AORANGI.CC

Carbon credits from Compact 5 and everything you wanted to ask but didn't!

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1. Carbon credits from Compact 5

The contract defines that:

- **20% of the GEM[1] gas energy** is used by the SCWG[2] Compact 5 system itself for its own needs. This energy is used for organic slurry grinding, preheating, pumps, SCADA telemetry and system monitoring. Part of the SCADA[3] data is available to the local AORANGI SPV, where the Compact 5 is installed, and the complete set of SCADA data is currently delivered to AORANGI GROUP AG in Zug, Switzerland. And this is so for every Compact 5 installed.
- **28% of the GEM gas energy** from the Compact 5 system is converted into electricity in the Jenbacher J416 generator (~700 kW every hour). This electricity is delivered to the waste owner through the network provided by the waste owner, free of charge.
- **52% of the GEM gas energy** from the Compact 5 system is synthesized into green methanol and sold on the market (~580 liters per hour). As a co-owner **(25%) of AORANGI SPV**, where Compact 5 is installed, **AORANGI GROUP AG** belongs every hour (~145 liters of green methanol, i.e. that's €~70+. The other co-owner **(75%) of AORANGI SPV**, where Compact 5 is installed, belongs to **I2C5** (Investor into CAPEX SCWG Compact 5) every hour (~435 liters of green methanol, i.e. that's €~ 210+). I2C5 invests in the CAPEX[4] of the specific Compact 5 system and takes care of the logistics and sales of green methanol on the market.
- **70% of the carbon credits** "produced" by Compact 5 from the processing of POME (residues from the processing of palm into palm oil), belong to AORANGI GROUP AG in Zug. Switzerland.

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[1] **GEM** - Green Energy Molecules, CH_4 and H_2 from POME, without emission into the environment.

[2] **SCWG** – is an abbreviation for Supercritical Water Gasification. It is a revolutionary, advanced thermochemical technology that converts moist organic biomass (such as POME waste from palm oil production) directly into pure syngas, without the need for energy-intensive and expensive drying of the feedstock.

Given that our devices process "wet waste" on site and deliver methanol, SCWG is actually the heart of our technology from Ivanec/WE-KR and a key reactor process that allows us to operate in the first place.

[3] **SCADA** - stands for **S**upervisory **C**ontrol **A**nd **D**ata **A**cquisition. It is an industrial computer system designed to monitor, measure, and control technical processes in real time.

[4] **CAPEX** - is an abbreviation for Capital Expenditures.

In the business and financial world, CAPEX stands for the money a company spends on the purchase, upgrade, and maintenance of non-current physical assets. These are large, one-time investments in resources that will deliver value and profits over a long period of years (usually longer than one tax year). In the case of the Compact 5, it's 20+ years.

- **25% of the carbon credits** "produced" by Compact 5 from the processing of POME (residues from the processing of palm oil into palm oil), belong to I2C5.
- **5% of the carbon credits** "produced" by Compact 5 from the processing of POME (residues from the processing of palm oil into palm oil), belong to technological consortium of companies that produced, according to the instructions of AORANGI GROUP AG, the SCWG Compact 5 system, the necessary SCADA IoT sensors and telemetry and system for recording process data on AORANGA. CC Matrix/Synapse blockchain, so that the members of this consortium are independent validators of measured and written data.

2. Calculation of the "production" of carbon credits

Given the precise data on energy distribution and production, below is an accurate and comprehensive calculation of **carbon credits and environmental savings** that the Compact 5 plant achieves on **an hourly basis**.

Given the precise data on energy distribution and production, below is an accurate and comprehensive calculation of **carbon credits and environmental savings** that the Compact 5 plant achieves on **an hourly basis**.:

1. **Avoiding methane emissions** (by destroying/exploiting POME gas).
2. **Replacement of fossil electricity** (by supplying green electricity to the mill).
3. **Substitution of fossil raw materials / carbon fixation** (through the production of green methanol).

2.1. Avoiding methane emissions (CH_4) – Plant base

Calculated from plant data (GEM gas, 60% CH_4, 40% H_2) 800 m^3 per hour:

- Amount of methane: $480\ m^3/h \approx 0.3437\ t\ CH_4/h$
- **Equivalent in (GWP[5] = 28 according to IPCC AR5)**CO_2**:**

[5] **GWP** - *Global Warming Potential* is a measure that shows **how much heat a particular greenhouse gas retains in the atmosphere compared to carbon dioxide (CO_2)** over a certain period of time (usually 100 years).

- **Reference point:** CO_2 always has GWP = **1**.
- **Why is it important for methane?** Methane (CH_4) has a GWP of **28** (according to the IPCC AR5 standard). This means that 1 ton of methane released into the atmosphere has **28 times the impact on warming the planet** over a 100-year period than 1 ton CO_2.

That's why capturing and destroying methane from waste (like POME) carries so many carbon credits – every ton of methane destroyed prevents the equivalent damage that 28 tons of CO_2 would do.

$$0.3437 \text{ t } CH_4 \times 28 = \mathbf{9.62} \text{ t } CO_2e \text{ per hour}$$

2.2. Electricity Replacement Credits (Grid Displacement)

The Jenbacher J416 generator produces total electricity from 48% GEM gas, which is divided into the consumption of the system itself and the free energy for the palm mill:

- **System self-consumption (20% gas):** 500 kW (0.5 MW) – energy for the operation of pumps, sensors, separation and compression.
- **Free electricity for the mill (28% gas):** 700 kW (0.7 MW) – this energy directly replaces the electricity that the mill would otherwise have to draw from the local power grid (which has a high emission factor due to fossil fuels like coal or gas).

