

**NORTHERN CROSS ENERGY LIMITED**

**ICE-GS SYSTEM DOCUMENTATION**

## **NORTHERN CROSS ENERGY LIMITED**

### **CO-GEN SYSTEM DESCRIPTION**

The Northern Cross Energy Limited (NCE) Internal Combustion Engine – Generator Set (ICE-GS) is currently located at the Thompson's Limited Grain Drying facility near Port Albert, Ontario (just north of Goderich on Hwy 21).

The unit consists of two containers. The first is an oversized container (white) that houses the ICE-GS and the controls. It is skid mounted and is equipped with lifting lugs. The second is a container (green) that houses the cooling unit.

The cooling unit is relatively light and consists of a set of intake louvers on one end that bring in outside air or return air from the building. The air then passes through a bank of fabric filters. The air then moves through the fan room that houses a 40HP motor that drives 2 fan units with a common shaft. The air then passes through a radiator that's connected to one of the cooling loops and then discharged to another set of louvers that either direct the heat to the outside or to the building. The second cooling loop serviced another portion of the building but has already been removed.

The two containers are connected by the two cooling loops and the associated electrical and control wiring.

To aid in understanding this system please refer to the following attachments:

ATTACHMENT 1: Electrical and Mechanical Specifications

ATTACHMENT 2: Physical Measurements

ATTACHMENT 3: Images

## **ATTACHMENT 1**

### **ELECTRICAL – MECHANICAL SPECIFICATIONS**

From: Jeff Zondag <jeffz@northerncross.ca>  
Subject: COGEN FACILITY RATING PLATE INFO ON EQUIPMENT  
Date: September 17, 2015 at 3:44:04 PM EDT  
To: David Thompson <dthompson@northerncross.ca>  
Cc: Dave McLean <dmclean@rb-consulting.ca>

**NORTHERN CROSS ENERGY LTD. – COGEN FACILITY AND ASSOCIATED  
EQUIPMENT INFO**

-RATING PLATE INFO-

**COGEN BUILDING CONTENTS:**

ENGINE

WAUKESHA DRESSER ENGINE  
MODEL P 48 GL  
SIZE 152 X 165 MM  
DATE JUN 95 G-975,305  
SER 403761  
GOV SPEED 1800

GENERATOR

LEROY SOMER A.C. GENERATOR  
TYPE LSA 49 L9 N' 160 539/1 IP 21  
kW 700 Cos 0.8  
kVA 875 Rend Eff% 94.2 Y:V 600 A 842  
RPM 1800 Ph 3 CI H Hz 60  
Service duty SI Excitation RBS No Load A 0.7  
AVR Basler Rated Load 82 A 2.7  
Date 09/92 Temp Rise (k) 125 Amb 40 ' c  
Quant 34g NDE BRG 6221 03  
Grease Every 3400 hrs With Shell Alvania G3

LSH EXHAUST HEAT RECOVERY BOILERS (X2)

BAIRD INDUSTRIES INC  
75 PSI AT 500 ' F ( MAX ALLOWABLE WORKING PRESSURE)  
-20' F AT 75 PSI ( MIN. DESIGN METAL TEMP)  
CRN K6755.5  
SER # 156868-01-1 YR 1992  
# 156868-01-2 YR 1992

WIEGHT 1095 LBS EACH

JACKET WATER BOOSTER PUMP (PUMPS TO AIR HANDLER LOCATED  
OUTSIDE-WAREHOUSE HEAT SUPPLY)

ARMSTRONG

MODEL 4X4X10 4380 CONSTRUCTION BF

PUMP CAPACITY 325 US GPM 57 FT

MOTOR 10 HP 1800 PRM

SER # 176808

AUXILLARY WATER BOOSTER PUMP (PUMPS TO SMALL AIR HANDLER  
INSIDE WAREHOUSE THAT SERVICED SCALE )

ARMSTRONG

TYPE DF 4

HP 4

RPM 1780

ELECTRICAL CONTROL PANELS

KLONKER MOELLER

SERIES 200 MOTOR CONTROL CENTER

**AIR HANDLERS:**

LARGE AIR HANDLER (THAT SERVICED WAREHOUSE)

ENGINEERED AIR

MODEL LMD-42-C

SER# M3398 AHU-1

SUPPLY CAP 40,000 CFM

EXTERNAL S.P. 1.0 W.C.

