

**COOLING SYSTEM ON THE NESTLÉ KUBAN
 INSTANT COFFEE PRODUCTION SITE**

**NESTLÉ PROMOTES THE DEVELOPMENT OF NATURAL REFRIGERANT IN RUSSIA
 BY USING A HIGH-TECHNOLOGY CO₂/NH₃ CASCADE FOR REFRIGERATION.**
Builder

Nestlé Kuban
 Timashvesk
 Russia

Planning

Nestec, Switzerland
 Avenue Nestlé 55
 1800 Vevey
 SWITZERLAND

**Refrigeration
 Technology Contractor:**

AXIMA REFRIGERATION
 6 rue de l'atome
 67800 Bischheim
 FRANCE


**An environmentally-friendly
 technology**

For its coffee freeze drying plant in Kuban in Southern Russia, Nestlé ordered a CO₂/NH₃ cascade from AXIMA REFRIGERATION, a company in the GDF SUEZ group.

This cascade plant, with 4MW close to triple point, is the biggest in Russia and one of the biggest in Europe.

No further proof is needed that the CO₂/NH₃ cascade system is the most environmentally-friendly solution available and that it meets Nestlé's demanding requirements for sustainable investments, which have been setting the trend for some time.

This solution also offers the advantages of:

- reducing the NH₃ load which is confined to a special NH₃ machine room, increasing safety and facilitating supervision
- reducing pipe diameter for the refrigerant supplying the coffee freeze drying plant.

AXIMA REFRIGERATION has considerable experience of industrial CO₂/NH₃ cascade systems.

The company has built similar plants in Western Europe, cooperating with Nestlé project teams to implement high technology solutions. AXIMA REFRIGERATION and Nestlé have chosen Mycom CO₂ screw compressors for the cascade low stage, operating close to CO₂ triple point, combined with NH₃ Mycom screws on the high stage.

Cost reductions

The TCO calculation (total cost of ownership) reveals high efficiency and low maintenance costs on equipment whose reliability is proven.

The use of screw compressors for the CO₂ stage halves the number of compressors needed and multiplies the maintenance intervals by 3. Also less machinery and less space are required in the machine room. High energy efficiency was obtained by precise design of the equipment, optimised control, heat recovery on NH₃ discharge used in the process and by placing an inverter on the compressor and pumps.

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High quality

The plant is designed and fitted with the highest technology and most reliable equipment available, inspired by petrochemical and process practices, such as completely welded plate heat exchangers in order to increase safety and reduce the risk of leakage or the use of pipe fittings such as T pieces or weldolets for piping branches to improve of pipe strength. Also control and inspection are carried out in accordance with Nestlé's own demanding requirements and Russian rules and regulations. In order to comply with Russian standards and obtain the RTN certificate of conformity, AXIMA REFRIGERATION worked in close collaboration with a local company, named OK, for the engineering and erection aspects.

Its long experience and know-how in very high-efficiency oil separation combined with the use of patented oil recovery systems allow immiscible

oil to be used with food-grade oil for the CO₂. This reduces the health and safety risk in the event of an accidental leakage or contact with the product.

Special attention was also paid during engineering and erection to facilitate maintenance and the safety of maintenance operations by installing access platforms for all vessels and evaporative condensers.

NH₃ detection was installed with several levels of alarm and an NH₃ detector on each NH₃-containing piece of equipment in order to comply with local regulations and improve safety in the NH₃ machine room.

The industrial PLC and plant supervision system was designed in line with factory standards and tools in order to facilitate maintenance and increase reliability.

AXIMA REFRIGERATION

Planning Services

Refrigeration planning including the monitoring of a smooth-running project.

Refrigeration plants and cooling units

Food processing, industry, processing technology, cold storage, ice rinks.

Services

Maintenance, repairs, renovation, modernization, reconstruction.
Energy consultation.



AXIMA Refrigeration
GDF SUEZ

AXIMA REFRIGERATION FRANCE

6 rue de l'Atome - F-67800 Bischheim - Tél : +33 (0)3 88 19 19 00 - Fax : +33 (0)3 88 19 19 49
info@aximaref-gdfsuez.com - <http://www.aximaref-gdfsuez.com>