Delivering Net Zero For Manufacturing

Understanding Your Net Zero Journey

Digital Twin - Maximising Energy Efficiencies Through Technology

auditel | THE COST, PROCUREMENT & CARBON SOLUTIONS COMPANY

Helping companies become Carbon Neutral and plan for Net Zero

nqa.app Associate Partner

bsi. | Associate Consultant

AGENDA

- Intro to Auditel
- Carbon - The Basics
- Why – the business drivers
- Options - so many choices
- Typical carbon programme
- Digital Twin

KEY INFO

- 60 minute webinar – including 10 minutes Q&A
- Questions will be answered at the end – questions in the chat as we go through

YOUR PRESENTERS

John Gerard – Auditel Carbon Solutions Specialist

Laurie McKelvie – IES Senior Operations Consultant

auditel

Who are Auditel?

1994
Company Founded

Helping SME's buy and manage energy supplies

2000
Full scope Procurement

Expanded to 80 consultants, delivering full scope procurement on over 100 cost areas

2013
Energy Savings team

Launched specialist ESOS lead assessor team. Started delivering client energy reduction projects

2017
Carbon Solutions

Formal launch of Carbon Solution team

2023
80 qualified Carbon Auditors

Now with network of over 100 consultants UK wide, 80 of whom are formally qualified in Carbon Solutions work

Our Mission…

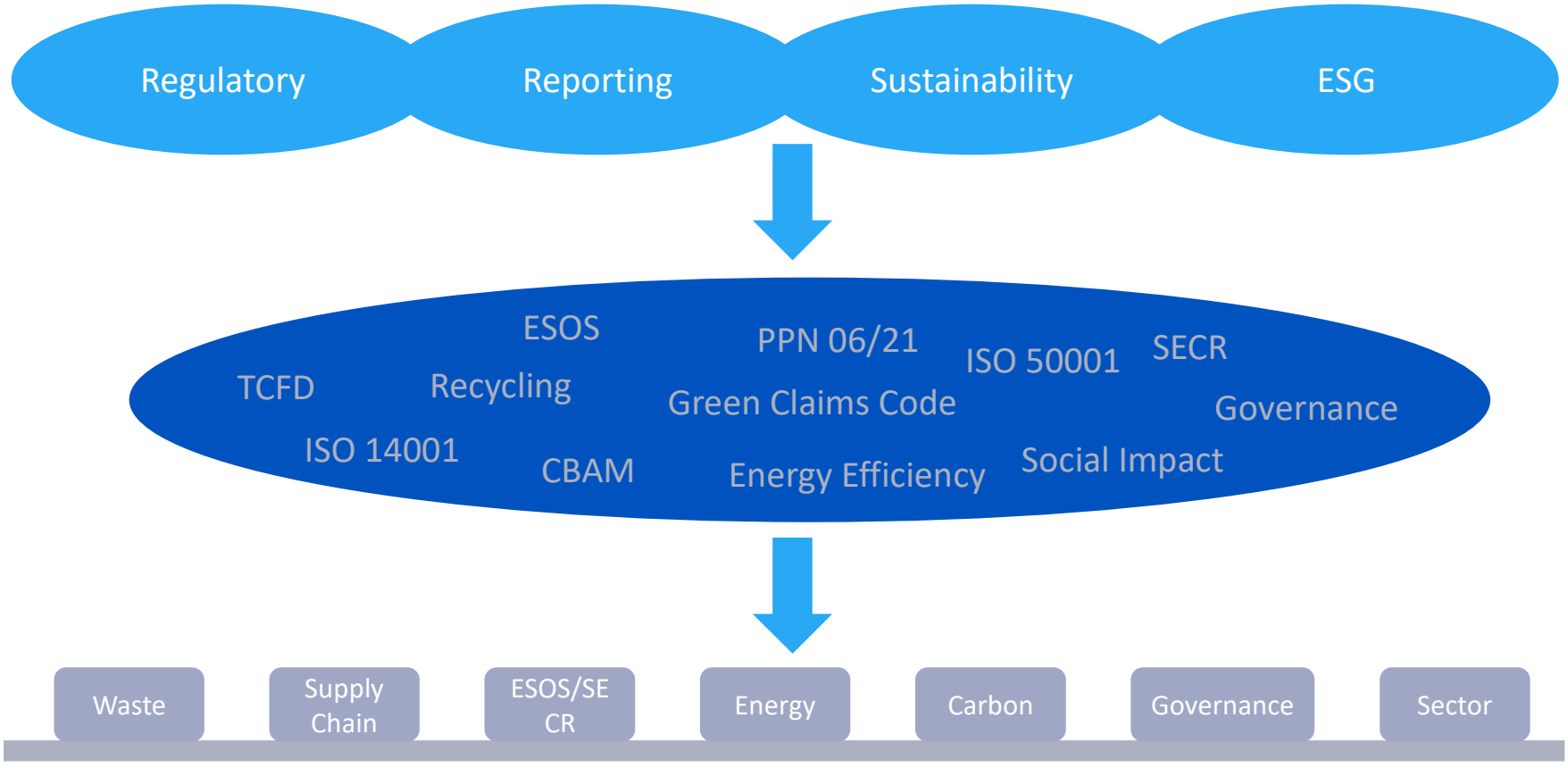
- To help organisations manage Carbon in a **measurable, meaningful** and potentially **self-funding** way.

