

**Unlock the true potential of your asset through  
our patent-pending WEX<sup>2</sup><sup>TM</sup> technology**



**WellPower Technologies**

**WEX<sup>2</sup><sup>TM</sup>**

**WEX<sup>2</sup><sup>TM</sup> - Wellstream Expansion & Waste Energy  
Extraction**



## **WEX<sup>2</sup>™ Across the Field Lifecycle**

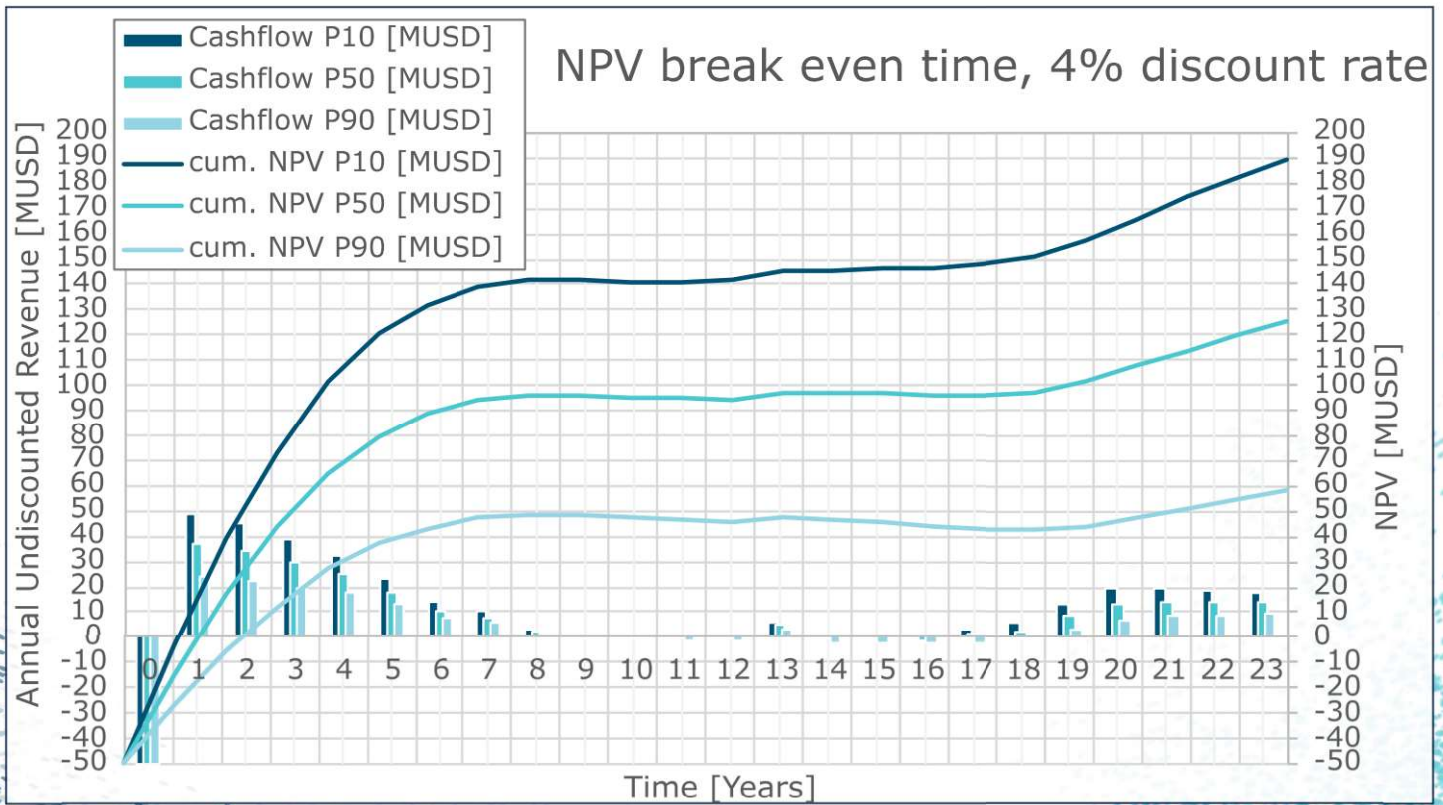
### **Plateau Phase – Maximizing Process Efficiency & Energy Recovery**