SUPPLY FAN SIZE (2) 25/25

BLOWER PULLEY 5B 18.4SF2 7/16

RPM 653

SUPPLY MOTOR PULLEY 5B6.6SK2 1/8

BELTS B112

SUPPLY MOTOR 37 FLA

40 H.P.

ELECTRICAL RATING 93.6 %

UNIT ELECTRICAL SPECS 600 VOLTS 3 PH 60 HZ  
(UNIT LOCATED OUTDOORS ON CONCRETE PAD)

SMALL AIR HANDLER (THAT SERVICED SCALE)

ENGINEERED AIR

MODEL LM-18-C

SER # M3398 AHU-2

SUPPLY CAP 18,000 CFM

EXTERNAL S.P. 1.5 W.C.

SUPPLY FAN SIZE 27/27 TEMP RISE 35°F

BLOWER PULLEY 3B15.48K1 11/16

RPM 589

SUPPLY MOTOR PULLEY 3B5.OSD1 5/8

BELTS B 104

SUPPLY FAN MOTOR 14.2 FLA 15 hp.. EFF. RATING 92.4 %

UNIT ELECTRICAL SPECS 600 V 3 PH 60 HZ

PHYSICAL DIMENSIONS- 9 1/2' LONG X 8' WIDE X 6' TALL (UNIT UP ON  
A MEZZANINE)

**DUCT WORK:**

ASSORTED SIZES-(SIZES ESTIMATED LOOKING AT IT FROM THE  
GROUND)

84" X 46" DUCT – APPROX 22 FT IN LENGTH

68" X 28" DUCT – APPROX 30 FT IN LENGTH

36" X 26" DUCT – APPROX 26 FT IN LENGTH

-ALSO ASSOCIATED REDUCERS TO GO FROM SIZE TO SIZE, A 84" X 46"  
Y FITTING, AND 4 LARGE DIFUSERS(APPROX 68" DIA)

-PLUS DUCT WORK FROM AIR HANDLER TO WAREHOUSE WALL

## **ATTACHMENT 2**

### **PHYSICAL MEASUREMENTS**

From: Jeff Zondag <jeffz@northerncross.ca>  
Subject: FW: Cogen measurements and pics  
Date: September 17, 2015 at 2:49:47 PM EDT  
To: David Thompson <dthompson@northerncross.ca>  
Cc: Dave McLean <dmclean@rb-consulting.ca>

Dave,

You had requested info on dimensions, weight etc of cogen.

I did a rough calculation for weight of building and contents at approx.  
42,000 lbs.

Engine- 14,900 lbs, generator- 4000 lbs, I beam base-13,780 lbs, exhaust  
boilers/pumps/piping- 4000 lbs, building structure/electrical cabinet- 4000  
lbs, muffler/exhaust hood with motor-520 lbs. Some of these #s are  
estimates but shouldn't be too far off.

Attached are pictures of cogen and associated equipment and description of  
the cogen building dimensions and cooler dimensions.

I will send a breakdown of some of the rating plate info for some of the  
equipment related to the cogen system in short order so you have the info  
for any potential purchasers if that is the route you decide on.

Jeff

----- Forwarded Message -----

From: "Jeff Zondag" <JeffZ@northerncross.ca>  
To: "Dave McLean" <dmclean7657@gmail.com>  
Sent: 04/09/2014 10:21:52 AM  
Subject: Cogen measurements and pics

Dave,

Cogen building measures:  
12 ft wide to the outside of lifting lugs  
35 ft long w/ hood removed off end  
11 1/2 ft tall - add 4 1/2 ft if exhaust hood and muffler were kept on

Exhaust stack  
Approx 35 ft tall

Cooler building  
12 ft wide



9.5 ft tall with duct removed  
20 ft long with hoods removed of ends

Other cost would be labour to strip out gas piping, removing cooler piping from Cogen to cooler building, removal of exhaust piping to stack, electrical disconnection etc New pas of cement for unit to sit on and all the reconnection costs

See pictures to follow this email.

Jeff Zondag  
Operations Manager  
Northern Cross Energy Ltd.

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No virus found in this message.

Checked by AVG - [www.avg.com](http://www.avg.com)

Version: 2014.0.4765 / Virus Database: 4015/8148 - Release Date: 09/03/14

## **ATTACHMENT 3**

### **IMAGES**

**NORTHERN CROSS ENERGY LIMITED**

**CO-GEN UNIT IMAGES**