nqa.app Associate Partner

bsi. | Associate Consultant

auditel

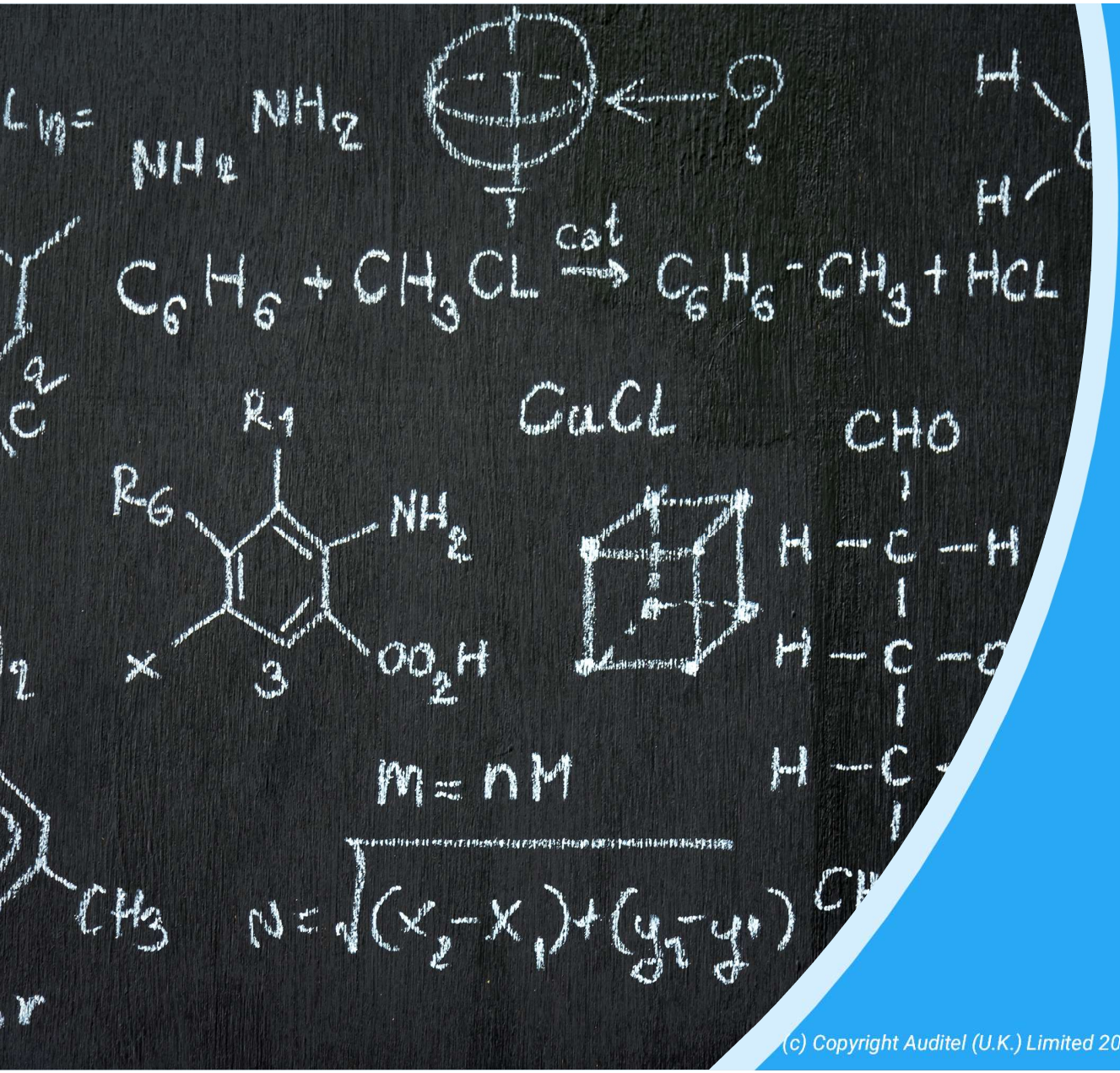
It’s not just about a Carbon Footprint



nqa.app Associate Partner

bsi. | Associate Consultant

auditel



The Basics

auditel

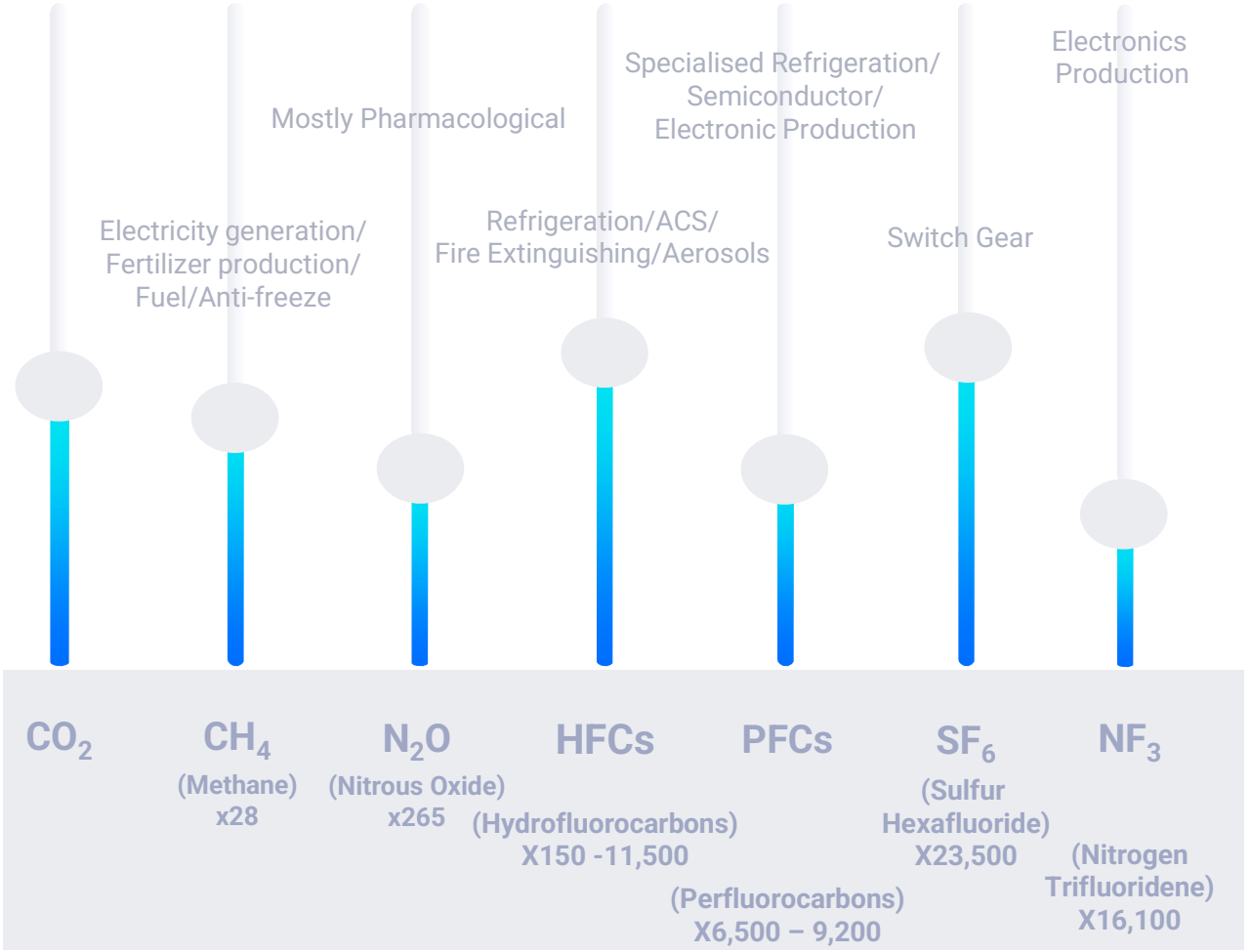
What Are Green House Gases?

GHG – 7 main gases

Use Govt conversation tables to covert to

tCO_2e

(tonnes of CO_2 equivalent)



