Production facility: focus on innovation

Thales's grid tubes are designed, developed and manufactured in a production plant in Thonon, southeast France, certified to ISO 9001:2000 and ISO 14001. Spanning some 25,000 square meters of floor space, including 200 square meters of clean rooms, Thonon is recognized worldwide as a center of expertise in power sources. R&D teams at Thonon are working on innovative new solutions for industry.

Thales industrial tubes at a glance

- In service in 40.000 generators worldwide
- 120 million operating hours/year
- 200 different models, for all industrial applications



Richardson Electronics global support network

Richardson Electronics is the world wide distributor of Thales industrial products. RELL has been distributing electron tubes since more than 60 years and has developed the best logistic services in the industry. It now has 45 sales offices and stocking locations around the world.

For more information regarding the products, feel free to ask Richardson Electronic - www.rell.com





Thales, a long-standing partner to industry

With over 60 years of experience in the design and manufacture of electron tubes, Thales is the benchmark supplier to a number of industries that call on these tubes for induction heating applications, including pipe welding and heat treatment.

We have made a two-pronged commitment to our customers: to ensure the long-term viability of tube technology, which has proven its reliability and flexibility; and to deliver high-quality products, based on our expertise in the complex underlying processes. Whether for induction, dielectric, or laser applications, we offer the largest range of tubes on the market, plus comprehensive support services around the world.

THALES

Richardson Electronics

www.thalesgroup.com

THALES



RF industrial heating Power grid tubes for induction heating

The world's widest range of tubes for RF industrial applications



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Thales: recognized expertise in high-power RF applications

No matter what industry you're in, you can count on Thales.

- A range of products that covers all market requirements, with tubes developing 5 to 1,250 kW of power. This means we can meet all your needs, whether for petrochemicals, construction, automotive, aviation or other applications.
- The largest catalog of products. Thales is today's largest manufacturer of grid tubes for industry, with products by Thomson, ABB and Siemens all integrated in our production lines.
- The most efficient solution. All Thales's products are manufactured in France, using strict component quality control procedures. We focus on product quality to ensure long operating life and reduced system maintenance costs.
- Delivery within 48 hours. Timely delivery is of course essential in industry. especially when you're waiting for replacement parts! At Thales, we deliver within 48 hours to keep your production lines up and running. Our worldwide distributor guarantees virtually immediate product availability from their stock.
- Customer support and technical assistance around the world. Thales engineers and local technical assistance teams support your development of RF industrial heating solutions. We can also custom-design products for your new systems, and provide upgrades and replacement kits for your older systems.

Thales's best-sellers: versatile solutions keyed to market requirements

1300 kW 1200 kW Heat treatment Pipe welding 1100 kW 1000 1000 kW 900 k\// 800 kW 700 kW 600 kW 500 kW 400 kW 300 kW 240 200 kW 100 kW 20 32 40 60 63 90 D KIA RS 3500 CJ RS 3700 CJ 3300 CJ TK 30 E048 ĚĚ

Water-cooled triodes



Induction heating, used to weld or process conducting materials, offers advantages that make it a perfect industrial match for medium and large production runs:

- Heating of inaccessible parts
- Excellent reproducibility
- Higher energy efficiency

Thales has developed a new technology for these tubes, namely the pyrolytic grid. Based on the crystallization of pyrolytic graphite, it produces a single-piece part, without any welds. This structure, coupled with the graphite's intrinsic mechanical properties, gives the grid unrivaled gualities:

- Very high thermal conductivity
- Very low thermal dilation coefficient, for reduced space between electrodes
- Excellent resistance to thermal shock
- Excellent chemical stability at high temperatures
- - Low and constant electrical resistivity
 - Much lower thermal and secondary emission effects than with metallic grids

Tubes with the pyrolytic grid stand up much longer to operating conditions involving high grid current levels. Which means that our **Pyrobloc**[®] tubes offer **better reliability** and **longer operating life** in high-power systems.





2 - Heat treatment of a mechanical part uses predetermined heating and cooling the material. This process improves the quality of steels and increases their





Pyrolytic grids, a major advance in induction heating

• Precise heat settings and absence of thermal inertia (quick startup) Facilitates automation and saves space • Heat source generates no pollution

Good mechanical resistance, increasing with temperature