary equipment for electro-colouring tank**: they are recommended in view of the high output, which can be obtained with TECNO 4 power supply.
    - Filtering and heat regulation unit with plate type heat exchanger.
    - Mixing system with automatic metering of chemicals controlled by amper-hour meter.

11. **Multicolour**: it is an innovative electro-colouring technology for the production of new colours for architectural and decorative applications.

12. **Auxiliary equipment for sealing tanks**: Pre-assembled unit consisting of filter pump and mixing system with automatic metering of chemicals controlled by metering pump programmed on the basis of daily output.

13. **Deminalizing units**: automatic or manual, single or DUPLEX units (one in operation and one in stand-by).

14. **Tanks heating system**: it is provided by low pressure steam generators and heating coils. Electrical heating coils are also available.

15. **Waste water treatment plants**: they are plants for treatment of waste water and concentrates, mud thickening system,
Horizontal line

Automatic one way anodizing line
final filtering with possibility of recycling up to 70% of the treated water. Our treatment plants fully respect the environmental regulations in force.

16. **Brushing machine with stainless steel brushes**: it is designed for mechanical pre-treatment of the profiles, fully hydraulic unit with water lubrication. Advantages:
   - Elimination of slight defects and extrusion lines
   - Scotch-Brite finishing (linear satin finish)
   - Reduction of 50-80% in chemical satin-finishing times and caustic soda consumption
   - Reduction of aluminium waste

17. **SATMAC machine**: it is designed for a mechanical finish similar to the one obtained chemically in etching baths in 10-20 minutes.

18. **Packing systems**: conventional or fully automatic with final weighing.

19. **Main control board** for the power supply of the different machines composing the anodizing plant.

20. **Computerized system for plant management**: main part is the software package suitable for storage of the production data (treatment time/surface treated per load (m²)-Oxide thickness) and for the automatic control of the whole
Horizontal in line plant lay-out
The design and technologies described, combined with the chemicals specifically developed by ITALTECNO, guarantee results which comply to European and international standards; they have also been developed with the aim of providing top efficiency, energy and water savings and complete respect for the environment according to the most severe law limits.

21. **Chemical laboratory for analysis of baths and quality control.**