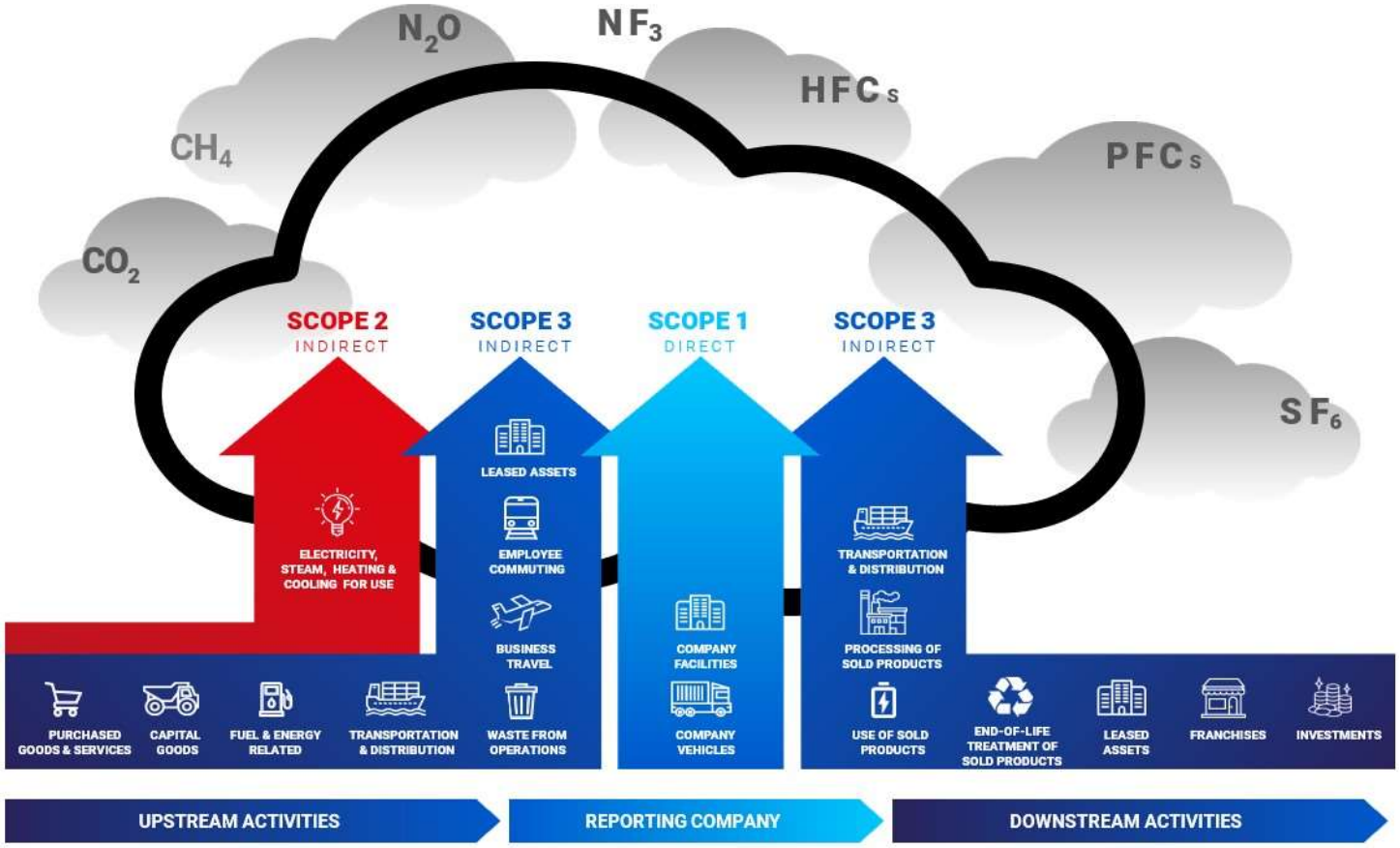
nqa.app Associate Partner

bsi. | Associate Consultant

auditel

What Are The Scopes?

- Scope 1 - Direct emissions from owned or controlled sources - for most companies this is gas boiler(s), company vehicles and F-Gas emissions (HFC&PFCs)
- Scope 2 – Indirect emissions from generation of purchased electricity, steam, heating and cooling - typically your electricity supply
- Scope 3 – ALL other indirect emissions in your value chain - it is multiple sources and, by far, the largest and most complicated scope to calculate



nqa.app Associate Partner

bsi. | Associate Consultant

auditel

Scope 3 – the real challenge

Typically Scope 3 will form between 85-95% of a company's emissions

but some will be more….

Microsoft's Scope 3 emissions add up to about 50 times the emissions Microsoft is responsible for in its own premises, and the emissions from the electricity it uses (Scope 1 and Scope 2) so a 23 percent increase in this part of Microsoft's footprint is more than 50 times the amount the company saved within Scope 1 and 2.

nqa.app Associate Partner

bsi. Associate Consultant

auditel

Carbon Neutral V Net Zero

Carbon Neutral

Means balancing GHG emissions by “offsetting” – or removing from the atmosphere – an equivalent amount of carbon for the amount produced. This can be achieved by buying “carbon credits”

Net Zero Carbon

This is reached when the amount of CO2e emitted is matched by the quantity of CO2e removed. It is accompanied by a target date for when this occur. You cannot achieve net zero by offsetting.

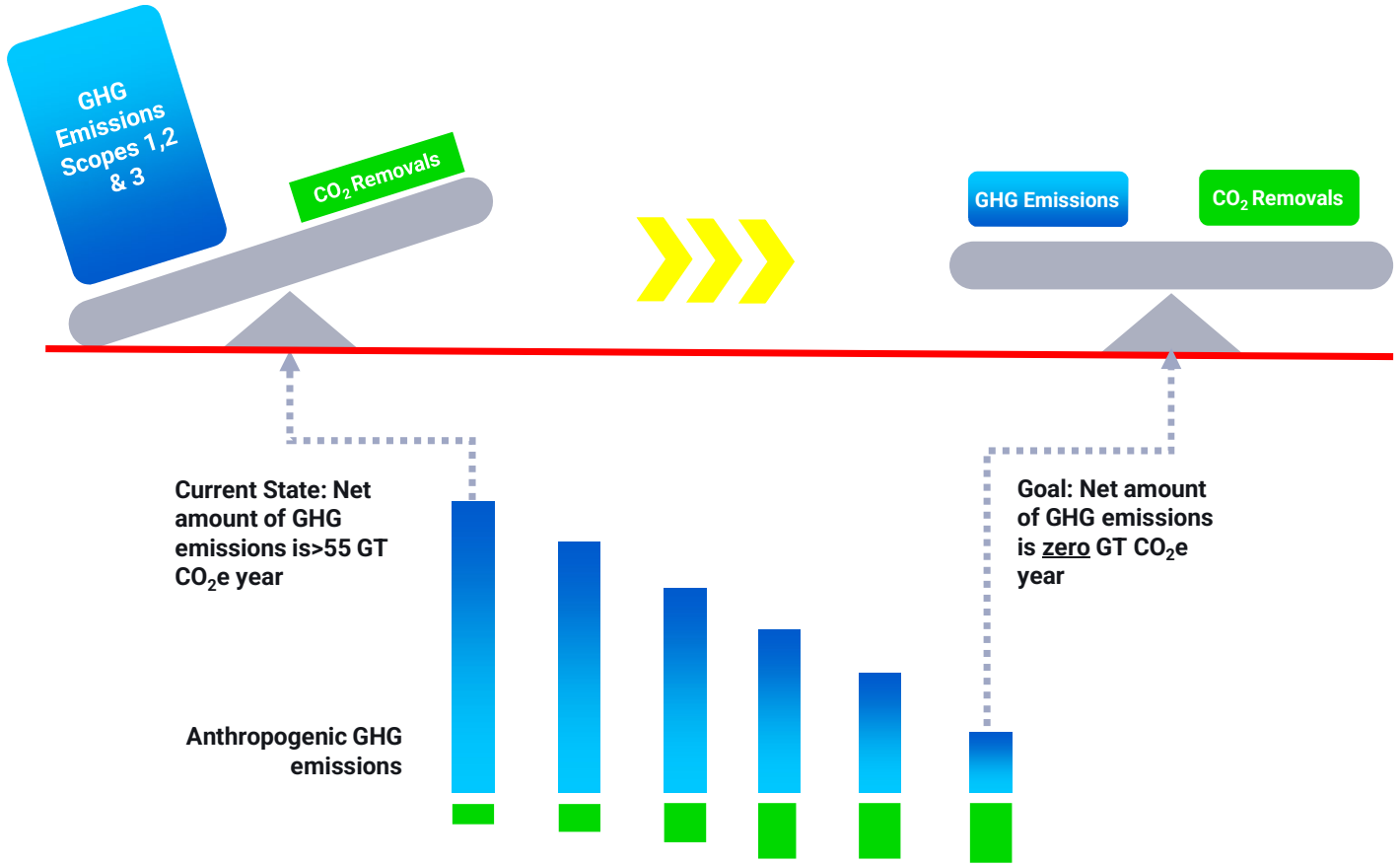
- Carbon Reduction
- Carbon Removal/Capture

nqa.app Associate Partner

bsi. | Associate Consultant

auditel

What does Net Zero really mean?



To limit global warming to 1.5'C, we must reach net-zero carbon emissions no later than 2050

nqa.app Associate Partner

bsi. | Associate Consultant

auditel

Greenwashing is when a company purports to be environmentally conscious for marketing purposes but actually isn't making any notable sustainability efforts.

CMA Green Claims Code

- claims must be truthful and accurate
- claims must be clear and unambiguous
- claims must not omit or hide important relevant information
- comparisons must be fair and meaningful
- claims must consider the full life cycle of the product or service
- claims must be substantiated

UK Regulators Crack Down on 'Greenwashing'

The CMA has warned businesses they have until the New Year to make sure their environmental claims comply with the law.

The CMA interim Chief Executive warned that if these businesses have used misleading green claims, "*[the CMA] won't hesitate to take enforcement action – through the courts if necessary*".

New EU Regulations – adopted March 2023

The proposal on green claims aims to

- make green claims reliable, comparable and verifiable across the EU
- protect consumers from greenwashing
- contribute to creating a circular and green EU economy by enabling consumers to make informed purchasing decisions
- help establish a level playing field when it comes to environmental performance of products

The FCA's Sustainability Disclosure Requirements (SDR) proposes an "anti-greenwashing" rule, applicable to all FCA-regulated firms, which will require all sustainability-related claims to be clear, fair, and not misleading i.e., proportionate and not exaggerated. The rule is due to come into effect from Q4 2023.

Why?