- ◇ **Replaces choke valve** – Captures lost pressure energy for on-site emission free power generation
- ◇ **Waste heat recovery** – Converts surplus heat from WHRU and other waste heat sources into electricity
- ◇ **Reduced cooling demand** – Lowers energy consumption for seawater lift pumps
- ◇ **Minimizes Fuel Gas Demand** – Lowers CO<sub>2</sub> emissions, freeing up more gas for export and increased revenue
- ◇ **Adaptive Process Optimization** – Adjust plant pressure to maximize condensate recovery or reduce fuel gas demand, optimizing operations based on commodity pricing

### **Decline Phase – Reduce OPEX and & Extending Field Life**

- ◇ **Recovers energy from export- & re-compressors recycling**– Recover previously wasted energy while staying on the right side of the surge curve
- ◇ **Eliminate costly re-bundling modifications** – Avoid costly re-bundling modifications, while ensuring turbine drivers operate at optimal efficiency
- ◇ **Reduced cooling demand** – Isentropic expansion of recycled flows lowers plant temperatures, boosting oil/condensate production while reducing energy demand for seawater lift pumps
- ◇ **Waste heat recovery** – Converts surplus heat from WHRU and other waste heat sources into electricity
- ◇ **Seamless Integration for New Tie-Ins** – New tie-in fields is easily integrated into the existing WEX<sup>2</sup>™ system, increasing your assets attractiveness as a host platform, while providing emission free power and isentropic cooling
- ◇ **Extends Field Life & Increases Recovery Factor** – By reducing OPEX and emissions in the tail-end phase, WEX<sup>2</sup>™ extends the economic lifetime of the field, enabling higher ultimate reservoir recovery and maximizing asset value.