Calculation of avoided electricity emissions:

- Clean energy produced for the mill: 0.7 MWh per hour.
- The standard average emission factor for nets in Southeast Asia (the main palm growing area) is around (we take a conservative average of approx.) $\mathbf{0.6}\ \boldsymbol{hingga}\ \mathbf{0.8}\ \boldsymbol{t CO_2/MWh}\ \mathbf{0.7}\ \boldsymbol{t CO_2/MWh}$.
- Avoided emissions: $\mathbf{0.7 \text{ MWh} \times 0.7 \text{ t } CO_2/\text{MWh} = 0.49 \text{ t } CO_2e \text{ per hour}}$.

2.3. Credits for the production of green methanol (CCU – Carbon Capture and Utilization)

By using the remaining 52% GEM gas and from the exhaust gases of the J416 generator CO_2 500 kg, **(0.5 tons) of green methanol is synthesized every hour**.

- Traditional methanol is produced mainly from natural gas or coal with high emissions (conventional production emits approximately up to per tonne of methanol produced) $\boldsymbol{CO_2}\mathbf{1.\ 22.0}\ \boldsymbol{t CO_2}$.
- Producing 0.5 tons of green methanol from waste and trapped gases prevents fossil methanol emissions and permanently binds carbon.
- Calculating the average savings of approx. per ton of methanol 1.5 t CO_2e:

$$0.5 \text{ t methanol} \times 1.5 \text{ t } CO_2e/t = \mathbf{0.75} \text{ t } CO_2e \text{ per hour}$$

2.4. Total balance of "produced" carbon credits per hour

By adding up all the elements of this integrated system:

1. Destruction/exploitation of methane from POMA: $\mathbf{9.62\ t\ CO_2e}$
2. Replacement of mains electricity (free electricity for the mill): $\mathbf{0.49\ t\ CO_2e}$
3. Green methanol production (CCU effect): $\mathbf{0.75\ t\ CO_2e}$

Total per hour: (10.86 carbon credits for each hour of work) $\mathbf{10.86\ t\ CO_2e.}$

2.5. What does this mean on an annual basis?

If the plant operates continuously (e.g. 8,000 hours per year):

- **About 86,880 carbon credits are generated annually.**
- Thanks to **fully sensor-authentic monitoring (dMRV[6]),** this data serves as irrefutable evidence in carbon credit registers (such as Verra

[6] **dMRV** - is an abbreviation for **digital Measurement, Reporting, and Verification**. It is a technological framework that uses digital tools for **fully automated and transparent monitoring of environmental impacts** (such as reducing greenhouse gas emissions). [1, 2, 3]

The traditional **MRV** system relied on people in the field manually tabulating the data, sending it to auditors once a year, and then waiting for months for seals and registry approvals. **dMRV turns this into a real-time digital process**. [1, 2, 3]

In the context of your business, each letter of this abbreviation stands for a key digital step:

- **M - Measurement:** Instead of human evaluation, data is collected directly at the source. Our reactors in Malaysia are equipped with IoT sensors that automatically and continuously measure the amount of POME waste processed, temperature and chemical composition of the gas. Each piece of data has its own geographical location and timestamp. [1, 2, 3, 4]
- **R - Reporting:** The software automatically standardizes the collected data from the field and processes it through official mathematical formulas (methodologies) prescribed by bodies such as Verre or Gold Standard. The system calculates independently at all times: *"The device has neutralized exactly X tons of methane in the past hour."* [1, 2]
- **V - Verification:** This is the hardest part that dMRV solves by switching to the blockchain. Because the data is immutably stored on our dedicated L1 network via the Matrix/Synapse system, independent auditors do not have to physically come to the plantations in Malaysia. They connect to the network node, verify the cryptographic evidence, and digitally sign the issuance of the carbon credit. [1, 2, 3]

Why is dMRV key to success?

First-generation systems (including *the Carbon Central Network*) suffered from a lack of integrity because customers and registries did not trust the numbers in Excel spreadsheets. [1, 2]

International bodies such as Gold Standard are actively implementing dMRV pilot programs, and customers in global markets today pay **extremely high price premiums for credits based on modern dMRV platforms**. By introducing dMRV IoT sensors through hardware during hardware manufacturing in Ivanec/WE-KR, we remove suspicion of fraud, reduce audit costs by about 75%, and enable our banking network in Australia and Vanuatu to instantly liquidate and turn that environmental data into high profits. [1, 2]

VCS or Gold Standard), ensuring maximum value and transparency in the green energy market. The palm mill has a triple benefit: it gets rid of hazardous waste (POME), it receives free electricity (700 kW, every hour), and the entire complex gradually becomes a leader in the sustainable palm oil industry.

3. Tokenization of carbon credits on the blockchain and integration of own banks

Tokenization of carbon credits on the blockchain and integration of its own banks in Australia and Vanuatu creates **a vertically integrated ecosystem that eliminates all intermediaries and drastically increases the profit margin of AORANGI GROUP AG holding in Zug.**

By connecting advanced industrial engineering from **Ivanec/WE-KR**[7] (where powerful machines with DMLS[8] and SiC[9] technology is created under strict quality control) with decentralized finance (DeFi[10]) and traditional banking, it closes the circle in which everything is controlled – from the processing of POME waste to the final liquidity of carbon loans.

The financial architecture and operational advantages of this ecosystem bring key benefits:

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[7] **WE-KR** - Contract manufacturer SCWG Compact 5 in Ivanec, Croatia, EU, https://www.we-kr.com/eng/

[8] **DMLS** - In the context of additive manufacturing (3D printing), the way SCWG Compact 5 is produced in WE-KR, DMLS stands for Direct Metal Laser Sintering.

It is an industrial 3D printing technology that falls under the category of Powder Bed Fusion (Powder Bed Fusion (PBF). The technology is used to create high-performance metal products and final pieces directly from a digital 3D model.

[9] **SiC** - stands for silicon carbide (also known by the trade name carborund), a chemical compound of silicon (Si) and carbon (C).