Market Forces & Challenges

Reducing costs & doing the right thing

...research by Totaljobs ...26% of British workers would be willing to take a pay cut in exchange for working for a business which acted responsibly in terms of the environment... 28% would actually consider quitting their current role and transitioning into one which was offered by a more environmentally responsible company.

differentiate yourself in your market

Microsoft now requires its suppliers to report their emissions and has data from 87 percent of its suppliers ....brands that have nurtured their eco-credentials are now reaping the rewards, with 52% of all consumers swayed by sustainability issues at the till

This currently primarily applies to large enterprises but the expectation is that, over the next few years, the size of companies required to submit returns will reduce

Since Sept '21 any company bidding on a central Govt contract >£5M MUST have a Carbon Reduction plan on how the will achieve Net Zero

lack of knowledge and understanding – and the time to correct this

Greenwashing is more and more recognised and care should be taken. Proof isn't needed – the court of public opinion can be very damaging

CARBON NEUTRAL DOES NOT NEED TO COST THE EARTH

By now we're all aware of the challenges of living with double-digit inflation. And in some cases far higher than that, electricity & gas have increased by factors of 3+. In this environment decarbonisation = 'decosting'...

nqa.app Associate Partner

bsi. | Associate Consultant

auditel

Options

SCIENCE
BASED
TARGETS

BITIOUS CORPORATE CLIMATE ACTION

GRE
GA

nqa.app Associate Partner

bsi. | Assoc
Consu

auditel

Options

Which is best for me?

Only Internationally Recognised Carbon Neutrality Standard

bsi. PAS 2060 Specification for the demonstration of carbon neutrality

GHG Protocol establishes comprehensive global standardized frameworks to measure and manage greenhouse gas (GHG) emissions from private and public sector operations, value chains and mitigation actions.

GREENHOUSE GAS PROTOCOL

ISO 14064

The international standard specifies organization-level principles and requirements for quantifying and reporting GHG emissions and removals

SCIENCE BASED TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

Science-based targets provide a clearly-defined pathway for companies to reduce greenhouse gas (GHG) emissions, helping prevent the worst impacts of climate change and future-proof business growth.

Carbon Footprint Certified PAS 2050

the first consensus-based and internationally applicable standard on product carbon footprinting that has been used as the basis for the development of other standards internationally.

ISO/FDIS 14068 – In Development

ISO 14068 is a comprehensive standard for verifying when carbon neutral is reached and being maintained. It brings 'carbon neutral' and 'net zero' together properly for avoidance of doubt and provides a clear structure in one place which supports a pathway to carbon neutral/net zero

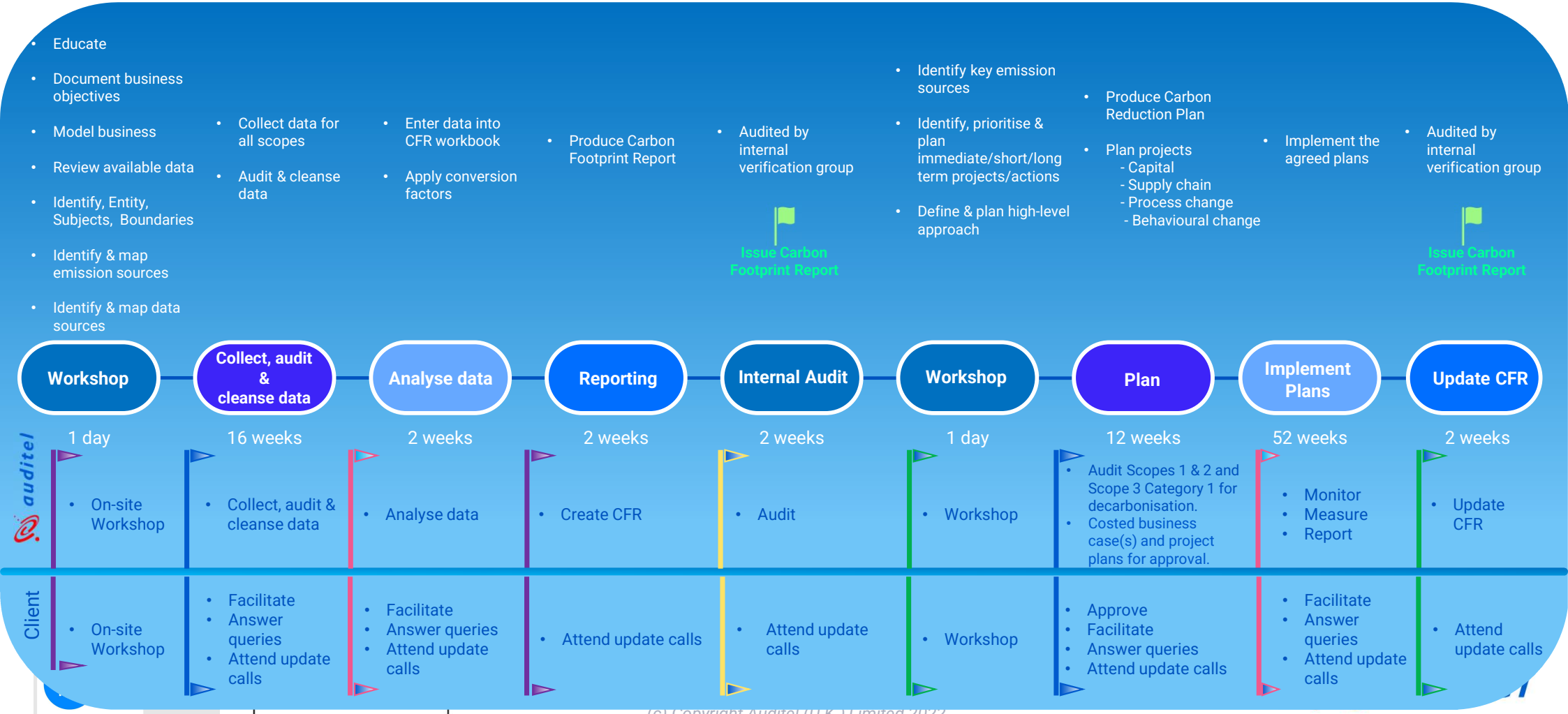
nqa.app Associate Partner

bsi. | Associate Consultant

auditel

Carbon Footprint & Reduction Plan

Typical Delivery Plan



Carbon Neutrality Does Not Need To Cost The Earth

Smart Procurement

Carbon Reduction Projects

Capital Projects

LED Lighting
5,000 m2 warehouse

Capital cost - £53k

ROI - 2.1 year for client

Carbon Reduction 48.2 tonnes (tCO_2e)

Purchase Ledger Carbon Audit

Behavioural

Business Process

Alignment

Cost Reduction Programme

1. **Understand & assess current position**
   - Purchase Ledger
   - NDA signed
2. **Explore & Identify Options**
   - Traffic light report
   - Proposal submitted, approved & agreement to proceed
3. **Agree a programme of work**
   - Agree cost areas, scope & plan
4. **Engage with trusted experts & suppliers**
   - Expert review and discussion with suppliers
   - Report submitted, approved and agreement to proceed
5. **Implement scope & plan**
   - Scope & plan agreed
6. **Ongoing supplier management**
   - Reporting
   - Regular reviews

Sustainable Suppliers

FUNDING FROM REVENUE GENERATED BY COST REDUCTION PROGRAMME

Carbon Reduction

PAS2060 Carbon Programme

Step 4
Document & Validate

Step 1
Define & Measure

Step 3
Offset

Step 2
Reduce

nqa.app Associate Partner

bsi. Associate Consultant

auditel

The ICL Digital Twin

The Power of Digital Twins to Decarbonise Manufacturing and Industry

Laurie McKelvie

ICL Senior Operations Consultant

About IES

Home to the largest building physics analytics team in the world

29
Years of building analysis

Apache
World renowned simulation engine

75,000+
Projects per year

>1,000,000
Buildings

40
Power stations prevented

Our Clients Include

ICL for Manufacturing & Industry

ICL Digital Twins help you identify and deliver:

Energy use reductions
Energy cost reductions
Carbon reductions and Net-Zero road mapping
Manufacturing process efficiency improvements
Building efficiency improvements

