



# Kyma Steam Analyzer : Data Input Form

Vessel : Demo LNGC

Trial Condition : 90% MCR, Fuel Oil  
 Trial Date : 11-Oct-2000 15:04:04

Trial Duration : 0hrs 15min.

## Fuel Data

|                                     | Unit      |        |
|-------------------------------------|-----------|--------|
| - Fuel Oil mass flow to boilers     | Kg/Hr     | 6850   |
| - Fuel Oil sp. gravity at 15°C      | [No unit] | 0.9800 |
| - Fuel Oil high calorific value     | kJ/kg     | 43032  |
| - Boil-off gas mass flow to boilers | Kg/Hr     | 0      |
| - Boil-off gas nitrogen contents    | Percent   | 0.0    |
| - Boil-off gas calorific value      | kJ/kg     | 55565  |

## Main Boilers

|                                     | Unit    | No. 1 | No. 2 |
|-------------------------------------|---------|-------|-------|
| - Air temp. SAH inlet               | Deg. C  | 45.0  | 45.0  |
| - Air temp. SAH outlet              | Deg. C  | 130.0 | 130.0 |
| - Gas temp. ECO inlet               | Deg. C  | 340.0 | 340.0 |
| - Gas temp. ECO outlet              | Deg. C  | 176.0 | 176.0 |
| - Feedwater temp. ECO outlet        | Deg. C  | 192.0 | 192.0 |
| - Superheater outlet steam pressure | MPa rel | 5.88  | 5.88  |
| - Superheater outlet steam temp.    | Deg. C  | 525.0 | 545.0 |
| - Desuperheater outlet steam temp.  | Deg. C  | 287.0 | 287.0 |
| - Steam temperature at SAH inlet    | Deg. C  | 236.0 | 236.0 |
| - Stack gas oxygen content          | Percent | 2.0   | 2.0   |
| - Fuel oil pressure at burners      | MPa rel | 2.00  | 2.00  |

## Main Feed Pumps

|   | Unit      | No. 1 | No. 2 |
|---|-----------|-------|-------|
| - Steam chest pressure                  | MPa rel   | 4.20  | 0.00  |
| - Discharge pressure                    | MPa rel   | 7.60  | 0.00  |
| - Recirculation valve (1=open/0=closed) | [No unit] | 0     | 0     |
| - Extra nozzle group (1=open/0=closed)  | [No unit] | 0     | 0     |

## Turbo Generators

|                      | Unit   | No. 1 | No. 2 | No. 3 |
|----------------------|--------|-------|-------|-------|
| - Generator load     | kW     | 900   | 0     | 0     |
| - Exhaust steam temp | Deg. C | 40.0  | 0.0   | 0.0   |



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## Main Turbine

|                                       | Unit      |       |
|---------------------------------------|-----------|-------|
| - 1st stage pressure                  | MPa rel   | 3.00  |
| - 1st bleed pressure                  | MPa rel   | 1.47  |
| - 1st bleed temperature               | Deg. C    | 352.0 |
| - Cross-over pressure                 | MPa rel   | 0.49  |
| - Cross-over temperature              | Deg. C    | 236.0 |
| - 3rd bleed pressure                  | MPa rel   | 0.024 |
| - 3rd bleed temperature               | Deg. C    | 108.0 |
| - LP turbine exhaust steam temp       | Deg. C    | 33.0  |
| - 1st bleed valve (1=open / 0=closed) | [No unit] | 1     |
| - 2nd bleed valve (1=open / 0=closed) | [No unit] | 1     |
| - 3rd bleed valve (1=open / 0=closed) | [No unit] | 1     |

## Main Condenser

|                                | Unit      |      |
|--------------------------------|-----------|------|
| - MC absolute pressure         | mm Hg abs | 38.0 |
| - MC inlet sea water temp.     | Deg. C    | 24.0 |
| - MC overboard sea water temp. | Deg. C    | 28.0 |
| - MC hotwell condensate temp.  | Deg. C    | 33.0 |

## Condensate and Aux. Systems

|   | Unit      |       |
|---|-----------|-------|
| - 1st. heater inlet condensate temp.      | Deg. C    | 50.0  |
| - 1st. heater outlet condensate temp.     | Deg. C    | 98.0  |
| - 1st. heater outlet drain temp.          | Deg. C    | 70.0  |
| - Deaerator shell pressure                | MPa rel   | 0.15  |
| - Deaerator inlet steam temp.             | Deg. C    | 350.0 |
| - Deaerator water temp.                   | Deg. C    | 128.0 |
| - 3rd. heater shell steam pressure        | MPa rel   | 0.49  |
| - 3rd. heater outlet feedwater temp.      | Deg. C    | 145.0 |
| - 3rd. heater outlet drain temp.          | Deg. C    | 135.0 |
| - Atm. drain tank temp.                   | Deg. C    | 62.0  |
| - Pressure in 0.9 MPa line to heating     | MPa rel   | 0.90  |
| - Service Dsphtr. outlet steam temp.      | Deg. C    | 200.0 |
| - Forcing Vaporizer (1=operat./0 =secure) | [No unit] | 0     |



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## Steam Plant Operation

|  | <u>Unit</u> |       |
|--|-------------|-------|
| - Propulsive power                       | kW          | 24120 |
| - Propeller speed                        | Rev/Min     | 85.9  |
| - Distiller No.1 production              | m3/Hr       | 0.00  |
| - Distiller No.2 production              | m3/Hr       | 1.40  |
| - Feed water make-up                     | m3/Hr       | 1.40  |
| - 0.9/0.24 MPa reduction to exhaust line | Percent Op  | 0     |
| - 1.6/0.9 MPa reduction to heating       | Percent Op  | 50    |
| - 6.0/0.9 MPa reduction to heating       | Percent Op  | 0     |
| - 0.53/0.17 MPa reduction to exhaust lin | Percent Op  | 15    |
| - 0.01 MPa reduction to distillers       | Percent Op  | 0     |
| - Exh. steam dump to MC                  | Percent Op  | 0     |
| - Main steam dump to MC                  | Percent Op  | 0     |



# Kyma Steam Analyzer : Heat Balance Diagram

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Vessel : *Demo LNGC*

Trial Condition : 90% MCR, Fuel Oil

## Key Values

|                          |       |       |
|--------------------------|-------|-------|
| Shaft power              | 24120 | kW    |
| SFR (corrected)          | 285.8 | g/kWh |
| Fuel oil consumption     | 6850  | kg/hr |
| Gas consumption          | 0     | kg/hr |
| Eq. Fuel oil consumption | 6850  | kg/hr |
| T.G. output              | 900   | kW    |
| Distillate production #1 | 0.00  | m3/Hr |
| Distillate production #2 | 1.40  | m3/Hr |

## Legend

|   |                           |
|---|---------------------------|
|  | Steam line                |
|  | Condensate and feed lines |
| Pressures   | (p) in MPa abs            |
| Temperatures  | (t) in °C                 |
| Enthalpies  | (h) in kJ/kg              |
| Flows   | (Q) in kg/hr              |



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