



CLEAN OIL  
BRIGHT IDEAS

# Oil for Cooling Compressor

## Sabroe Grasso Cooling Compressor, Cold Store

### CJC™ Application Study

Application Study  
written by:

Kasper Nissen  
C.C.JENSEN A/S  
Denmark

2014

#### CUSTOMER

Claus Sørensen, Vejle, Denmark  
Contact person: Mr. Michael Glering, chief engineer

#### SYSTEM

**System:** 7 pcs Grasso  
390 kW piston compressors  
1 pc Grasso 525 kW screw unit  
1 pc Sabroe 400 kW cooling compressor  
**Oil type:** Petro-Canada Reflo 68 A (V)  
oil for cooling compressor  
**Oil volume:** 200 litres per tank

#### PROBLEM

Claus Sørensen A/S Group owns a number of cold stores in Denmark. Their compressors are in operation 24 hours a day, 365 days a year. During the cooling process, the oil in cooling compressors generally becomes contaminated with ammonia, water and particles. This means that prior to the installation of the CJC™ Oil Filter they discarded around 800-1000 litres of oil a year.

#### SOLUTION

**CJC™ Filter:** HDU 27/27 Mobile  
**CJC™ Filter Insert:** AK and A 27/27  
**Pump type:** PVM4-18  
**Pump flow:** 120 litres/h  
**Dirt-holding capacity:** 4 kg

In 2012, Claus Sørensen A/S decided to invest in a **CJC™ HDU 27/27 Mobile Filter** with 2 pcs. CJC™ Filter Inserts per 200 litres. First an **A** Filter Insert, followed by an **AK**-Filter Insert.

Oil is tapped off from the system into tanks, allowing the ammonia content to evaporate prior to the filtering process.

After commissioning the CJC™ Oil Filter, Claus Sørensen has been able to filter the oil and re-use it on a par with newly purchased oil. This has made for huge financial and environmental savings.

#### FINANCIAL BENEFITS

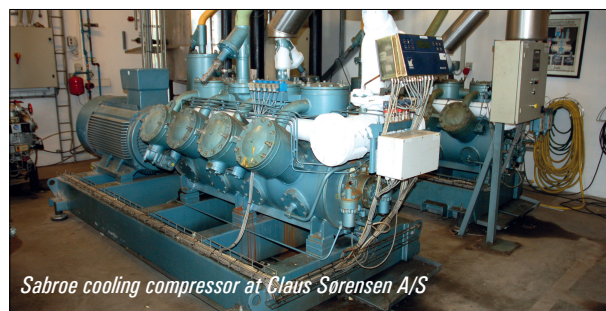
The payback time for a CJC™ HDU 27/27 Mobile Filter will be 10 months per 1,000 litres of oil, incl. the Filter Inserts used in the period 2012-2014.

By filtering the oil, Claus Sørensen achieves a **saving of DKK 35,000-40,000** (EUR 4,700-5,300) a year on 800-1000 litres of oil.

The annual operational cost of the CJC™ Oil Filter has been deducted from this calculation.

#### ENVIRONMENT BENEFITS

After commissioning the CJC™ Oil Filter, Claus Sørensen avoids discarding some 800-1000 litres of oil a year.

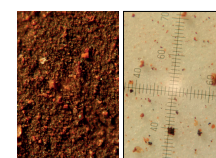


Sabroe cooling compressor at Claus Sørensen A/S

#### OIL SAMPLES



Oil samples **BEFORE** and **AFTER** filtration



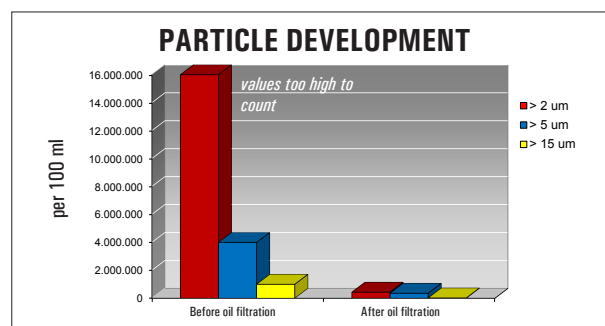
Oil sampling membrane  
**BEFORE & AFTER**

#### RESULT

Date	BEFORE oil filtration	AFTER oil filtration
Water, ppm	146	33
Particles > 2 µm	nc *)	435,979
Particles > 5 µm	nc *)	357,864
Particles > 15 µm	nc *)	19,605
ISO Code	> 24/22/20	19/19/15

\*) values too high to count

Analyses conducted by Filtrix Services



#### CUSTOMER'S COMMENTS

**Mr. Henrik Hyre-Sandfeld, Cooling Systems Fitter:**

"In short, our problem was/is that cooling compressors use a lot of oil as part of the cooling process. This accumulates in the oil separators and pump separators. We can tap it off from here but not immediately recycle it. Compressor oil used to be discarded as waste oil, but after we installed a CJC™ Oil Filter this oil can be re-used. We filter about 800 – 1000 litres a year, which can be re-used in the compressors on a par with newly purchased oil."