Increase production efficiency, reduce energy use, lower energy costs & divest from fossil fuels with Net Zero road mapping

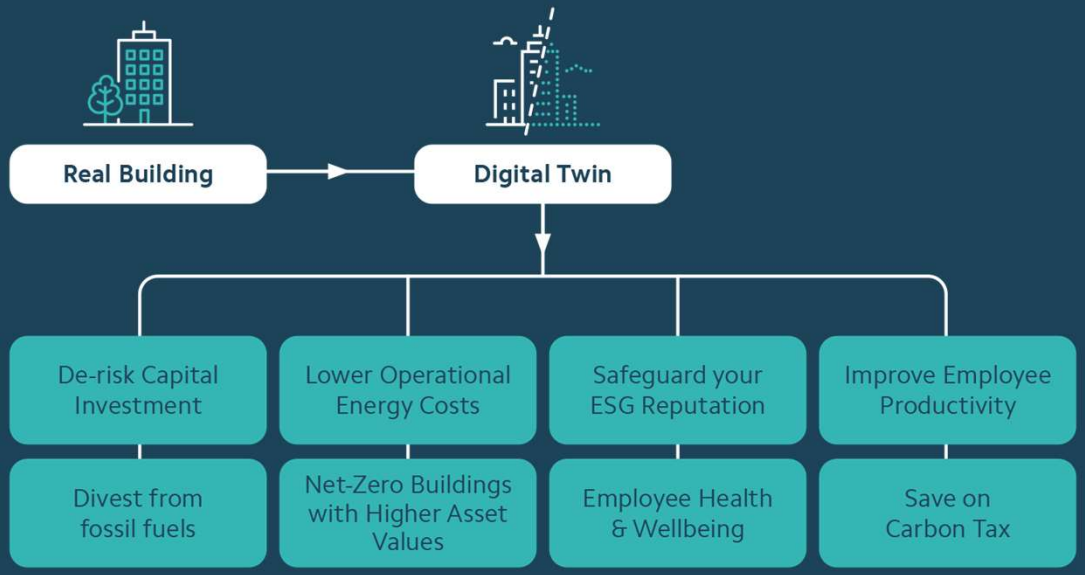
Navigating the Energy Crisis

- Energy cost is now the number one boardroom issue for eight out of ten companies
- Energy Trilema – cost, carbon, self sufficiency – all now pulling in the same direction
- IES can help you save over **20%** off your energy bill with carefully targeted energy efficiency measures
- Your initial Return on Investment can be within 1 year.
- The resulting Digital Twin is a lifetime asset for your organisation, enabling quantifiable and qualifiable Net-Zero road mapping and monitoring with associated additional energy and cost savings.

Our Digital Twin Solution

- The IES Digital Twin is a detailed, calibrated digital representation of your built environment asset, infrastructure, occupancy and manufacturing processes across it's lifecycle

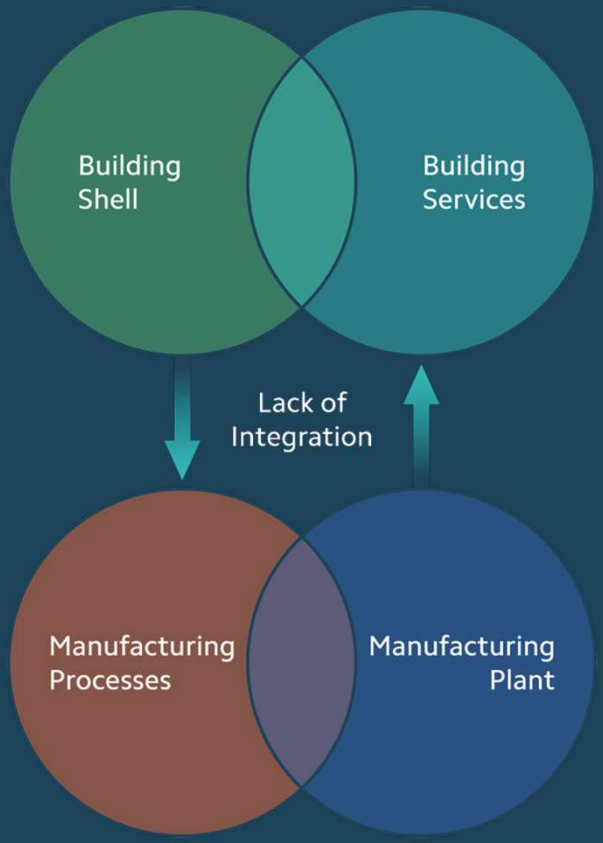
- It's a Lifetime Digital Asset for monitoring, energy cost risk reduction and net-zero investment road-mapping



www.iesve.com

Holistic Approach to Manufacturing Modelling

Key Issue:



Solution:

Reference: Dr Michael Oates, IES Ltd, PhD Thesis - https://www.dora.dmu.ac.uk/handle/2086/2388/browse?value=Oates%2C+Michael&type=author

How We Cut Energy Costs

1 **Data Gathering**

Together, we will identify and gather energy consumption and metering data, system performance data, manufacturing process data, building performance and building use data including occupancy profiles.

2 **Accurate Modelling & Identification of Energy Savings**

We put the available data sets through our world renowned Digital Twinning software to provide insights into energy wastage. We then identify key energy saving measures with accurate forecasting of potential savings and payback periods.

3 **Step towards Net-Zero**

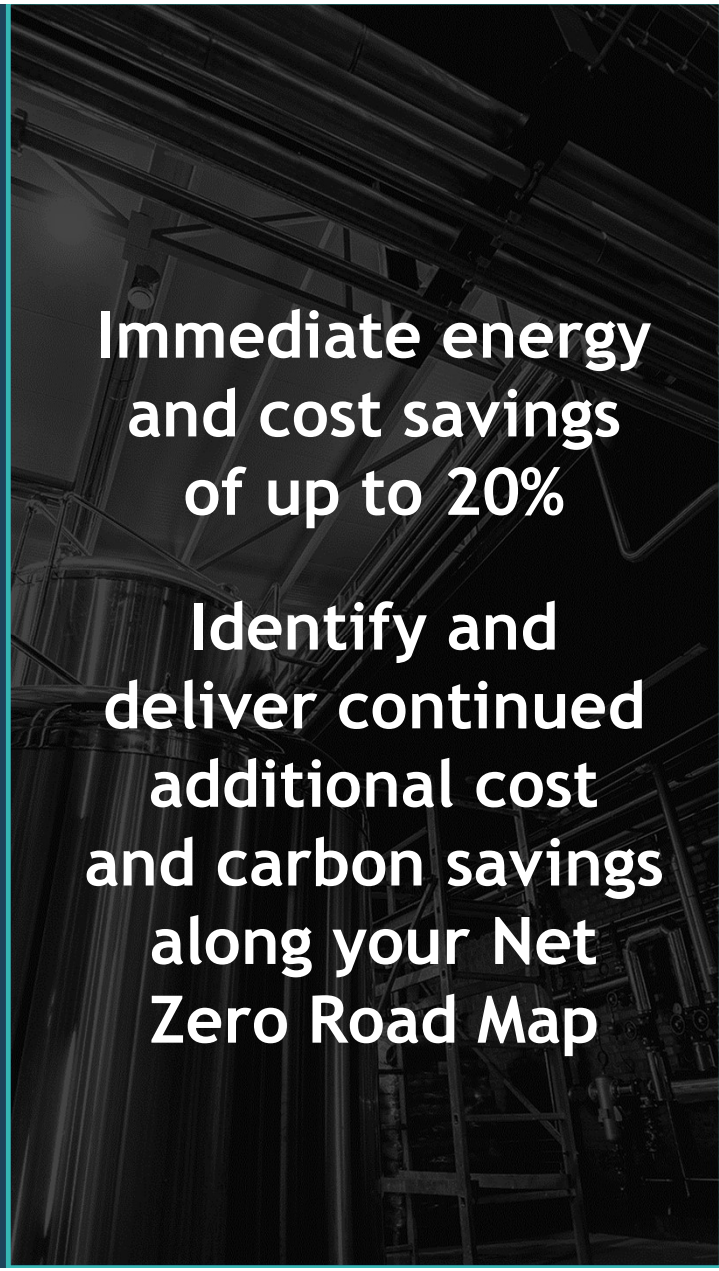
We can further develop the Digital Twin to take you to the next stage and test scenarios that moves you to net-zero & energy Self Sufficiency.