It is an extremely hard synthetic material and an advanced semiconductor that is widely used in industry and advanced ceramics due to its superior properties, especially in acidic, abrasive and high-temperature environments.

[10] **DeFi** - A decentralized financial market is a digital infrastructure of smart contracts on the blockchain that allows tokenized real-world assets (so-called RWA - Real World Assets, such as carbon credits or green methanol from "SCWGA Compact 5 trades"), to be managed and financed fully automatically, 24/7 and without the intermediation of classic exchanges or brokerage houses.

While tokenization converts physical assets (e.g., reducing methane emissions at a mill in Malaysia) into a digital token, DeFi is the engine that gives that token instant liquidity, value, and global reach.

3.1. Tokenization of carbon credits (On-Chain RWA)

Converting carbon credits derived from methane removal into **RWA (Real World Asset) tokens** on the blockchain brings a huge change in trading:

- **Avoidance of brokerage fees:** Classic verification and sales through intermediaries take a significant percentage of the loan value. Tokenization directly to a private blockchain transfers value from a device in Malaysia to Switzerland without any friction.
- **Immutable Proof:** Buyers in the Singapore market, especially shipping companies, pay a price premium for the tokens because smart *contracts* contain immutable information about the exact location of the mill, the amount of POME processed, and the time it takes to neutralize greenhouse gases.

3.2. Synergy of banks in Vanuatu and Australia

Buying banks in these locations solves the biggest challenge that crypto projects and holding companies face – **the banking approach (Fiat on/off-ramp)** and liquidity management:

- **Vanuatu (Strategic Offshore Flexibility):** A bank in Vanuatu provides offshore flexibility with an extremely favorable tax environment and fast execution of transactions related to tokenized assets. It serves as an ideal hub for receiving and processing liquidity from DeFi protocols in the AORANGI GROUP AG fiat system.
- **Australia (Onshore Credibility):** The Bank of Australia (under the regulation of APRA[11]) gives AORANGI GROUP AG holding the institutional credibility of a Tier-1 jurisdiction. Through it, AORANGI GROUP AG can carry out classic high-value international payment transactions (SWIFT) and ensure the stability of the entire operation according to Western standards.

3.3. The Perfect Closed Financial Circle

In this scenario, the AORANGI GROUP AG holding in Zug functions as the central brain, while cash and commodity flows flow without value leakage to third parties:

1. **Manufactures** from Croatia and Slovenia DMLS/SiC reactors and delivers all hardware to Malaysia.

[11] **APRA** - is an abbreviation for Australian Prudential Regulation Authority.
It is the central government institution in Australia in charge of supervising and regulating the financial sector. APRA directly supervises banks, credit unions, insurance companies and superannuation funds.

2. Hardware in Malaysia works, generates electricity for mills and produces green methanol for Singapore.
3. Neutralized methane data is automatically tokenized on the blockchain in the form of carbon credits.
4. AORANGI GROUP AG Bank in **Vanuatu** buys these tokens or manages their placement on the market.
5. AORANGI GROUP AG Bank in **Australia** converts this liquidity into pure fiat money, providing stable capital for the order of new production lines in Croatia.

4. Network Architecture and Field Data Processing (POME to Token)

The SCWG Compact 5 manufactured in **Croatia/Slovenia** has integrated sensors that monitor the flow of POME waste, temperature and operation of methanol generators and synthesizers in real time.

- **Matrix as a communication trunk:** Instead of sending data through classic web servers (vulnerable to attacks), AORANGI SCWG Compact 5 devices in Malaysia use decentralized Matrix nodes (*homeservers*) to send encrypted, *timestamped* data packets of neutralized methane and other technical SCADA parameters.
- **Synapses as an orchestrator and validator:** The synapse layer manages the logic of smart contracts and serves as *a bridge* to AORANGI. CC L1 consensus. It takes data from Matrix rooms/channels, verifies it through automated cryptographic proofs and based on them directly on AORANG.CC L1 network initiates the **minting operation (minting) of carbon tokens**. [1, 2]

5. Elimination of "Green Capital Laundering" and Institutional KYC

Public blockchains face the problem of anonymity, which is unacceptable for Australian banking regulators (APRA). AORANGI.CC dedicated L1 network solves this problem:

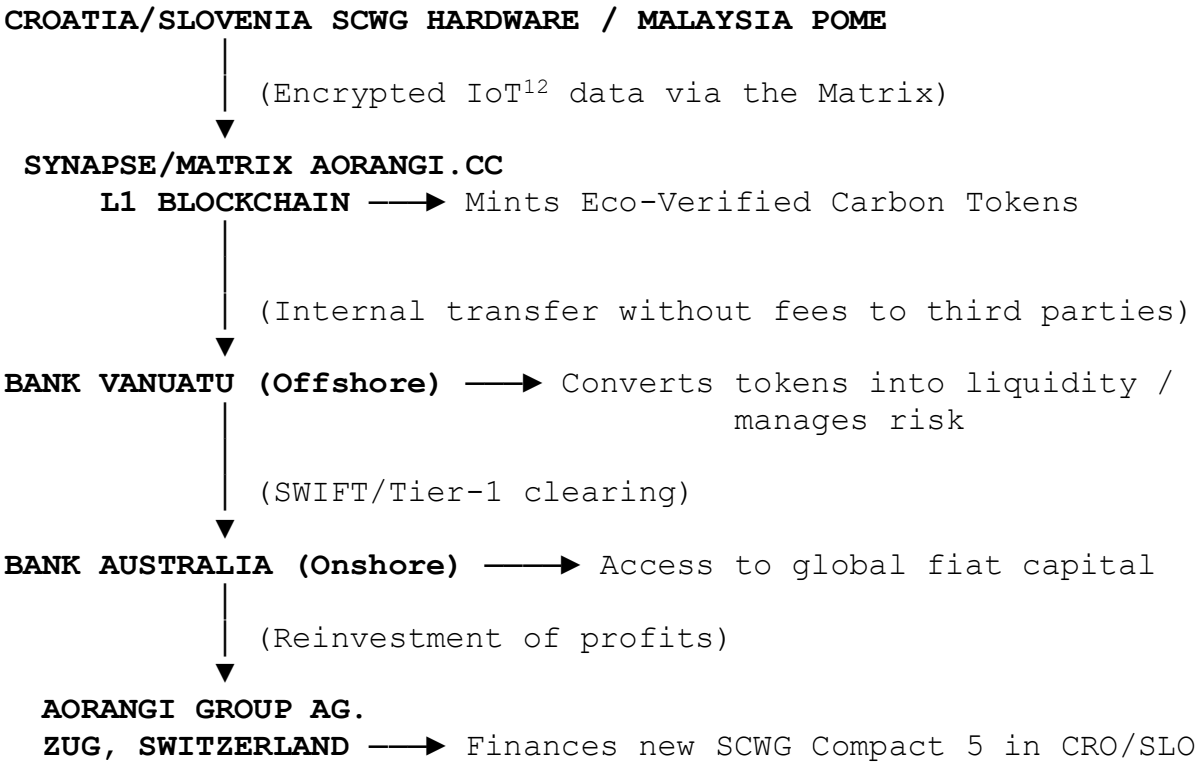
- **Permissiond L1 (Sovereign Chain Concept):** Block validation is not done by anonymous miners, but exclusively by authorized nodes within AORANGI.CC system: AORANGI GROUP AG holding company in Zug, AORANGI Bank in Australia, AORANGI Bank in Vanuatu, and

AORANGI SPVs near the mills in Malaysia (as passive observers with the right to see).

- **Built-in ERC-3643 standard:** Carbon credits on AORANGI.CC network are not ordinary, speculative tokens. They carry embedded program code that does not allow the transfer of tokens to a wallet that has not previously passed strict bank KYC/AML verification within AO-RANGI.CC system. [1, 2]

6. Perfect Monetization Through Banking Off-Ramp

When the data is converted into tokens on the AORANGA.CC Synapse/Matrix L1 network, the financial loop closes without any contact with external unsafe crypto-markets:



[12] **IoT** - Internet of Things it refers to a network of smart devices and sensors that are connected to the internet to communicate, collect, and exchange data with each other without the need for human interference.

In practice, this includes everything:

- From smart home appliances (such as smart watches, thermostats and lighting),
- To industrial sensors (such as those in our plant that automatically and continuously measure gas flow, pressure, temperature and methane composition and send the data to a carbon credit calculation system).

7. Strategic Advantage for Expansion to Africa and the Pacific

When the expansion to Africa and the rest of the Pacific begins, we offer local governments and partners not just a "device", but a complete **sovereign financial-ecological internet**. New partners in e.g. Nigeria simply get their Matrix node and SPV wallet on the AORANGA.CC L1 network, becoming part of a global system that is regulated and cleared of systemic risks.

8. Verra and Gold CC standard

The first generation of carbon tokenization (around 2021–2023) was ahead of its time, but it failed key tests: it relied on speculative public blockchains, suffered from a lack of transparent and immutable input from the field (*junk* credit problem), and lacked an integrated banking infrastructure.

From that story and that time, founders AORANGI GROUP AG (Erminio Kotlar and Mladen Štefanec), extracted the most important thing – we learned exactly where the cracks were and how to permanently patch them up in the new system.

AORANGI.CC's new architecture addresses all structural errors of past projects through three key improvements:

8.1. Solving the problem of "Ghost" credit through IoT

Verra and Gold Standard have historically lost credibility because CC were issued on the basis of estimated, static tables or periodic field audits, which opened up room for manipulation.

- In AORANGI.CC system, hardware from **SCWG Compact 5** manufactured with DMLS and SiC technology in Croatia/Slovenia, with integrated sensors., serves as **an irrefutable digital witness**. The data that arrives via the Matrix protocol directly to the AORANGI.CC L1 network gives Verra and Gold Standard what they have been looking for years: **continuous, dynamic proof (dMRV).** They don't have to guess how much methane has been neutralized in Malaysia; AORANGI.CC smart contracts deliver mathematical and chemical proof in real time.

8.2. Regulatory shield through its own banking system

Older projects failed because they were cut off from fiat systems by traditional commercial banks due to non-compliance with KYC/AML regulations. By buying banks in **Australia and Vanuatu**, AORANGI GROUP AG itself becomes a regulator within its system. When external auditors (such as Verra) approve the methodology, AORANGI Australian Bank ensures that every incoming and outgoing flow of money is institutionally clean, which AORANGI.CC tokenized CC opens the doors of the world's largest investment funds.

8.3. Institutional recognition without loss of control

Since AORANGI GROUP AG is developing its own AORANGI.CC L1 network, integration with Verra or Gold Standard can be done in an extremely elegant way:

- Instead of AORANGI GROUP AG having their slow, multi-month biocratic processes for each batch, AORANGI GROUP AG assigns them **a dedicated node (Validator/Auditor Node)** on the AORANGI.CC L1 network.
- Through this node, auditors have passive, but full "read-only" access to historical data stored on the blockchain. This allows them to automatically sign (*co-sign*) the issuance of CC, thus AORANGI.CC tokens in Zug are currently gaining globally recognized institutional status.

The experience of AORANGI GROUP AG founder *(Erminio Kotlar and Mladen Štefanec)* from the Carbon Central Network has shown AORANGI GROUP AG the anatomy of a pioneer failure. Now, with a holding in Zug, automated production SCWG Compact 5 in Ivanec, solid operations in Malaysia and its own banks, AORANGI GROUP AG is building a second-generation system that has all the prerequisites to set a new global standard in environmental finance.

