

DEVELOPMENT OF AIR REFRIGERATION SYSTEM “PASCAL AIR”

Jan Boone

MAYEKAWA EUROPE S.A.,Leuvensesteenweg 605, 1930 Zaventem, Belgium

Tel. 32-2-757-9075, Fax. 32-2-757-9023

Akito Machida

MAYEKAWA Mfg.Co.Ltd, Technology Laboratory, 3-14-15 Botan, Koto-Ku,
Tokyo 135-8482, Japan

Fax.81-3-3642-8271

ABSTRACT

This paper presents an introduction of the principle and the results of operation in the field of “Pascal Air”, a refrigeration system using the ultimate natural refrigerant ‘Air’.

In the introduction of the “Pascal Air” an overview of the refrigeration system unit, composed of 3 parts : an expander-integrated compressor, a primary cooler and a heat recovery heat exchanger, is given. It is an easy transportable outdoor installation type.

The system characteristics are explained in detail. The COP is over more than 20% higher than with conventional systems. There is no need for air coolers in this system and up to 50% energy saving is possible, contributing to the reduction of consumption of fossil fuel and CO₂ emissions.

In the field example we present an ultra-low temperature refrigerator for tuna and bonito fish with nominal freezing storage of 20.000 m³ at -55°C.

The 23rd IIR International Congress of Refrigeration. August 21-26,2011 Prague,Czech Rep.