The Underdeck Suspended Scaffold Problem

- Slow to Install
- Heavy
- Weak
Under Deck Access Solved

WEB Deck – Time saving under deck access solution
# Benefits Analysis for WEB Deck

## Product Benefits vs. Client Results

<table>
<thead>
<tr>
<th>Product Benefits</th>
<th>Client Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 40-80% time savings</td>
<td>• Faster access and reduced POB</td>
</tr>
<tr>
<td></td>
<td>• Cost-effective access</td>
</tr>
<tr>
<td></td>
<td>• Reduced requirement for safety boat cover</td>
</tr>
<tr>
<td>• 8 x Lighter</td>
<td>• Reduces the load on the structure</td>
</tr>
<tr>
<td></td>
<td>• Provides access to pipe / walkway bridges and other weaker structures</td>
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<td></td>
<td>• Reduces manual handling risks</td>
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<tr>
<td>• 75% less volume</td>
<td>• Reduces the wind load on the structure &amp; system</td>
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<tr>
<td></td>
<td>• Minimises transportation logistics</td>
</tr>
<tr>
<td></td>
<td>• Minimises storage of product on site</td>
</tr>
<tr>
<td>• 87% less contact points</td>
<td>• Improved quality of paintwork</td>
</tr>
<tr>
<td></td>
<td>• Extended life of assets</td>
</tr>
<tr>
<td></td>
<td>• Reduced time spent returning for touch up for contact points</td>
</tr>
<tr>
<td>• Stronger</td>
<td>• Withstands high winds</td>
</tr>
<tr>
<td></td>
<td>• Withstands waves</td>
</tr>
<tr>
<td></td>
<td>• Takes heavy loads</td>
</tr>
<tr>
<td>• 40 -80% reduction in exposure to Work at Height</td>
<td>• Improves safety</td>
</tr>
<tr>
<td>• 2 x FoS</td>
<td>(200,000 safe man hours logged)</td>
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</tbody>
</table>

## Comparative Analysis

<table>
<thead>
<tr>
<th></th>
<th>30m x 10m work area</th>
<th>Scaffold 1.5 kN/m²</th>
<th>WEB Deck 1.5 kN/m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total time man days (rig &amp; de-rig)</td>
<td>120</td>
<td>50</td>
<td></td>
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<tr>
<td>Hung Weight</td>
<td>42t</td>
<td>5.1t</td>
<td></td>
</tr>
<tr>
<td>Storage volume</td>
<td>125m³</td>
<td>32m³</td>
<td></td>
</tr>
<tr>
<td>Contact Points &amp; Droppers</td>
<td>590</td>
<td>72</td>
<td></td>
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<tr>
<td>UDL Range kN/m²</td>
<td>0.75-2.5</td>
<td>0.5-3.0</td>
<td></td>
</tr>
<tr>
<td>Total time man days (rig &amp; de-rig)</td>
<td>120</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Factor of Safety (FoS)</td>
<td>Typically 1.6:1</td>
<td>3:1</td>
<td></td>
</tr>
</tbody>
</table>
Centrica, DPPA Platform

**Work Scope**
- Work platform for shot blasting and spray painting underdeck of helideck. Full containment was required to cope with wind conditions.

**Advantages**
- The WEB Deck was installed by 4 installers in **14** productive shifts and de-rigged in **6**
- **66% time saving**
- **Overall Project Duration Reduced**
Stork - Centrica, DPPA Platform, Helideck

• “It is fully evident from the improvement of the Schedule of Rates meterage completion S curve .......... that the decision to utilise the web deck system under the helideck structure has been fully justified compared to scaffolding or rope access.

• The installation of the deck system allowed safer working within the solid deck & side netted structure. Reduced risk as no over side cover was required, no dropped object issues, weather downtime was minimal, reduced non-productive time and the obvious high quality to the surface preparation and finished coat systems.

• During my visit to the platform during the installation of the deck the installation team were professional and worked in a safe manner and worked quickly with the deck being installed in under a week. The team were also pioneering as they utilised the maximum amount of daylight hours during over side cover to have the system installed.

• I would recommend the web deck system on all large areas of fabric maintenance work at high level or under deck to allow the longer period of fabric maintenance and repair work scopes. As you know we are looking at utilising the system in a number of other areas and platforms in the field as it has been so successful on the DPPA.”

Centrica Energy Upstream 2012
ConocoPhillips Jetty, Seal Sands

**Worksop**
Access required for shot blasting and spray painting to 5km long jetty pipe work.

**Advantages**
The WEB Deck provided a complete encapsulated working area for blasting and paint works to be carried out despite the weather conditions.

Design of WEB Deck system allowed for a **75% reduction in contact points** for minimal return touch ups for painting contractor.

**Zero disruption** to working functions of jetty thus resulting in no loss of production to the main client.

On going refurbishment of jetty now into third year of programme.