9. Why DMLS in the production of SCWG Compact 5?

There are several reasons why DMLS is used in the production of SCWG Compact 5:

- **Production Duration SCWG Compact 5**
    - The production of SCWG Compact 5 takes 192 hours using DMLS. Without DMLS, production lasts 6 months.

- **SCWG reactor Compact 5**
    - It consists of several layers: outer bearing layer, hastelloy, compensation layer due to the different expansion of hastelloy and a final layer of SiC.
    - Each of these layers needs to be seamlessly merged, with other technologies this is impossible.
    - An alternative is hand forging from a special alloy originating from Russia. This is problematic today, and in the future. And that is why a multi-layer reactor was developed.
- **Welding Attestation Conditions**
    - Due to the high pressures and temperatures in which the key parts of the SCWG Compact 5 operate, each manufactured SCWG Compact 5 must pass the prescribed attestation. By using DMLS, the first and thousandth and first SCWG Compact 5 is identical and attestation is literally a mere formality, which still needs to be passed.

10. What is the role of a SCADA system?

While classic programmable logic controllers (PLCs) control the individual valves and motors on the machine, the SCADA system is **the "central brain" and visual interface (HMI)** that monitors the operation of the entire plant or network of dislocated plants from one place. [1, 2]

Through our specific architecture, SCADA represents a well-defined link between physics in Malaysia and digital twins in Croatia/Slovenia producer and AORANGI GROUP AG Zug:

10.1. Four key layers of SCADA architecture

Every SCADA system, including the one that manages our processes, consists of four levels: [1]

1. **Field instrumentation (Sensors & Actuators):** Physical elements within the SCWG Compact 5 device that measure pressure, gas temperature, POME flow, or mechanically open/close valves. [1, 2]
2. **Local controllers (PLC/RTU):** Microcomputers built into the device housing. They directly receive signals from sensors, execute local operating logic in milliseconds, and make sure that the system operates safely and autonomously. [1, 2, 3]

3. **Communication network:** The infrastructure that transmits data from local controllers to the main computing center. In our case, it is a decentralized **Synapse/Matrix L1 network** that replaces old, insecure industrial protocols. [1, 2]
4. **Monitoring station (Software and HMI):** A central display (or control room) where operators can see the status of all 150, 1500 or 5963 or more devices through a graphical display in real time. If the gas pressure drops on a device in Malaysia or the temperature rises too much, SCADA immediately triggers **an alarm** and allows us to manually intervene or shut down the process from a distance (e.g. from Ivanec or from Zug or from Zabok or wherever we are). [1, 2, 3, 4]

10.2. How does SCADA connect to our dMRV and Blockchain system?

In traditional industry, SCADA collects data solely for the purpose of controlling plant operation (so-called *Operational Technology (OT). However*, in our advanced model, **SCADA becomes the basic input channel (Data Ingestion Layer) for dMRV and tokenization**: [1, 2]

- **Data collection:** Our SCADA "reads" in real time the exact cubic meters of neutralized methane and kilowatt-hours of electricity produced from all 150 (or tomorrow 1,500) locations. [1, 2]
- **Packaging for Matrix:** Instead of storing this data only in a local database (the so-called *Historian*), SCADA software cryptographically signs it and pushes it into **the Matrix protocol**.
- **Token generation:** When our L1 network recognizes this verified SCADA data, it automatically converts it into carbon credits in Zug.

10.3. Summing up

SCADA is the eyes and ears of our engineers and field operators. Without the SCADA system, we would be blind to what is happening inside the DMLS/SiC reactor in Malaysia. With it, we have absolute control over the production of electricity and green methanol, while at the same time providing immutable raw data for our financial blockchain ecosystem. [1, 2, 3]

Given that our devices are manufactured in **Croatia/Slovenia**, we have developed **our own, dedicated Web-SCADA software solution** that is factory-integrated with the Synapse/Matrix protocol.

11. How SCWG actually works? (Physics and Process Chemistry)

Water becomes "supercritical" when exposed to extreme conditions: temperature above **374 °C** and pressure above **221 bar**. In this state, water ceases to be an ordinary liquid or vapor – it enters the fourth state of matter, which combines the properties of gas (high diffusivity) and liquid (high density). [1, 2, 3]

When POME waste enters the SCWG reactor, dramatic changes occur:

1. **Water becomes a solvent:** Unlike ordinary water, supercritical water acts as a non-polar solvent. Organic compounds, fats, oils and cellulose from palm waste dissolve instantly and **completely in the palm tree**, breaking down complex carbohydrates into homogeneous, simple molecules. [1, 2, 3]
2. **Tar inhibition (Tar and Coke):** In classic gasification or pyrolysis of wet waste, a huge problem is created with sticky tar clogging the system. SCWG completely prevents the formation of tar because all reactions take place in a homogeneous phase within the supercritical water itself. [1, 2, 3]
3. **Reforming into gas:** Inside the reactor, in a fraction of a second, a rapid thermochemical conversion (hydrolysis and steam reforming) takes place, which generates a gas mixture rich in hydrogen, methane and CO_2. This gas is then fed to our methanol synthesis system and a Jenbacher generator that generates electricity. [1, 2]

11.1. Why SCWG is the "Holy Grail" for the POME Waste Project?

Anyone reading this probably understands why AORANGI uses such advanced metallurgy and geometry:

- **No drying of waste (Huge energy savings):** POME consists of over 85-95% water. Drying such a slurry for conventional incinerators would require more energy than could ever be extracted from it (consumption of 8-12 GJ per ton of dry matter). SCWG converts this water from *a problem* into *a reaction medium* – the water from POME becomes a reagent itself. [1, 2]
- **Crystallization of salts and minerals:** Under supercritical conditions, inorganic salts and minerals (such as phosphorus and potassium) become completely insoluble in water and settle to the bottom. This

allows us to extract pure phosphorus from POME as a high-value fertilizer for palm plantations (additional circular income), but also explains why we need **silicon carbide (SiC).** Without the SiC layer, these sedimentary salts and sulfur would literally gnaw and destroy the reactor metal within a few weeks at a pressure of over 220 bar. [1, 2, 3]

