

# CSIRO Minifrac System



## Features

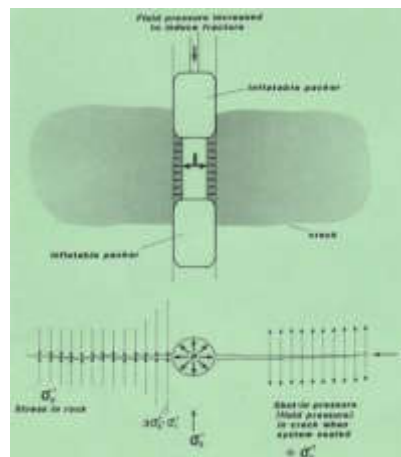
- IS version
- Fully self contained and portable system
- Dual hand pumps for test and packer pressurisation
- Light weight transport case
- Laboratory test frame
- Mechanical or electronic chart recorder
- Miniature system is more convenient than larger scale equipment

## Applications

The ES&S CSIRO\* Minifrac system is a low cost Hydraulic Fracturing tool for determining stress in applications where less precise measurements are required. Hydraulic fracturing produces 2D results.

The Minifrac system has been used for stress determination projects including the M5 Tunnels Sydney Australia, the MacArthur River Mine NT Australia, Torino Limestone Caverns Torino Italy and the National Institute of Rock Mechanics India.

The CSIRO Minifrac system is available in an IS version for use in Collieries.



# Technical Specifications

<b>Minifrac Tool</b>  Diameter Overall Length Test Section Length Weight Maximum Packer Pressure (under ideal test conditions)	36mm 620mm 160mm 2.4kg 35MPa	<b>Impression Packer</b>  Diameter of Collars Diameter of Packer Diameter when wrapped Overall Length Active Length Weight Maximum Packer Pressure (under ideal test conditions)	36mm 34mm 37mm 620mm 500mm 2.4kg Typically greater than 20MPa
<b>Installation Rods</b>  Diameter Length Weight Construction  Maximum Pressure Coupling	36mm 500mm 3.0kg Stainless steel tube with dual pressure lines Greater than 35MPa Dual Pin with ring nut	<b>Pressure Pumps</b>  Type  Maximum Pressure Maximum Flow Rate Tank Capacity Fluid	Hand pumps □ 2 stage (2 x Enerpac P142) 40MPa 200ml/min 4 Litre Water/soluble oil Biodegradable oil
<b>Laboratory Load Frame</b>  Hydraulic Cylinder Maximum Pressure Core Lengths	Enerpac RC50 35 MPa Max. 100mm	<b>Transportation Case</b>  <div style="text-align: center;"><b>L x W x H</b></div> Module 1 2080 x 600 x 590 Module 2 1690 x 600 x 1160	<b>Weight</b> 90kg 125kg

\*Commonwealth Scientific and Industrial Research Organisation Australia

## Operating Principle

Hydraulic fracturing involves the isolation of part of a borehole using an inflatable straddle packer and the subsequent pressurisation of the hole until the wall rock fractures. If an axial fracture is produced, the pressure record obtained during the test can be used to determine the magnitudes of the secondary principal stresses in the plane normal to the test hole axis.

The Minifrac System is supplied in two robust transportation modules. Each module has been designed to be self-contained and easily transported to site in an underground mine. System options include choice of recorder type i.e. mechanical/ electronic chart/electronic chart with data logger and additional installation rods for deeper testing.

### Module 1- installation & test tools

Comprising:

- Transportation Case base and cover
- 8 x Installation Rods (1.5 metre each)
- 2 x Fracturing Tools
- 2 x Impression Tools
- 1 x Test Pipe

### Module 2 - pressurisation and recording system

Comprising:

- Transportation Case base and cover
- Hydraulic Tank with Dual Hand Pumps
- Instrument Panel with Test and Packer Manifolds
- 2 x Pressure Gauges (40 MPa) Recorder & Pressure Sensors
- 2 x Vent Valves
- 2 x Test and Packer Hoses (5 metres each)
- Laboratory Test Frame
- Operation Manual and Interpretation Guide
- Spares Kit

### Environmental Systems & Services Pty Ltd.

8 River Street, Richmond, VIC, 3121 Australia

PO Box 939, Hawthorn, VIC, 3122 Australia

Telephone: + 61 3 8420 8999

Facsimile: + 61 3 8420 8900

Email: [geotechnical@esands.com](mailto:geotechnical@esands.com)

Web: [www.esands.com](http://www.esands.com)