*Left: Distance view of encapsulated WEB Deck*

*Below: Spray application works*
Exxon Mobil, Fawley Refinery

Work Scope

• Required 180m2 of unobstructed work platform in order to remove and replace 10 x 6m crane rails.
• Removal of 13t overhead crane to be replaced with 15t overhead crane

Advantages

• WEB Deck and Net modular solution installed in 25 man days compared with an estimated 66 man days for a scaffold installation
• 63% time savings
• Zero production down time in sub-sea pump room.

Client Reference

“The WEB Deck allowed unrestricted access to the pump room below the work area which would have been otherwise obstructed by scaffolding” Client
Transerv, Connel Bridge

Work Scope

• Client required access to the underdeck for replacement of springs to the 2,400m² of Connel Bridge.

Advantages

• Zero Obstructions
• 50% time savings
Network Rail, Ryde Pier

Work Scope

• The works comprised concrete and steelwork repairs to pier.

Advantages

• WEB Deck was installed with a time and cost saving compared to suspended scaffolding.

• Network Rail H&S manager highly commended the WEB Deck.

• Double Decker System
Work Scope

• Work platform required for concrete hydro demolition, and cathodic protection, steelwork repairs, blasting and spraying to bridge under deck area.

Advantages

• WEB Deck to take a 9kN lateral load per linear metre to account for tides and flood waters.
• No scaffold could be built to take this load.
HIE, Kyle of Tongue

**Work Scope**

- Client required access to the underdeck for concrete repair works.

**Advantages**

- The road carriageway was unobstructed by the installation of the WEB Deck.
- Project was completed 5 weeks ahead of a 26 week programme.
- Design of WEB Deck system allowed for a 80% reduction in contact points in comparison to access scaffolding for minimal return touch ups for concrete contractor.

- **20% time savings**

**Client Reference**

- “The WEB Deck was the fastest and most cost-effective solution for this project”
Ford Motor Company, Dagenham Jetty

**Work Scope**
- The works involved concrete hydro demolition and subsequent cathodic repairs.

**Advantages**
- The WEB Deck was installed faster and at a lower cost than scaffolding.
- The WEB Deck handled the curve in the jetty.
- The WEB Deck provided a submersible solution.
EDF, Heysham Jetty

Right & Below: Fully encapsulated work platform on Heysham Jetty

**Work Scope**

Temporary work platform required for concrete removal and repairs. Full encapsulation required for environmental protection.

**Advantages**

- WEB Deck installed in 7 days by 4 man team.
- WEB Deck de-rigged in 5 days by 4 man team.
- 78% time savings compared to scaffolding.
Work Scope
The client required access to the furnace vents which were approximately 24ft x 20ft box sections.

The works involved repairing the insulation from the underside of several of the vents. The work area was 80ft above an access roadway.

Advantages
The WEB Deck was installed with no obstruction to the access road either during the rig and de-rig.

System scaffold would have taken 86 mandays to erect and dismantle.

The WEB Deck took 18 mandays to rig and de-rig.

- 80% time saving
AFCC, Gate Towers in Abu Dhabi

**Work Scope**
- Platform required in 2 no. 60m x 30m bays and 1 no. cantilever 15m x 30m bay for cladding works at 230m of height.

**Advantages**
- 4,000m² work platform installed in 134 shifts.
- No other access system was considered possible.
Overview

WEB designed and engineered a full containment system capable of containing falling debris and personnel.

Advantages

The containment system allowed other operations adjacent to the drilling derrick to continue uninterrupted.

Because of this there was zero production downtime in drilling operations saving significant amounts of time and cost.
Shell, Mossmorran

Overview

Access required for pipe rack maintenance works.

Scaffolding had been used for this work historically and had been a very time intensive and therefore expensive access solution.

The client was looking for ways in which to increase productivity and reduce costs simultaneously.

Advantages

The WEB Net provided a temporary work platform suitable for the work task.

The WEB Net tension netting provided a platform for 4 bays with a rolling work front.

Client Reference

“The WEB Net made a step change in cost reduction for these works. The numbers speak for themselves.”
Overview

WEB designed and engineered a tension netting system capable of 10 men carrying out blasting and spraying works.

Advantages

- 1,000 m² WEB Net installed with a 6 man team in 2 weeks.
Overview

Access required for blasting and spraying the under deck of offshore platform, offshore Ireland.

Advantages

The WEB Net provided a very simple and fast to install work platform. Although the tension net does deflect, the blaster sprayers were able to maintain productivity.
ConocoPhillips, Britannia Cellar Deck

**Left**: Existing scaffolding on under deck of Britannia  

**Left Below**: Proposed WEB Deck solution

**Work Scope**

- Temporary work platform required for coating application to cellar deck on the Britannia.
- WEB to provide installation of the WEB Deck system.