- **High outlet pressure:** Since the SCWG reactor operates at a naturally high pressure (>221 bar), the syngas produced exits at a pressure that is ideal for direct routing into the catalytic process of methanol synthesis, without the need for energy-consuming compressors. [1, 2]

11.2. Summing up

SCWG is an advanced "hydrothermal refining" technology that allows us to enter any tropical plantation, take liquid ecological mud and squeeze a clean energy medium out of it under extreme pressure and temperature. It is the technological link that connects palm waste in Malaysia with our digital dMRV tokens in Zug. [1, 2, 3]

Given that SCWG requires operation at pressures above **221 bar**, **the Local Control Systems (SCADA)** automatically relieve and control the pressure in the event of sudden clogging of the reactor with inorganic salts, in order to prevent damage to expensive DMLS components and initiate urgent safe shutdown and decompression of the entire system.

12. Behind the scenes construction or how does it all work?

The fact that these are acquisitions of existing banks with a clean history (the age of the owners in Adelaide and the lack of working capital in Vanuatu) makes things dramatically easier. This is a **top-notch engineering and financial checkmate** – we are not building a system from scratch, but taking over the "legal shells" with licenses, which is the fastest way through regulatory hurdles.

The inclusion of **Croatian/Slovenian** manufacturer of Compact 5, **Croatian** designer and implementer of SCADA and **Croatian** developer and contractor of the Synapse/Matrix blockchain L1, as independent arbiters (validators) on the blockchain is move the point of view of credibility towards third parties and loyalty to AORANGI GROUP AG. This completely destroys any doubt of the auditors (Verra/Gold Standard) about centralization. The system becomes resistant to manipulation because third-party, reputable technical parties from the EU (Croatia/Slovenia) control the accuracy of data from the field.

Since **I2C5 covers 100% of CAPEX** (finances production, DMLS machines in Crooatia/Slovenia, bank acquisition and software), they take all the financial risk. AORANGI CROATIA enters **IP (intellectual property) and complete system architecture**.

Below is a proposal on how to include these three companies as validators and how to financially arrange them through the existing green **methanol** and **carbon credit** (CC) split, while still keeping AORANGI CROATIA in control and motivating all partners.

12.1. Model of inclusion of technical validators in the L1 network

In order for the network to have full institutional credibility, these partners must not only be "contractors", but **"Guardians of system integrity".** Each of them gets its own validator node (Validator Node):

1. **Manufacturer Compact 5 (Hardware Validator):** With its node, it guarantees that the Compact 5 physical reactor is manufactured to DMLS specifications and that the sensors on the hardware have not been modified.
2. **Designer SCADA IoT (SCADA validator):** Guarantees the integrity of the Web-SCADA software and that the data on the destroyed methane and the electricity produced are accurate and unchanged sent to the Matrix protocol.
3. **Software Contractor (Architectural Validator):** Monitors the stability of the Synapse/Matrix L1 network itself and ensures that smart contracts correctly mint tokens based on SCADA inputs.

12.2. Financial Engineering: Redistributing Without Compromising the Base

Since **I2C5** provides all the CAPEX, their percentages (75% methanol / 25% carbon credits) **should not be touched too much** so as not to compromise their ROI (return on investment). On the other hand, **the holding company AORANGI provides pure IP**, and its 70% in carbon credits is the main source of enormous profit.

Validator compensation should be set up through **a "Technical Tax" (SaaS / Maintenance Fee)** model that is paid per hourly operation of each active Compact 5 device. Validators must be paid in **a combination of live money (from methanol) and long-term stake (from carbon credit) 5%**.

Below is a mathematical and logical proposition of the distribution.

12.2.1. Green Methanol (Hourly Cashflow for Validator Operating Costs)

- **Current state:** 52% of GEM energy goes to methanol = ~580 liters/h. Split: **75% I2C5 (~435 l)** and **25% AORANGI (~145 l)**.
- **Proposal:** Given that the manufacturers of the basic Compact 5 equipment, the designers of SCADA/IoT sensors/telemetry and the contractors of Synapse/Matrix AORANGI.CC blockchains are also contracted to be in charge of system maintenance, the methanol portion covers their fixed operating costs (Opex) for network monitoring and SCADA.
- **New Split (within the AORANGI quota): I2C5** remains at its **75%** (because they gave CAPEX). **AORANGI** takes its 25% and sets aside **3% for the "Technical Consortium"** (1% each).
    - **I2C5:** 75% (~435 liters/hour)
    - **AORANGI:** 22% (~127.5 liters/hour)
    - **Technical consortium (manufacturers of equipment, sensors/telemetry and Synapse/Matrix blockchain):** 3% (~17.5 liters/hour total → approx. 5.8 liters per partner per hour).
    - ***What does this mean?*** At the price of green methanol, it brings each partner a stable, continuous income in euros every hour, for every active device in the world. If we have 150 devices, that becomes a huge amount of money.

12.2.2. Carbon Credits (Long-term "Equity" in loyalty tokens)

- **Current state:** Split: **75% AORANGI** and **25% I2C5**. Since we generate 10.86 CC per hour (~86,880 per year per device), AORANGI holding holds the lion's share.
- **Suggestion:** In order for these partners to be maximally motivated to protect the integrity of the network (and keep the price of our token high in the market), they must own a portion of these tokens.
- **New Split: I2C5** remains at **25%. AORANGI** reduces its stake to **70%** and **5%** is allocated to the **"Validator Pool".**
    - **AORANGI:** 70% (still holds absolute control over the ecosystem).
    - **I2C5:** 25%
    - **Validator Pool:** 5% (equipment manufacturer gets 2%, designer and contractor of SCADA/IoT 1.5%, developers Matrix/Synapse blockchain 1.5% – reallocated according to hardware/software maintenance complexity).