### Case Study: Norwegian Continental shelf Gas platform



#### Field Profile:

**15 Msm<sup>3</sup>/d** (530 Mscf/d) plateau rate

**7MW** power demand

**23-year** field life



#### Economic Impact:

Assumed **50MUSD** CAPEX (conservative) 2x WEX<sup>2</sup><sup>™</sup> systems

ROI of **0.75, 1, and 2 years** for **P10, P50, and P90** cases

NPV of **190MUSD, 125MUSD, and 60MUSD** for **P10, P50, and P90** scenarios



#### Emissions / Production efficiency Impact:

**222 000 mT** of **CO<sub>2</sub>** emissions reduction

**98 Msm<sup>3</sup>** (3,460 Mscf) reduced fuelgas demand - sold to market

**309 Ksm<sup>3</sup>** (1.94Mboe.) increased condensate production

**743 GWh** power produced by WEX<sup>2</sup><sup>™</sup> system

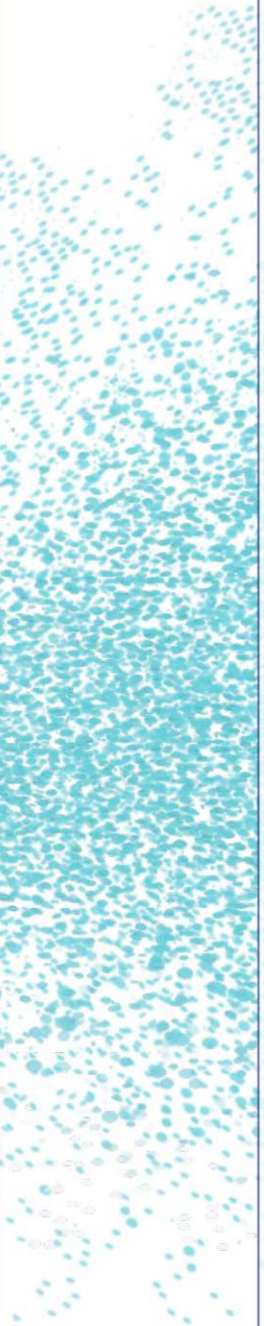
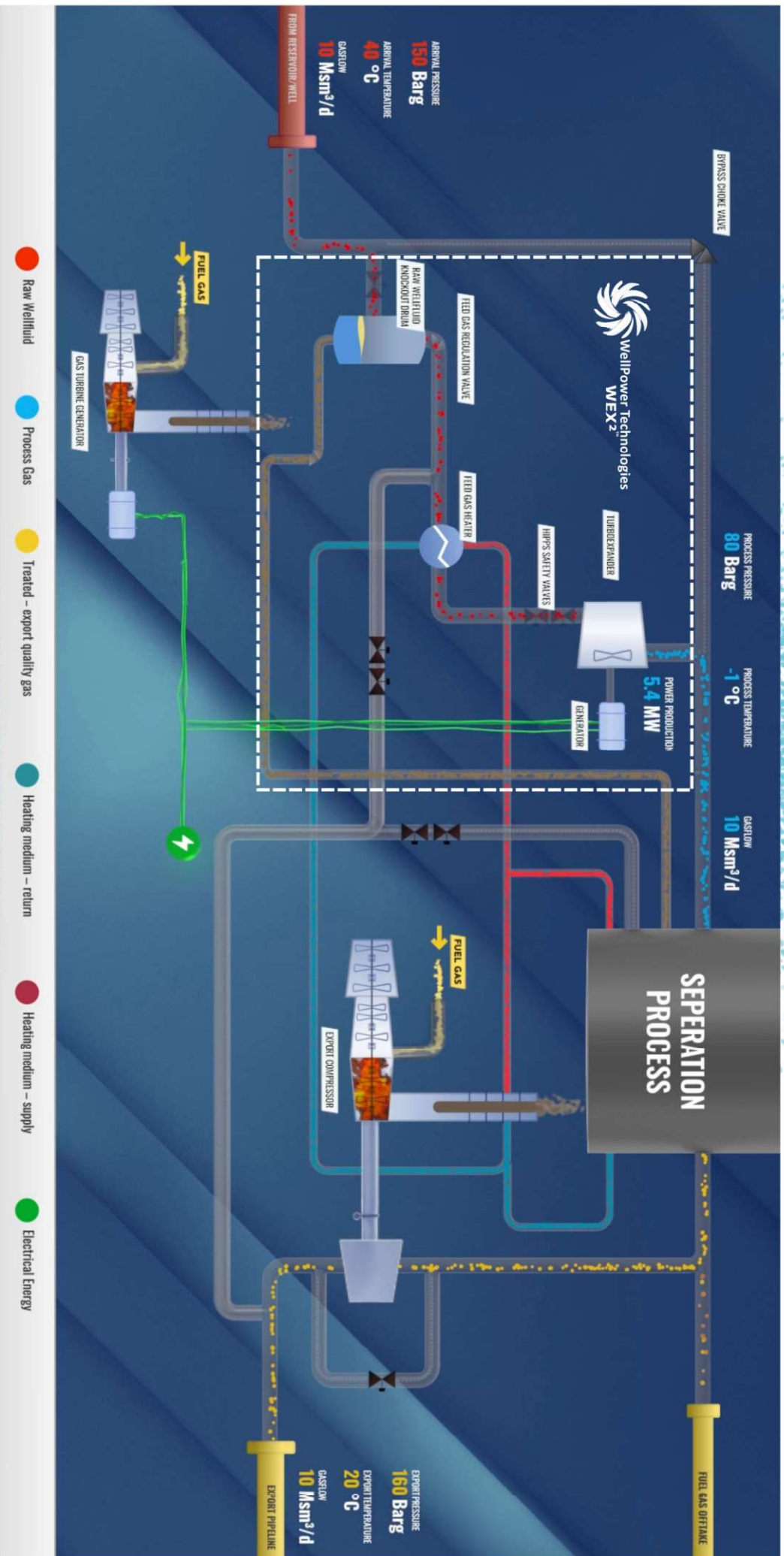
**36 GWh** in lower power demand



