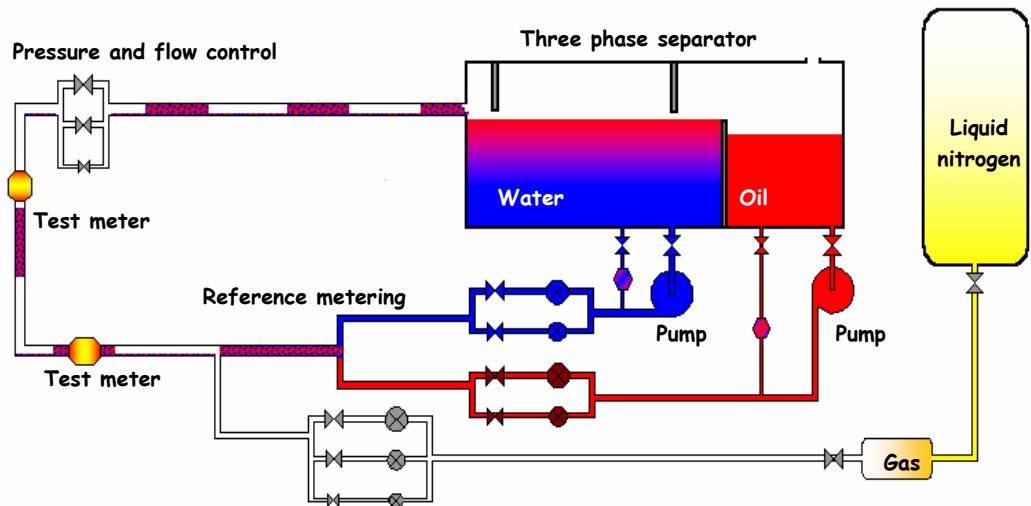


# MULTIPHASE TEST FACILITY

NEL has long been recognised as a world leading supplier of multiphase test and evaluation services. NEL'S multiphase facility is a purpose built facility designed to simulate full three-phase flows encountered in the oil and gas production industry. The facility is designed to enable testing and evaluation of the new production technologies required in today's production situations. Our multiphase testing facility is fully independent and traceable to national measurement standards. The facility is operated by highly skilled operators supported at all stages by technical experts to ensure that our customers receive the best possible service, matching their expectations throughout the process.

The facility is built around a full-scale three-phase separator, which separates and stores the oil and water phases, with the gas phase supplied on demand. Each phase is pumped and measured separately before being mixed into a multiphase flow and transported round the facility. The two test sections can be constructed to offer horizontal, vertical or inclined piping configurations to match the customer's requirement. The facility is completely enclosed in a state of the art dedicated testing building, providing a comfortable and safe working environment.



## Multiphase Metering- the Way Forward

Multiphase meters have developed significantly in recent years, driven by the technical and economic requirements of new marginal field developments.

NEL has been heavily involved in all stages of multiphase meter development. Through extensive Joint Industry Projects and 3<sup>rd</sup> party testing programmes NEL has tested virtually all multiphase meters currently on the market or deployed in the field.



Continued development, testing and evaluation of multiphase meters is essential to improve their performance (5% uncertainty in 10,000 bbl/day oil production equates to approximately \$5 million in financial exposure per year) and reduce costs, enabling per well metering.

## Testing Services Offered

- Detailed multiphase flowmeter evaluation
- Multiphase flowmeter FATs
- Water cut monitor evaluation
- Coriolis “Net Oil” evaluation
- Multiphase pump testing
- Compact separator efficiency evaluation
- Interface level detector testing
- 2 and 3-phase effects on single phase meters
- Evaluation of  $\Delta p$  through components
- Valve performance characterisation



## Facility Services



In addition to the instrumentation and equipment available in the facility, NEL also offers:

- Handling of dangerous goods
- Handling and storage of radioactive sources
- Overhead crane (10 tonnes)
- Power supplies (110VAC, 240 VAC, DC)
- Mains air supply @ 7 bar (100 psi)

Subject to availability, the NEL facility can be hired on a day rate basis for short, medium or long term testing. Full details of facility rates are available on request.

## Multiphase Test Facility Specifications

### Fluids/Flowrates

Crude oil (North Sea, API 30)  
Salt water (salinity as required)  
Nitrogen gas  
Gas volume fraction (GVF)  
Water cut (WC)

up to 100 m<sup>3</sup>/hr (15,000 bpd) (uncertainty < 1.0%)  
up to 100 m<sup>3</sup>/hr (15,000 bpd) (uncertainty < 1.0%)  
up to 1500 Sm<sup>3</sup>/hr (1.3 mmscfd) (uncertainty < 1.5%)  
0% to 100%  
0% to 100%

### Operating Conditions

Line pressure  
Line temperature  
Line sizes  
Horizontal line length  
Vertical line height

up to 10 barg (145 psig)  
5°C to 40°C (40°F to 104°F)  
1-inch to 6-inch  
60m (30m available test section)  
10m

### Reference Instrumentation

Oil 1 ¼” and 3” turbine meters  
Water 1 ½” and 3” turbine meters  
Gas ½”, 1” and 3” turbine meters  
Cross contamination monitors  
Fluid sampling

### Test Section Instrumentation

Temperature, pressure  
Perspex viewing sections  
Gamma densitometer  
Video cameras  
Mixing (static or powered)  
High speed Dp/ pressure logging

### Offline Instrumentation

Density measurement  
Viscosity measurement  
Oil/ water analysis  
Gamma densitometer

For all enquiries, please contact:  
NEL, East Kilbride, GLASGOW, G75 0QU, UK  
Tel: +44 1355 220222 Fax: +44 1355 272999  
Email: sales@tuvnel.com www.tuvnel.com