**Advantages**

- Minimised damage to existing PFP coatings due to reduced contact points and method of attachment.
- Faster installation times compared to suspended scaffolding.
- Less obstructed work platform will increase productivity of coatings application.
- Reduced contact points improves quality of coatings applications.
Standard Cellar Deck Design Solution

Overview

WEB Deck provides a complete dance floor to under deck areas.

The WEB Deck is easily encapsulated.

Advantages

Faster Access

- Fast access to under deck for a full range of fabric maintenance and modifications. E.g. blasting & spraying structure, running pipelines below deck.

Improved Productivity

- An average of 88% less contact points improves productivity with minimised return for touch up.

Additionally, the open work platform with minimised droppers increases on site productivity.

Above: Under deck access design showing details around anchors
Spider Deck Design Solution – Grated Deck

Overview

Scaffolding can be washed away by waves on spider decks. This has productivity and safety consequences for work planned in this area. The grated WEB Deck allows waves to pass through so that it will not be washed away by waves.

Advantages

• **Improved Safety:** This risk of scaffold boards washed away is eliminated by WEB Deck.

• **Reduces Storm Damaged Scaffold:** Scaffold when subjected to storm conditions can become completely damaged to the point it requires removal. This has significant time, costs and planning consequences.

• **Reduced Access Installation Time:** The spider deck is an area where scaffolding is particularly time consuming to install. WEB Deck can be installed quickly.

*Top: Design for spider deck solution
Bottom: Waves passing through grated WEB Deck*
Pipe Bridge Design

Overview

Using scaffold the client only gets a partial access solution due to weight restrictions and wind loadings.

The lower weight WEB Deck can provide a full platform to the entire bridge improving project productivity.

Advantages

- **Full Access to Pipe Bridge:** Due to the low hung weight a temporary work platform can be installed to the whole pipe bridge at once.

- **Reduced Volume of Product:** A typical WEB solution involves only one lift of WEB Deck unlike scaffold that requires two lifts.

- **Faster Install:** The WEB Deck can be installed faster than scaffold with estimated 40% time savings. This reduces installation cost, and POB.
Engineering

- In-House Engineering software
- Developed substantial engineering expertise
- Wind & Tidal Loads
- Vehicular transport

Basic snapshot of the structural model showing maximum tension forces in wire for dead and wind load.
2013 AWARD WINNERS

Emerging Technology Category

Scaffolding & Access
Company of the Year Category
Benefits

• 40% - 80% Time savings
• Reduced safety boat cover
• Reduced transportation costs
• Reduced logistical costs
• Increased quantity of work
• Improved quality of work
Backslides
<table>
<thead>
<tr>
<th>Dates</th>
<th>Client</th>
<th>Site</th>
<th>Task</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>Santa Fe Drilling</td>
<td>Jack Up Drilling Platform South China Sea</td>
<td>Sand blast and spray of jack-up hull whilst in drilling position. No standby boat required</td>
<td>Approx. 3,600m² 8 weeks</td>
</tr>
<tr>
<td>1998-2002</td>
<td>Marathon Oil</td>
<td>Kinsale A and B, Offshore Platform, Atlantic Ocean</td>
<td>Sand blast and spray of under deck over 4 seasons No standby boat required</td>
<td>Approx. 3,000m² 64 weeks</td>
</tr>
<tr>
<td>2007</td>
<td>Shell</td>
<td>Cormorant Offshore Platform</td>
<td>Under deck sand blasting and coating, patch repairs No standby boat required</td>
<td>Approx. 2,000m²</td>
</tr>
<tr>
<td>2005 to 2008</td>
<td>BG</td>
<td>Armada Offshore Platform North Sea</td>
<td>Sand blast and spray of under deck over 3 seasons No standby boat required</td>
<td>Approx. 2,000m² 216 weeks</td>
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<tr>
<td>2005</td>
<td>BP</td>
<td>Hound Point Loading Pier, Firth of Forth</td>
<td>Soffit of pier and piles coating repairs No standby boat required</td>
<td>Approx. 500m² 8 weeks</td>
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<tr>
<td>2007-8</td>
<td>Muehlhan</td>
<td>Shell Brent Field</td>
<td>Under deck painting and refurbishment.</td>
<td>Approx. 5,000m²</td>
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<tr>
<td>2007</td>
<td>Aquaterra</td>
<td>Shell Brent Delta</td>
<td>Containment WPN system for utility leg.</td>
<td>Approx. 100m²</td>
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## Clients & Projects

