

Summary Specification	
BIL. SEBUTHARGA/QUOTATION REF.:	UBD/Q/244/2025 (FIT) - [T]
TARIKH DIIKLANKAN :	30 December 2025 [Selasa]
TARIKH TUTUP :	13 Januari 2026 [Selasa] JAM: 2 Petang
DOCUMENT FEE :	B\$ 10.00

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The Official PDF quotation/tender form will be send via email once UBD Official receipt issued and send to vendors/supplier for confirmation of payment received.

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TITLE :		<u>TO SUPPLY, DELIVER, CUSTOMIZE, INSTALL, TEST AND COMMISSION CUSTOMIZE MICROWAVE PYROLYSIS SYSTEM FOR UBD FIT.</u>
No.	Quantity	SPECIFICATIONS
1	1 lot	To Supply, Deliver, Customize, Install, Test and Commission Customize Microwave Pyrolysis System for UBD FIT, that includes the following: -
1.2	1 unit	<p><b>Microwave chemical reactor</b></p> <p>Specifications:</p> <ul style="list-style-type: none"> <li>• Microwave output power: 0–750 W (adjustable)</li> <li>• Microwave frequency: 2450 MHz</li> <li>• Temperature range: Room temp → 250 °C</li> <li>• Temperature accuracy: ±1 °C</li> <li>• Power supply: AC 220 V, 50 Hz</li> <li>• Heating mode: Continuous (non-pulsed)</li> <li>• Control system: <ul style="list-style-type: none"> <li>- LCD display</li> <li>- Constant temperature / constant power modes</li> <li>- Up to 5 programmable steps</li> <li>• Stirring: Built-in magnetic stirrer, adjustable speed</li> <li>• Atmosphere: Supports inert gas inlet (e.g., N<sub>2</sub>, Ar)</li> <li>• Safety: Door interlock, overheat protection</li> <li>• Dimensions: Approx. 400 × 510 × 470 mm</li> <li>• Reaction chamber: Approx. 330 × 330 × 230 mm</li> </ul> </li> </ul>
1.2	1 unit	<p><b>Quartz 3 necks flat bottom flask, 500ml, socket 24/40</b></p> <p>Specifications:</p> <ul style="list-style-type: none"> <li>• Product: Quartz glass</li> <li>• Capacity: 500 mL</li> <li>• Material: High-purity Quartz glass</li> <li>• Design <ul style="list-style-type: none"> <li>- 3 necks (1 center, 2 side necks)</li> <li>- All joints: standard taper 24/40</li> <li>- Flat bottom for stable placement</li> </ul> </li> <li>• The taper size for each neck can be adjusted by the manufacturer as long as it fits.</li> <li>• Please see the attached design</li> </ul>