Your Return on Investment

1. **Immediate Energy Efficiency Gains**
   The process of gathering and collating your built environment and manufacturing process data itself will identify immediate energy and process efficiency gains hidden within. These simple gains alone often cover the capital cost of your investment

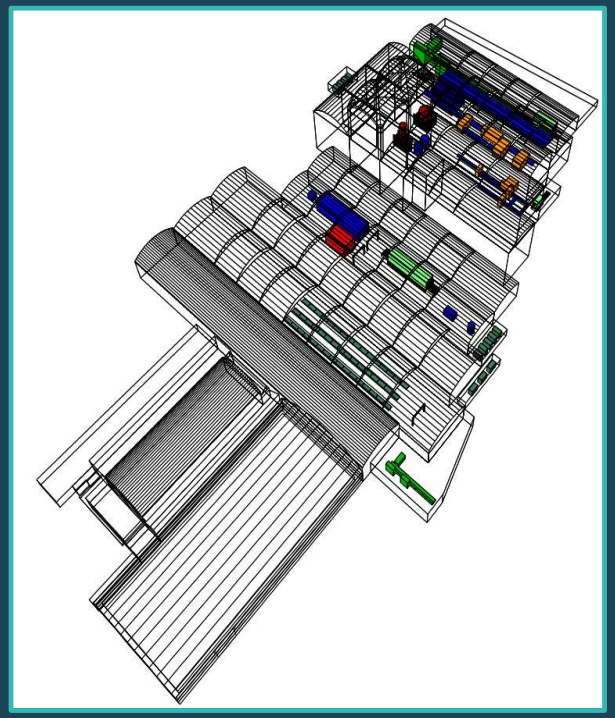
2. **"What If?" Scenario Planning and Strategic Views**
   Once the data is collated and your virtual Digital Twin is built, you can run unlimited engineering, control or behavioural scenarios through the model without any risk to the business. You will identify significant and strategic deliverable improvements with fact based analysis.

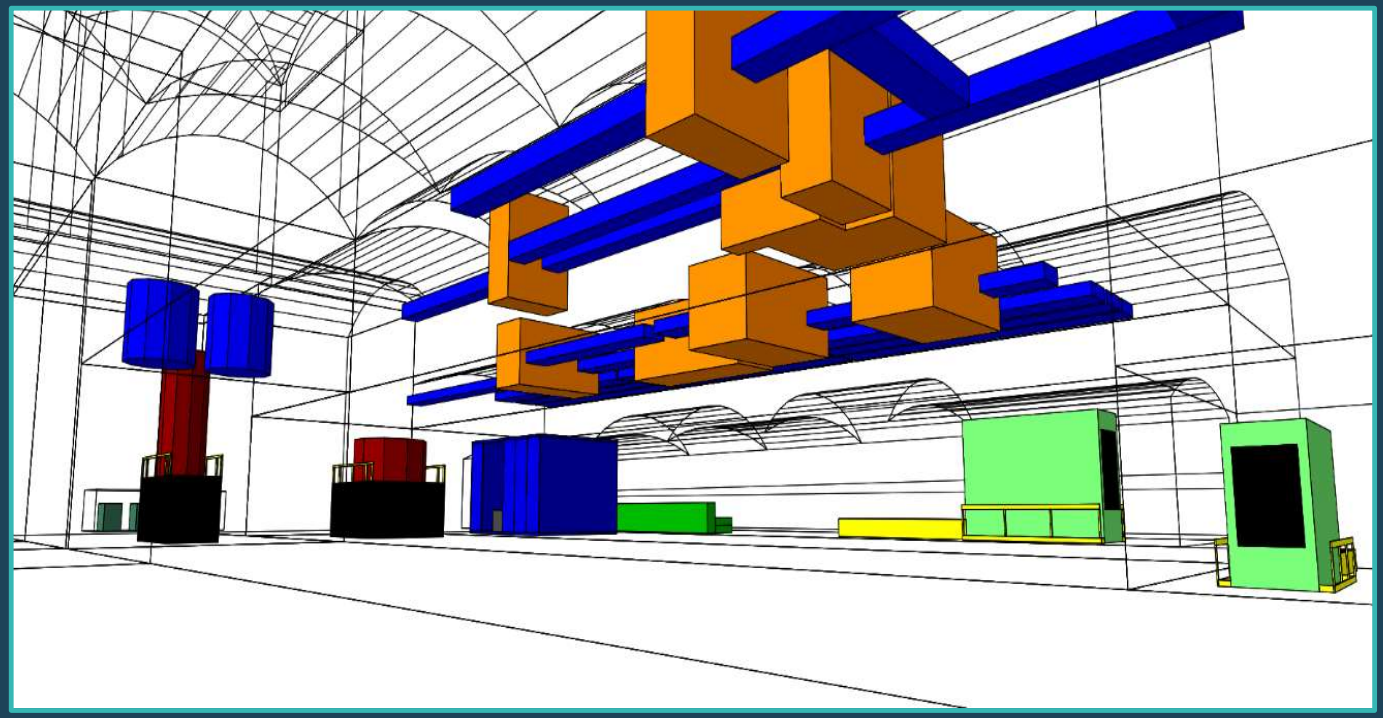
3. **A Quantifiable, Measurable and Defined Net Zero Road Map**
   You will have the tools at hand to plan ahead towards your Net Zero targets. Your road map will be fact based, reportable, costed, measurable and robust.



Case Study: Steel Production, Italy

- Add energy efficiency measures to systems to reduce energy consumption
- Create model of foundry:

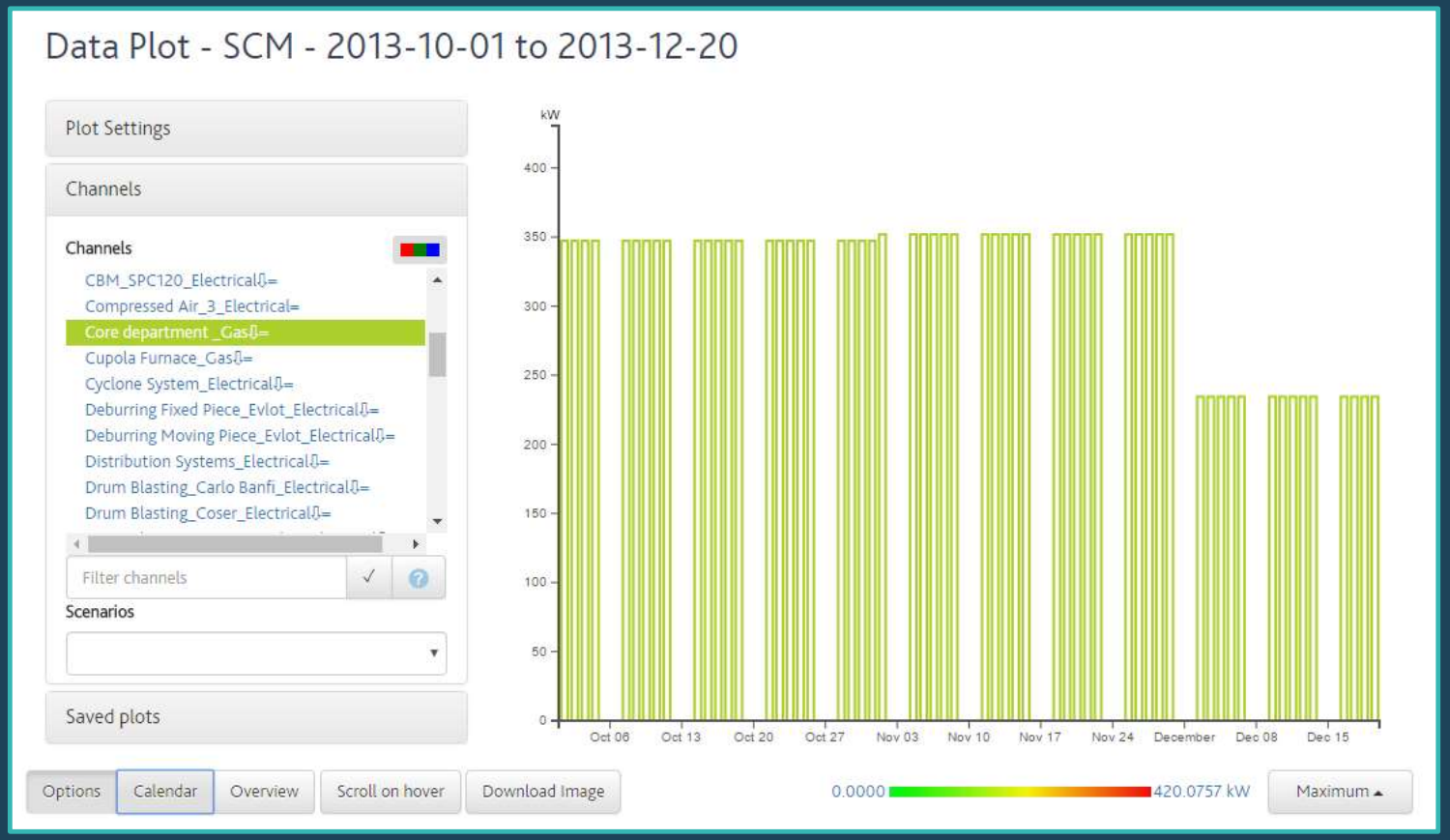




Case Study: Steel Production, Italy

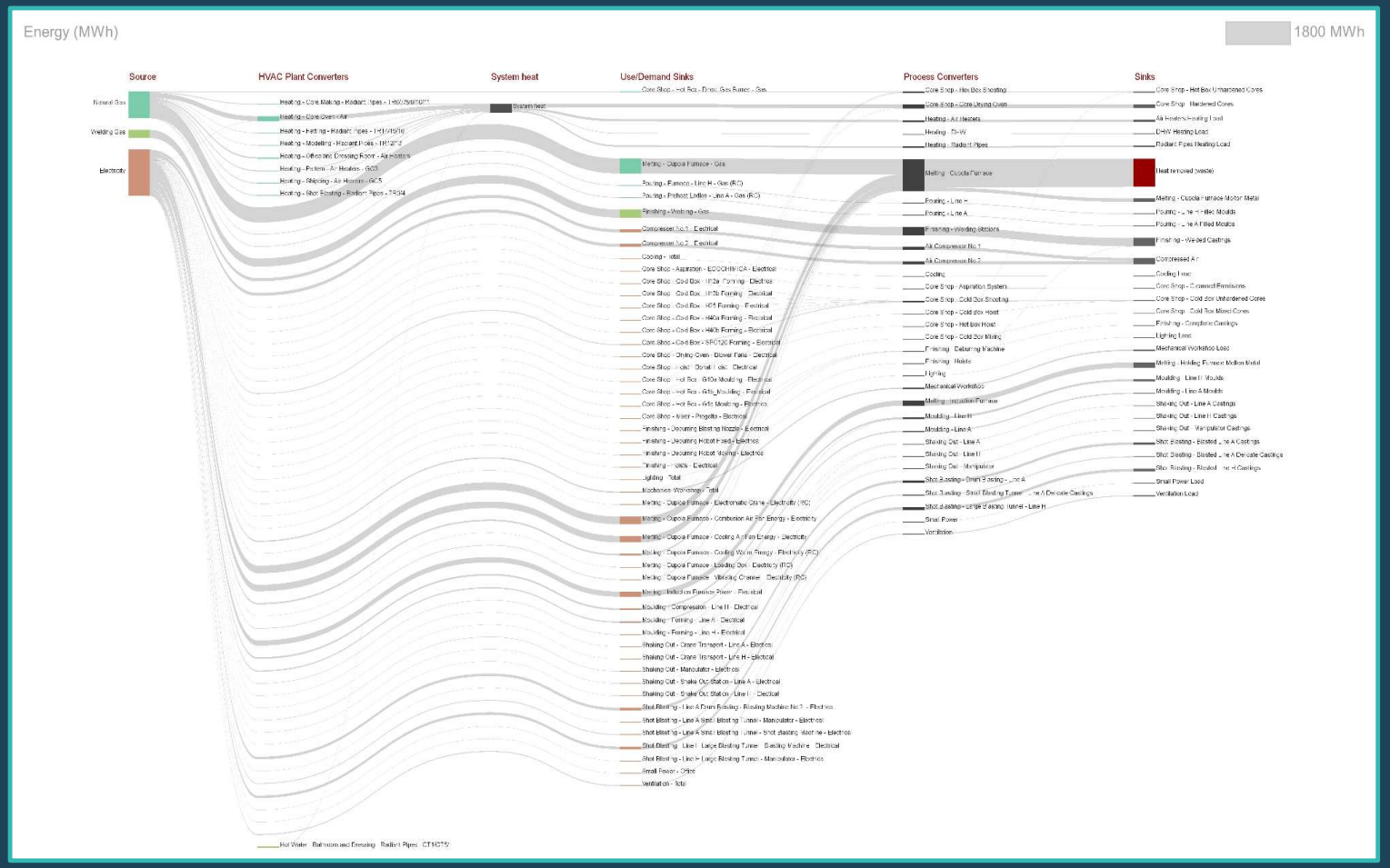
Import data & create profile of energy demand from different processes:

- Natural gas – Monthly bills
- Electricity – Yearly bill
- Materials – Yearly quantities
- Production – Set quantity per hour



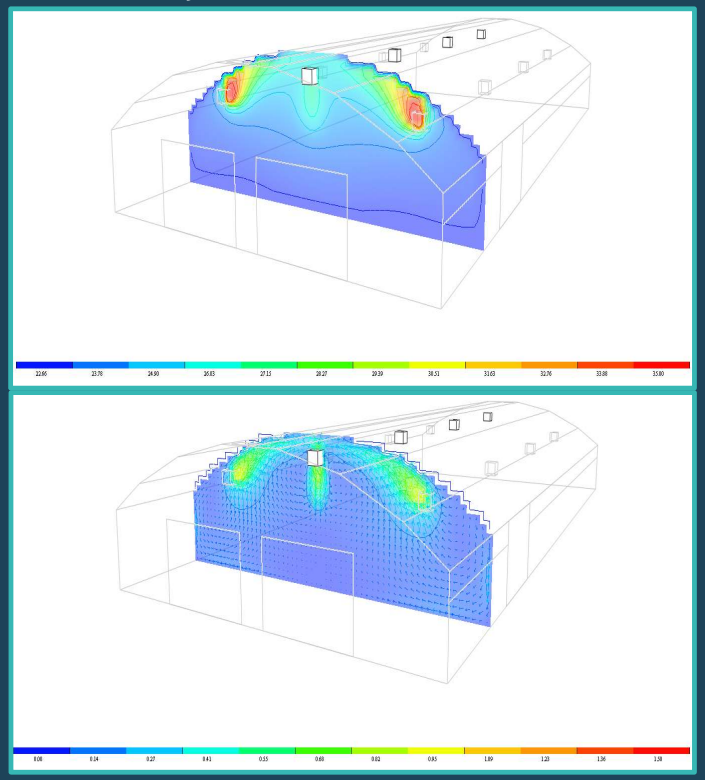
Case Study: Steel Production, Italy

- Create energy Sankey diagram to show energy sources and sinks for different processes
- Identify large energy consumers