<table>
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<tr>
<th>Dates</th>
<th>Client</th>
<th>Site</th>
<th>Task</th>
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</thead>
<tbody>
<tr>
<td>2008-9</td>
<td>Nigerian Clients</td>
<td>West Africa</td>
<td>Helideck and Under deck painting and refurbishment works. No standby boat required</td>
<td>Approx. 3,000m²</td>
</tr>
<tr>
<td>2009</td>
<td>Transocean</td>
<td>Semi sub drill platform Brazil</td>
<td>Under deck painting and refurbishment No standby boat required</td>
<td>Approx. 5,000m² 16 weeks</td>
</tr>
<tr>
<td>2009</td>
<td>Cape</td>
<td>St Fergus Refinery</td>
<td>Installation of 3 deck netting system for pipe rack and containment system</td>
<td>Approx. 1,000m² On-going</td>
</tr>
<tr>
<td>2009</td>
<td>Muehlhan</td>
<td>Chevron Helm Platform</td>
<td>Installation of Work Platform Netting under Helideck No standby boat required</td>
<td>Approx. 700m²</td>
</tr>
<tr>
<td>2009</td>
<td>BP Trinidad</td>
<td>Immortelle Platform</td>
<td>Installation of Work Platform Netting for under deck works. No standby boat required</td>
<td>Approx. 1,000m²</td>
</tr>
<tr>
<td>2010</td>
<td>Axiom NDT</td>
<td>Total North Alwyn</td>
<td>Drilling Derrick Dropped Object Containment</td>
<td>Approx. 500m²</td>
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<td>2010</td>
<td>Cape</td>
<td>BP Andrew</td>
<td>Work Platform Netting</td>
<td>Approx. 400m²</td>
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<tr>
<td>2010</td>
<td>Wagenborg Foxdrill</td>
<td>Saipem Scarebo 8</td>
<td>Winterised Drilling Derrick In harbour no standby boat required.</td>
<td>Approx. 1,200m²</td>
</tr>
<tr>
<td>2010</td>
<td>Cape</td>
<td>Eggborough Power Station</td>
<td>WEB Deck for Furnace Extraction Flue</td>
<td>Approx. 350m²</td>
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</tbody>
</table>
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<tr>
<td>2010</td>
<td>Wagenborg Foxdrill</td>
<td>Saipem Scarebo 8</td>
<td>Winterised Drilling Derrick</td>
<td>Approx. 1200m²</td>
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<td>In harbour no standby boat required.</td>
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<tr>
<td>2009 to</td>
<td>Hertel</td>
<td>ConocoPhillips Teesside</td>
<td>WEB DECK on loading jetty</td>
<td>Approx. 18,000m²</td>
</tr>
<tr>
<td>Date</td>
<td></td>
<td>Refinery</td>
<td>No overside cover required</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>CRL</td>
<td>Highland Council Bridge</td>
<td>WEB DECK on bridge</td>
<td>Approx. 2,000m²</td>
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<tr>
<td></td>
<td></td>
<td>Kyle's of Tongue</td>
<td>No standby boat required</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>Cape</td>
<td>EDF Heysham 2</td>
<td>WEB DECK for nuclear station outfall jetty</td>
<td>Approx. 1,200m²</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>No standby boat required</td>
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<tr>
<td>2011</td>
<td>RBG</td>
<td>Ithaca Energy Beatrice A</td>
<td>Work Platform Netting for Under deck</td>
<td>Approx. 300m²</td>
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<td>Inspection.</td>
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<td></td>
<td></td>
<td></td>
<td>No standby boat cover required.</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>Cape</td>
<td>BP Andrew</td>
<td>Flare Tower Containment system for dropped</td>
<td>Approx. 1,600m²</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>objects and over side.</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No standby boat required</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>Vopack</td>
<td>Vopack Teesside Refinery</td>
<td>WEB DECK on Loading Jetty</td>
<td>Approx. 300m²</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No standby boat required</td>
<td></td>
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<tr>
<td>2011 - 2012</td>
<td>Ford Motor Company</td>
<td>Dagenham Jetty</td>
<td>WEB Deck on tidal jetty</td>
<td>Approx. 2,000m²</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>Network Rail</td>
<td>Derwent Viaduct</td>
<td>WEB Deck on rail bridge</td>
<td>Approx. 1,000m²</td>
</tr>
</tbody>
</table>
2013 First Severn Bridge

- Multiple Deck Solution
- Moving Work Fronts
WEB Net Specifications

- Polyester has a low friction co-efficient, making it highly durable.
- Melting Point of Polyester is approx. 280degC
- Polyester has a stretch of 0.5%
- WPN is knotted to ensure greater strength and purchase reducing slip and trip hazard.
- Polyester 3.5mm cord strength is 490kg, 5mm cord strength is 1000kg
- Holding Capacity for 40mm square mesh with 3.5mm strands is 8000kg for 4m x 4m assuming attachment points at 0.5m of WLL 1t around perimeter of net. POLYESTER NETS ONLY.
- British Aerospace tested the nets for dropped objects. 15kg steel object fired at 50G (450kph)force into nets. CONTAINED OBJECT.