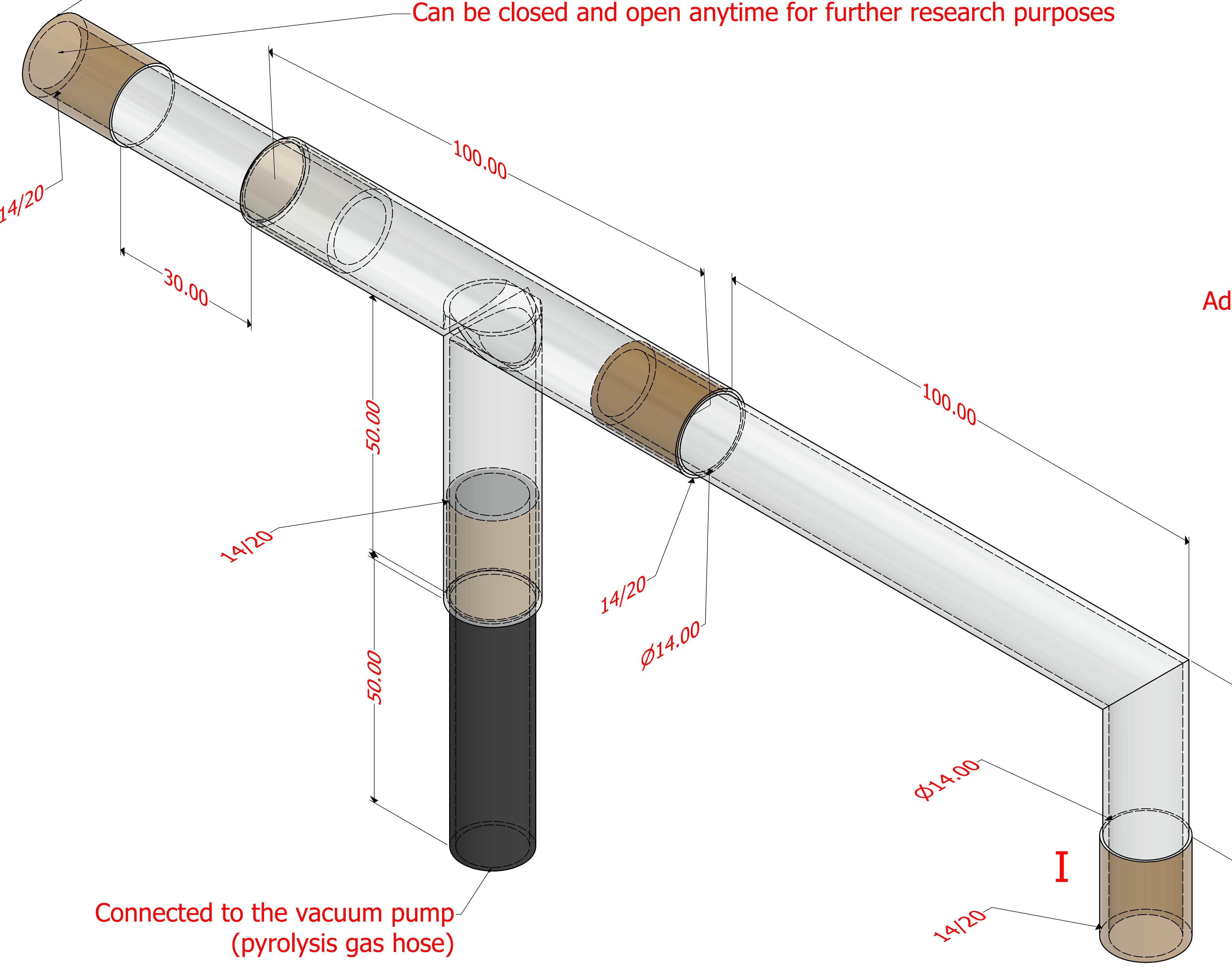
TITLE :		<u>TO SUPPLY, DELIVER, CUSTOMIZE, INSTALL, TEST AND COMMISSION</u> <u>CUSTOMIZE MICROWAVE PYROLYSIS SYSTEM FOR UBD FIT.</u>
No.	Quantity	SPECIFICATIONS
1.3	1 unit	<p><b>Quartz 3 neck glass pipe</b>      Specifications:      • Material: Quartz glass      • Neck Details</p> <p><b>Top Neck (Thermocouple Port):</b>      - Taper joint: 30/40      - Outer Diameter: Ø30 mm      - Note: Needs a custom stopper with center hole for thermocouple.</p> <p><b>Left Neck (Nitrogen Gas Inlet)</b>      - Taper Joint: 14/20      - Outer Diameter: Ø14 mm</p> <p><b>Side Neck (To Liebig Condenser)</b>      - Taper Joint: 24/40      - Outer Diameter: Ø24 mm      - Horizontal Length: 50 mm</p>
		<p><b>Bottom Neck</b>      - Taper Joint: 30/40      - Outer Diameter: Ø30 mm</p> <p><b>Main Body</b>      - Vertical main tube length: ≈ 200 mm      - Main body outer diameter: Ø30 mm</p> <p><b>Functions</b>      - Top neck: Insert thermocouple      - Left neck: Nitrogen inlet      - Side neck: Connection to Liebig condenser      - Bottom neck: Main outlet/connection      • The taper size for each neck can be adjusted by the manufacturer as long as it fits.      • Please see the attached design</p>
1.4	1 unit	<p><b>Additional pipe for pump -Quartz</b>      Specifications:      • Material: Quartz glass</p> <p><b>Taper Joints</b>      - All connections: 14/20 standard taper      - Outer diameter: Ø14 mm</p> <p><b>Dimensions</b>      - Horizontal tube section 1: 100 mm      - Horizontal tube section 2: 100 mm      - Short side horizontal segment: 30 mm      - Vertical tube (to vacuum pump): 50 mm</p> <p><b>Functions</b>      - Vertical tube: Connects to vacuum pump (pyrolysis gas hose)      - All ports: Can be opened/closed using a stopper for research flexibility      - Stopper/Lid required: For sealing any unused 14/20 ports      • The taper size for each neck can be adjusted by the manufacturer as long as it fits.      • Please see the attached design</p>
1.5	1 unit	<p><b>Quartz connecting tube to condenser</b>      Specifications:      • Material: Quartz glass</p> <p><b>Dimensions</b>      - Total length: 135 mm      - Both ends: 34/45 standard taper joints      - Taper Joint outer diameter: Ø34 mm      • The taper size for each neck can be adjusted by the manufacturer as long as it fits.      • Please see the attached design</p>
1.6	1 unit	<p><b>Quartz connecting tube to reactor</b>      Specifications:      • Material: Quartz glass      - Max temperature: ~1100°C (continuous)</p> <p><b>Dimensions:</b>      - Total length: 260 mm      - Outer diameter: 30 mm      - Inner diameter: 24 mm      - Thickness: 3 mm      • The taper size for each neck can be adjusted by the manufacturer as long as it fits.      • Please see the attached design</p>