- ***What does this mean?*** Out of a total of 86,880 loans per year per device, approximately 4,344 loans go to validators. At institutional prices of verified dMRV loans, this is serious capital that turns them from mere suppliers to partners.

12.3. How to present it to an investor (I2C5)?

To I2C5, this is presented as **a reduction in the risk of their investment (Risk Mitigation)**.

1. **CAPEX security:** If the network is controlled only by us (through our banks and holding companies), Western audit firms can block the issuance of carbon credits under suspicion of internal data manipulation.
2. **Institutional Shield:** By involving three independent EU companies with references in manufacturing and IT, the project gets an **AAA rating in transparency**. This directly raises the value of the carbon tokens held by I2C5 (their 25%).
3. **I2C5 loses nothing:** Their share in methanol (75%) and CC (25%) remains intact. The technical consortium is settled from **AORANGI's shares**, which shows **AORANGI** 's faith in the system and its willingness to pay for state-of-the-art infrastructure from its profits.

13. Decentralized Governance and Consortium Validation

The integrity of the **AORANGI.CC** ecosystem is secured through a decentralized consortium validation model. To eliminate any risk of data manipulation and to provide absolute transparency to international carbon registries (such as Verra and Gold Standard), block validation and data verification are distributed among three independent, highly specialized EU-based entities.

These entities function as **Independent Technical Validators**. They possess read/write validation rights on the Permissioned L1 network, acting as a cryptographic counterweight to the AORANGI holding and banking network.

13.1. Consortium Members and Validation Roles

- **Direct Equipment Manufacturer (Hardware Integrity Validator):**
    - **Role:** Validates the physical and structural parameters of each SCWG Compact 5 reactor.

    - **Cryptographic Guarantee:** Confirms that the device running on-site is an authentic, unmodified DMLS/SiC system manufactured under strict EU quality controls. It cross-checks hardware telemetry against the factory-issued digital twin.

- **SCADA/IoT Designer (Data Ingestion & SCADA Validator):**
    - **Role:** Validates the software layer responsible for measuring operational technology (OT).

  Cryptographic Guarantee: Digitally co-signs the data packets before they enter the Matrix protocol. This ensures that the volumetric figures for neutralized methane and megawatt-hours of green electricity are mathematically accurate and untampered with.

- **Contractor AORANGI.CC blockchain (Network Architecture & Synapse Validator):**
    - **Role:** Validates the L1 blockchain consensus and consensus logic.
    - **Cryptographic Guarantee:** Monitors the Synapse orchestration layer. It ensures that the smart contracts responsible for minting Real-World Asset (RWA) carbon tokens trigger exclusively upon receiving valid, dual-signed hardware/SCADA inputs.

13.2. Validator Compensation Framework

Validators are incentivized through a hybrid model that provides **immediate operational liquidity (Opex)** from green methanol sales and **long-term capital appreciation (Equity)** via eco-verified carbon tokens.

All validator allocations are carved out entirely from the **AORANGI GROUP AG** share, leaving the **I2C5** allocations completely untouched.

13.3. Revenue Split: Green Methanol (Hourly Cashflow)

- **Total Output:** ~580 liters per hour per Compact 5 unit.
- **I2C5 Allocation:** 75% (~435 liters/hour) — Fixed for CAPEX backing and market logistics.
- **AORANGI GROUP AG Allocation:** 25% (~145 liters/hour) baseline, redistributed as follows:
    - **AORANGI Holding (Net):** 22% (~127.5 liters/hour).
    - **Consortium Pool:** 3% (~17.5 liters/hour total → **1% per validator**). This provides an immediate, continuous stream of fiat-

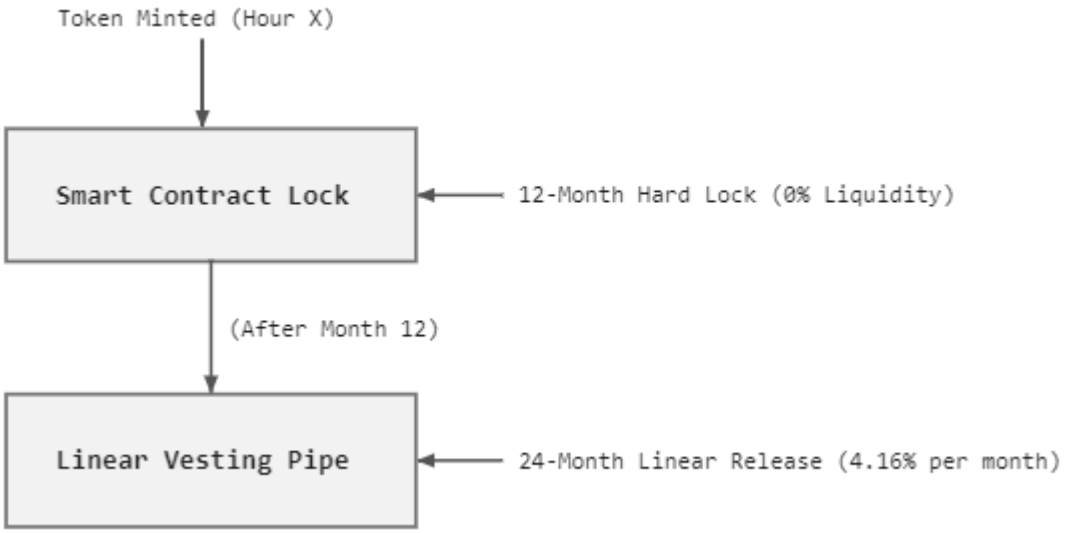
convertible revenue to cover ongoing node maintenance and system audits.

