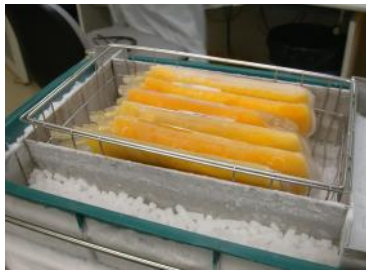


# Sub-zero blood product handling facilities



## The Project

The Australian Red Cross Blood Bank Service (ARCBS) manufactures several different blood products, all with different pack sizes and production requirements. The ARCBS were experiencing difficulties with their manufacturing due to every product using a different basket (NSW), then at another site (VIC) all the baskets would be completely different. This made it difficult to set up standard procedures, processes and equipment across the manufacturing facilities.

The baskets carrying the blood products are placed on shelves in both fridges (2°C) and freezers (-40°C). ARCBS staff must become completely suited up in appropriate PPE before entering the fridge or freezer work zones and can only stay in this environment for a very short time period.

The ARCBS wanted equipment designed specifically for their purpose and that would be common across all manufacturing sites. This included a new basket design, that would be suitable for all their products, as well as a new trolley design, that would be designed to suit the new basket & allow easy wash down. The final requirement was to have a method of storing these full baskets inside a freezer, without having to suit up an go in and out all the time.

ARCBS engaged Australis Engineering to provide the following outcomes for their new blood handling facilities in both Sydney and Melbourne:

- Design a roller conveyor system that will operate in in both fridges at +2°C & freezers at -40°C.
- Design and manufacture prototype blood product handling baskets for all products in both manufacturing facilities.
- Design and manufacture a new trolley to suit the new common basket and that is capable of full wash-down.
- Manufacture of 280 x 316 Stainless Steel roller conveyors for use in sub-zero freezer environment
- Manufacture of 316 Stainless Steel blood handling baskets

**Engineering Design**

**TGA Compliant Conveyors**

**Research & Development**



## The Result

Australis provided the ARCBS with the following outcomes:

- Designed, through several prototypes, a common basket that could be used for all blood products in both Sydney and Melbourne;
- Designed and manufactured a highly compact gravity roller conveyor system, so that blood products can be placed through a door in one end of fridge or freezer & removed from the other end, first in first out, without staff needing to suit up. These roller conveyors allowed the fridge and freezer space to be maximised.

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**Client:**

**Australian Red  
Cross Blood Bank  
Service**

**Locations:**

**Sydney and  
Melbourne**

**316 Stainless Steel  
roller conveyor**

**316 Stainless Steel  
product baskets**

**316 Stainless Steel  
product trolleys**

**Anti-bacterial belt  
conveyors**

**Sub-zero freezer  
use**

**Wash down Use**

**Engineering  
consultancy**

**Proto-typing**

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- Designed a new trolley to suit the new common basket which could be used at all facilities & would allow the trolley full of baskets to be washed down easily in a new automated washer.

Following successful completion of the engineering design consultancy, Australis was awarded the manufacturing contract to produce the sub-zero roller conveyors, trolleys and baskets for the new ARCBS Sydney Manufacturing Facility and Melbourne Manufacturing Facility.

In winning these contracts, Australis was sub-contracted to the civil contractors, Hooker-Cochram and BuildCorp, resulting in a strong working relationship that ensured the conveying systems were delivered on time and to meet with the overall civil project timeline.

Australis Engineering's solution ensured that the purpose-built roller conveyors and belt conveyors, product handling baskets and trolleys being installed to the ARCBS freezer and fridge facilities in Sydney and Melbourne resulted in reduced OHS risk to ARCBS employees as the conveyors operate easily in the sub-zero temperatures – compared to the previous scenario where ARCBS employees had time restrictions in place to prevent cold-related health and safety impacts from occurring. OHS risk and facility have since improved as ARCBS staff spend less time donning cold suits to brave the arctic-like conditions of the freezer facilities. Instead the conveyor system transports the blood products directly to the lab technician's work area. This is a major benefit as it means a dramatic reduction in the number of freezer entries by ARCBS staff and results in increased productivity.

To ensure that the new materials handling solution meets strict Therapeutic Goods Association (TGA) standards, the Australis Engineering solution incorporated medical grade stainless steel construction of all structural components and the use of food grade anti-bacterial belts within the system. Critically, Australis supplied the roller conveyors with special purpose roller bearings that are designed to maintain their operational requirements despite the extremely cold temperatures within the freezer environment.



## **Innovation**

A key element of the Australis solution has been the use of the stainless steel gravity roller conveyors in ARCBS's fridges and freezers, which are a robust, effective and inexpensive solution, that will prove to last the test of time until the ARCBS requires further expansion. The 316 Stainless Steel conveyors also withstand the harsh freezer environment more effectively and allow for easy cleaning and maintenance which is critical for a TGA facility. To ensure the rollers worked in the  $-40^{\circ}\text{C}$  environment, Australis custom designed and supplied special purpose stainless steel roller bearings. These bearings were specifically designed to ensure no ice build up and to ensure the rollers operated effectively in the harsh environment.