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No.	Quantity	SPECIFICATIONS
1.7	1 unit	<p><b>L-shape connector - Quartz</b></p> <p>Specifications:</p> <ul style="list-style-type: none"> <li>• Material: Quartz glass</li> <li>• <b>Dimensions</b> <ul style="list-style-type: none"> <li>- Horizontal arm: 50 mm</li> <li>- Vertical arm: 50 mm</li> <li>- Both ends: 24/29 standard taper joints</li> <li>- Outer diameter: Ø24 mm</li> </ul> </li> <li>• <b>Function</b> <ul style="list-style-type: none"> <li>- 90° L-shaped connector for joining two 24/29 joints</li> <li>- Used to redirect gas flow or connect perpendicular components</li> <li>• The taper size for each neck can be adjusted by the manufacturer as long as it fits.</li> <li>• Please see the attached design</li> </ul> </li> </ul>
1.8	3 pcs	<p><b>Quartz U-shape connector (3 pcs)</b></p> <p>Specifications:</p> <ul style="list-style-type: none"> <li>• Material: Quartz glass</li> <li>• <b>Dimensions (2 pcs)</b> <ul style="list-style-type: none"> <li>- Total height (each vertical leg): 200 mm</li> <li>- Bottom horizontal length: 100 mm</li> <li>- Bend radius: 25 mm</li> </ul> </li> <li>• <b>Dimensions (1 pc)</b> <ul style="list-style-type: none"> <li>- Total height (each vertical leg): 100 mm</li> <li>- Bottom horizontal length: 100 mm</li> <li>- Bend radius: 25 mm</li> </ul> </li> <li>• <b>Tube Diameters</b> <ul style="list-style-type: none"> <li>- Main tube outer diameter: Ø16 mm</li> <li>- Inner tube diameter: Ø12 mm</li> </ul> </li> <li>• <b>Taper joint Types</b> <ul style="list-style-type: none"> <li>- Both top ends: 24/40 standard taper joints</li> <li>- Joint outer diameter: Ø24 mm</li> </ul> </li> <li>• The taper size for each neck can be adjusted by the manufacturer as long as it fits.</li> <li>• Please see the attached design</li> </ul>
1.9	1 unit	<p><b>Vacuum pump</b></p> <p>Specifications:</p> <ul style="list-style-type: none"> <li>• <b>Type</b> <ul style="list-style-type: none"> <li>- Oil-free diaphragm laboratory vacuum pump (Clean, no oil mist, low maintenance)</li> </ul> </li> <li>• <b>Performance</b> <ul style="list-style-type: none"> <li>- Flow rate: ~20 L/min</li> <li>- Ultimate vacuum: ~0.09 MPa (~ 90 kPa negative pressure)</li> <li>- Noise level: ≤ 65 dB</li> </ul> </li> <li>• <b>Electrical</b> <ul style="list-style-type: none"> <li>- Power: ~35 W</li> <li>- Voltage: AC 110–220 V, 50 Hz</li> </ul> </li> <li>• <b>Design</b> <ul style="list-style-type: none"> <li>- Compact &amp; portable</li> <li>- Low vibration with rubber shock-absorbing feet</li> <li>- Adjustable vacuum/flow control</li> <li>- Corrosion-resistant housing</li> </ul> </li> </ul>
1.10	1 unit	<p><b>Quartz glass beaker</b></p> <p>Specifications:</p> <ul style="list-style-type: none"> <li>• Material: Quartz glass</li> <li>• <b>Dimensions</b> <ul style="list-style-type: none"> <li>- Outer diameter: 130 mm</li> <li>- Radius: 65 mm</li> <li>- Height: 115 mm</li> </ul> </li> <li>• <b>Capacity</b> <ul style="list-style-type: none"> <li>- 1.5/2 liters</li> <li>• Please see the attached design</li> </ul> </li> </ul>
1.11	1 unit	Glass beaker, 1L (Standard)
1.12	1 unit	Lab beaker tripod stand, stainless steel, self-assembled (Standard)

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No.	Quantity	SPECIFICATIONS
1.13	1 unit	Conical flask with side arm, 250mL (Standard)
1.14	1 unit	Liebig condenser tube (Standard)

# Provide stopper / lid

Can be closed and open anytime for further research purposes



Connected to the vacuum pump  
(pyrolysis gas hose)

Additional pipe for pump

DRAWN	Dr. Amal Fadhilah	5/26/2025	FIT, UBD
CHECKED			
QA			
MFG			
APPROVED			
SHEET	3 . 1	DWG NO	All dimensions in mm
SCALE	1 : 1	REV	
SHEET	1	OF	1