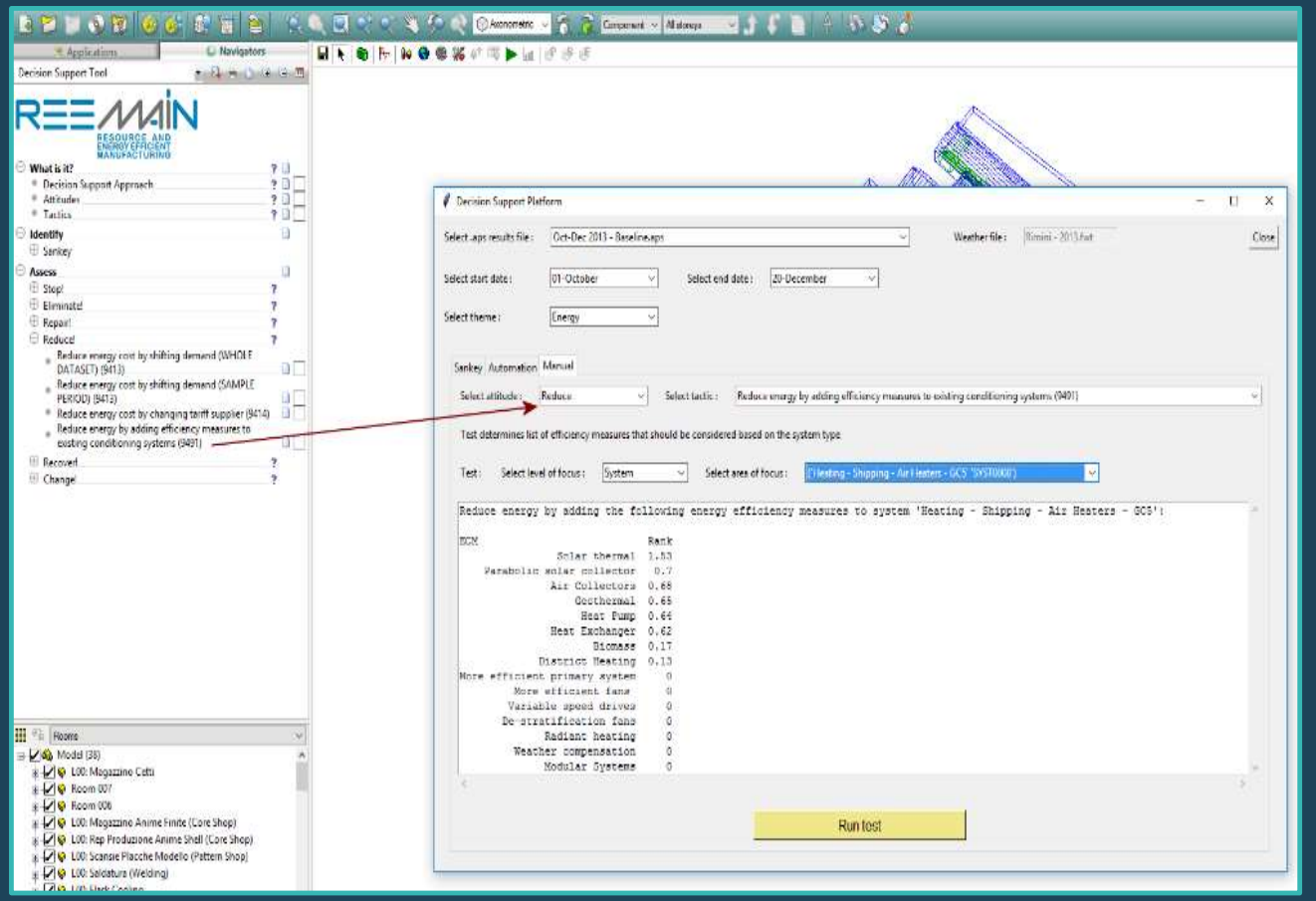


Case Study: Steel Production, Italy

Analysis of heating fans indicates potential savings to be made by adjusting heating fans to run more efficiently:



Run analysis for efficiency measures:



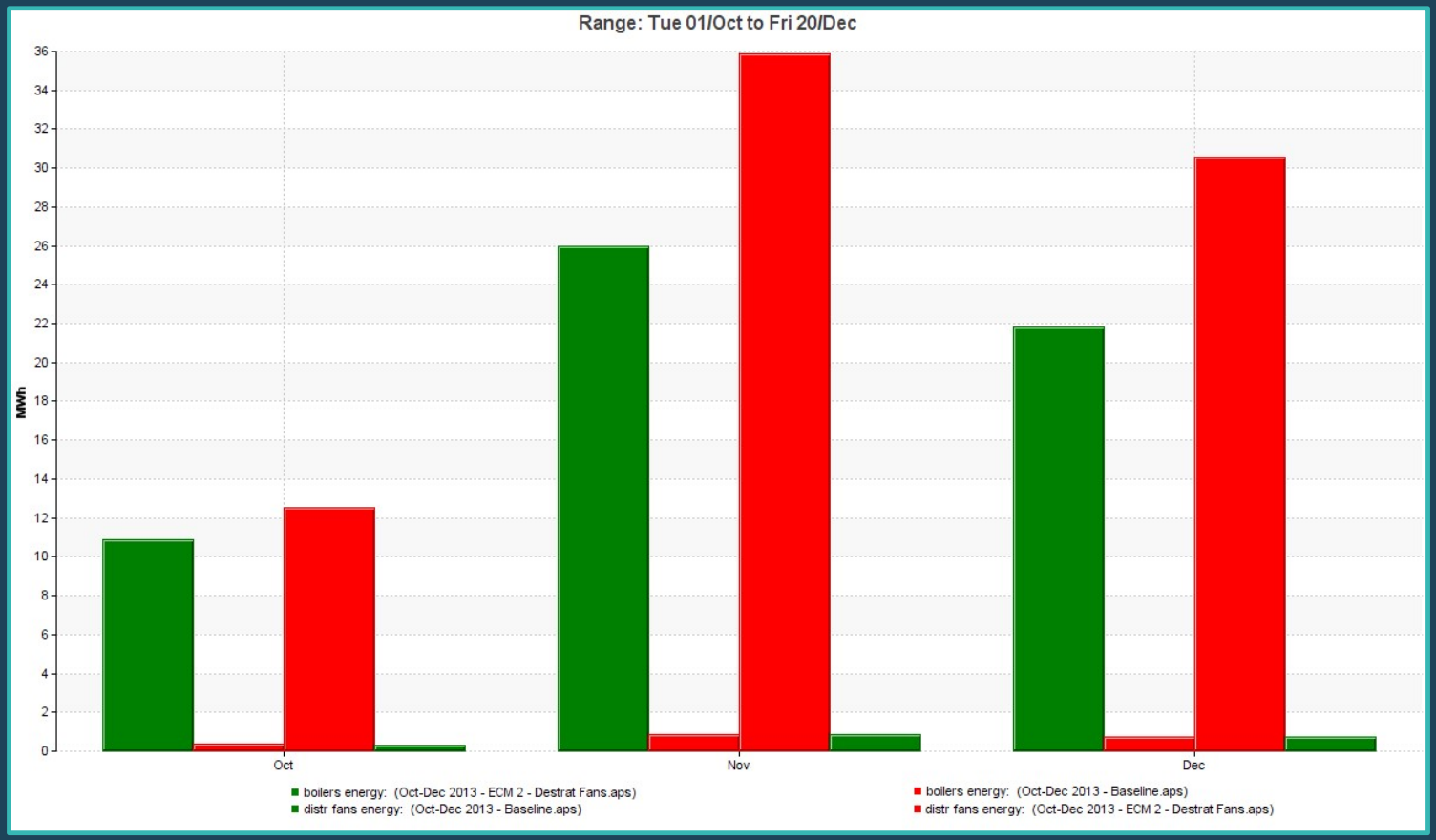
Case Study: Steel Production, Italy

Results:

Saving of

26%

in energy used in heating fans over 3 months:



Red = Baseline

Green = Simulated energy efficiency scenario

Thank You

Contact Details
John Gerard
john.gerard@auditel.co.uk.
LinkedIn - linkedin.com/in/netzerocarbon/
Mobile – 078 138 41638

auditel

nqa.app Associate Partner

bsi. | Associate Consultant