13.4. Revenue Split: Eco-Verified Carbon Tokens (Long-Term Assets)

- **Total Yield:** 10.86 Carbon Credits (CC) per hour of operation (~86,880 credits annually per unit).
- **I2C5 Allocation:** 25% — Fixed contractual share.
- **AORANGI GROUP AG Allocation:** 75% baseline, redistributed to secure network governance:
  - **AORANGI Holding (Net):** 70%.
  - **Consortium Validator Pool:** 5% distributed according to technical complexity:
    - **Direct Equipment Manufacturer:** 2.0% of total minted CC.
    - **SCADA/IoT Designer:** 1.5% of total minted CC.
    - **Contractor AORANGI.CC blockchain:** 1.5% of total minted CC.

13.5. Smart Contract Lock-up and Vesting Mechanics

To protect the market value of the **AORANGI.CC** carbon token and prevent sudden liquidity dumps that could depress prices, all tokens distributed to the Technical Consortium are subject to programmatic lock-up rules enforced directly by the L1 smart contracts:



- **The 12-Month Hard Lock:** Every token minted to a validator's wallet address enters a **12-month non-transferability period** starting from

the exact block timestamp of its creation. During this timeframe, the token cannot be wrapped, transferred, or liquidated via any banking off-ramp.

- **The 24-Month Linear Vesting:** Following the completion of the 12-month hard lock, tokens are released into the validators' active balances on a linear, block-by-block schedule over the subsequent 24 months (**4.16% of the locked batch per month**).
- **Slashing & Penalty Clause:** In the event of a validation failure, deliberate data omission, or a node going offline for more than 48 consecutive hours, the AORANGI Consortium Governance board reserves the right to trigger a consensus vote to **slash and burn** up to 100% of the validator's currently locked tokens.

14. Accurate Cash and Token Flow Across the Financial Architecture

The following operational blueprint outlines how funds, physical assets, and digital tokens circulate through the Swiss holding company, the onshore/offshore banking legs, and the technical consortium based on the finalized ecosystem percentages.

14.1. Structural Assumptions

- **Holding Seat:** Zug, Switzerland (Central clearing, IP licensing, and corporate treasury).
- **Onshore Bank:** Adelaide, Australia (APRA-regulated, Tier-1 SWIFT compliance, fiat gateway).
- **Offshore Bank:** Port Vila, Vanuatu (Regulated offshore liquidity center, rapid DeFi clearing hub).
- **CAPEX Source:** 100% pre-funded by the I2C5.

14.2. Complete Flow Matrix

Phase / Asset	Origin / Source	Primary Gateway	Intermediate Processing	Final Destination & Reinvestment
1. Industrial CAPEX	**I2C5**	**AORANGI GROUP AG (Zug)**	Direct wire transfer to manufacturing accounts.	**Direct Equipment Manufacturers:** Funds the DMLS printer tooling and physical Compact 5 fabrication.
2. Green Methanol Revenue	**Singapore Shipping/Global Markets**	**I2C5 Logistics & Sales**	**75%** retained by I2C5 to amortize CAPEX. **25%** forwarded to Switzerland.	**AORANGI Holding (Zug):** Retains **22%**. Disburses **1% each** via SEPA according to each of the *Technical Consortium* as Opex cashflow.
3. Carbon Data Ingestion	**Compact 5 Sensors (Malaysia)**	**Matrix Nodes & SCADA**	Encrypted packets signed by equipment manufacturer and SCADA/IoT designer.	**Synapse Layer (L1):** Cryptographically verifies the chemical proof of neutralized methane.
4. Token Minting (RWA)	**AORANGI.CC L1 Network**	**Synapse Contract Protocol**	Automatically splits the minted batch at the minting block.	**I2C5 Wallet:** 25% (Liquid). **AORANGI Holding:** 70% (Liquid/Treasury). **Validator Wallets:** 5% (Sent straight into the Smart Contract Lockup).
5. Financial Off-Ramp	**AORANGI Holding (Zug Treasury Tokens)**	**AORANGI Bank (Vanuatu)**	Absorbs RWA tokens from the holding company, matches liquidity with international DeFi pools.	Converts tokenized collateral into fiat; routes via clean institutional lines to Australia.
6. Capital Settlement	**AORANGI Bank (Vanuatu Liquid Fiat)**	**AORANGI Bank (Adelaide, Australia)**	Clears inbound capital under **APRA / SWIFT** regulatory oversight.	**AORANGI GROUP AG (Zug):** Received as clean corporate fiat, ready to fund new production lines in Croatia.

14.3. Step-by-Step Capital Loop

1. **The Funding Phase:** I2C5 wires 100% of the CAPEX for bank acquisitions, network setup, and machine production directly to **AORANGI GROUP AG in Zug**. Zug distributes these funds to **Direct Producers** in Croatia and Slovenia to launch production lines.

2. **The Production Phase:** Clean energy data and green methanol are generated on-site in Malaysia. The **3% methanol cash share** flows to the Croatian tech consortium via Zug to sustain node uptimes.
3. **The Cryptographic Phase:** Methane destruction metrics are uploaded via Matrix. The L1 network mints the carbon credits, sending **70% to Zug**, **25% to I2C5**, and locking the **5% validator share** inside a programmatic smart contract.
4. **The Banking Off-Ramp Phase:** To liquidate the holding company's tokens without touching public crypto markets, **AORANGI GROUP AG** utilizes its subsidiary **Bank Vanuatu** to process the assets within a compliant offshore framework.
5. **The Final Settlement Phase:** Bank Vanuatu routes the resulting fiat liquidity directly to **Bank Australia in Adelaide**. Regulated by **APRA**, this entity clears the capital via SWIFT, providing institutional grade, clean fiat revenue back to the Swiss treasury for ongoing scaling and reinvestment.