**The WEX<sup>2</sup>™ system integrates industry-proven components to recover energy, optimize gas processing, and improve plant efficiency. The key equipment includes:**

- ◇ **Wellstream Inlet Separation** – A raw wellfluid knockout drum removes free liquids from the gas stream before expansion, ensuring that the gas entering the turboexpander meets operational limits
- ◇ **Turboexpander Feed Gas Heater** – Utilizes waste heat from WHRU or other heat sources to preheat the gas before expansion. This increases gas enthalpy and power output, while allowing precise control of the turboexpander outlet temperature to for process optimization, prevention of hydrate formation and to reduce or eliminate need for hydrate prevention chemicals (MEG/Methanol). This functionality effectively creates a combined cycle system within a single, compact unit, maximizing energy efficiency.
- ◇ **HIPPS Safety Valves** – High-Integrity Pressure Protection System (HIPPS) valves are installed upstream of the turboexpander to safeguard against overspeed events or pressure surges, ensuring safe and reliable operation under all process conditions
- ◇ **Turboexpander-Generator System** – The turboexpander replaces the traditional choke valve to recover energy while safely and efficiently controlling the wellflow. The choke valve is retained for use during the decline phase, when wellflow bypasses the turboexpander, or during process upsets. This highly efficient, passive machine utilizes isentropic expansion to capture otherwise wasted pressure and heat energy and generates emission free electrical power via a coupled generator. The process also cools the gas, enhancing condensate recovery. An inlet Variable Inlet Guide Vanes system ensures optimal efficiency and process control by dynamically adapting to fluctuating wellstream conditions.
- ◇ **Energy Recovery from Compressor Recycling** – During the decline phase, as wellstream bypasses the turboexpander, recycle flows from the export and/or re-compressor(s) are routed back to the turboexpander via the feed gas heater. This enables both heat and pressure energy to be converted into electrical power, while providing isentropic cooling to the plant. The recycle line can also be utilized during the plateau phase to boost power production, optimize staging levels between Gas Turbine Generators (GTG) and Gas Turbine Compressors (GTC), and potentially allow GTG maintenance without production shutdown, enhancing system redundancy and operational flexibility.
- ◇ **Power Integration & Plant Grid Connection** – The electrical energy generated by WEX<sup>2</sup>™ is conditioned to the correct voltage and frequency before being fed into the plant's power grid, delivering emission-free electricity for on-site consumption or export.







## Let us unlock the full potential of your asset with our patent-pending WEX<sup>2</sup>™ technology

### Expert Process Specialists – Thinking Like Our Customers

At WellPower Technologies, we set the bar high. Our process engineers are not just highly qualified—they have first-hand field- and Central Control Room operations experience from offshore natural gas production platforms.

We recruit **only** engineers with direct E&P operator experience to ensure that we understand your challenges and approach projects with the same mindset as our customers.

We conduct comprehensive Concept and pre-FEED studies to evaluate the full lifecycle impact of integrating our patent-pending WEX<sup>2</sup>™ technology into your gas production facility. Our detailed delta impact analysis provides a clear assessment across your production forecast, covering:

- ☑ **CO<sub>2</sub> emission reductions**
- ☑ **Enhanced oil and condensate recovery**
- ☑ **Production and energy efficiency improvements**
- ☑ **System redundancy & operational flexibility**
- ☑ **NPV impact under multiple commodity pricing scenarios**
- ☑ **Equipment Pre-FEED Engineering**

With our unique combination of engineering expertise and real-world E&P operations experience, our process specialists ensure that every aspect of your facility is optimized for efficiency, profitability, and long-term value.

**Let's unlock the full potential of your asset—together.**

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