

RADIÚS

*A Practical  
and Industry  
Specific Guide  
to R&D Tax  
Relief Claims*

R&D Tax Reliefs  
Patent Box Tax Reliefs  
Innovation Grants

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# Introduction

## Welcome to our guide to R&D tax relief claims.

This guide is not intended to cover all the technical complexities of making an R&D tax relief claim – after all, those are the issues which your adviser can help you address.

Rather, the guide aims to illustrate, by way of case studies built on real life client examples, the vast scope of potential companies who can benefit from this tax relief.

R&D tax relief is one of the key methods by which successive governments have sought to

incentivise innovative companies for over 20 years. Nevertheless, it is widely accepted that the relief is significantly under-claimed.

One of the main reasons why companies fail to claim the relief to which they are entitled is because they overestimate the level of innovation required.

*The aim of this guide is to give real life examples of successful claims to demonstrate the type of activity which qualifies, and hopefully to encourage other similar eligible companies to claim.*

## How to use this guide

This isn't a comprehensive summary of every company who can claim, so if you don't see a case study which exactly reflects your fact pattern, it doesn't mean that your company isn't eligible for R&D relief.

The guide is split into different sectors. If your company fits into one of those sectors, you may want to head straight to that section.

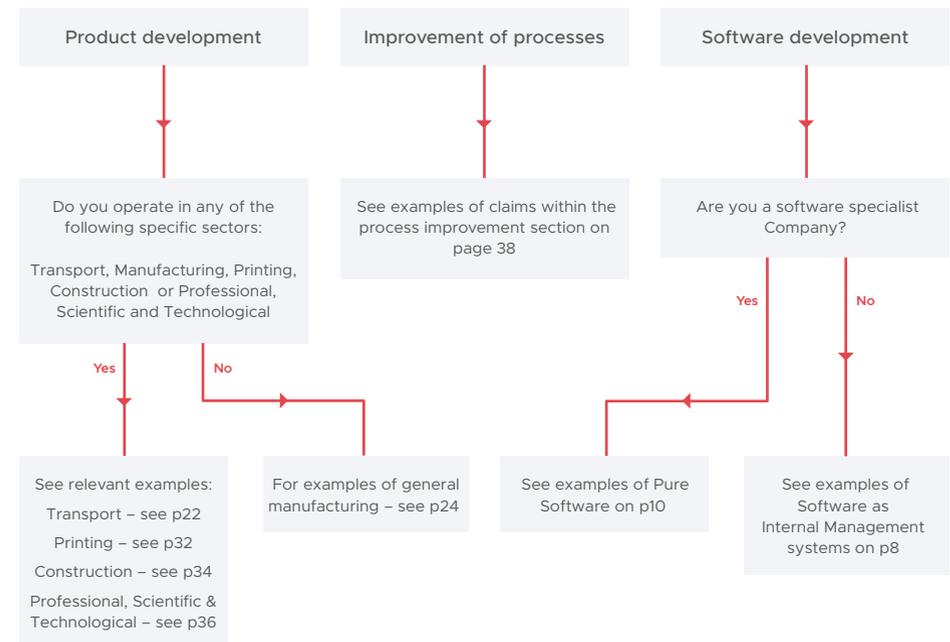
Alternatively try our flow chart on the next page which should direct you to the case studies relevant for your company.

NB - The savings quoted are those for one financial year for each company. The average savings per claim for Radius clients are over £35k. The savings are merely illustrative and will vary company by company.

## A

# Which case studies might be most relevant to me?

## Which activity/activities does your business undertake? (Follow as many as relevant)



## What Is R&D tax relief?

- It's an incentive paid via the UK corporate tax system for innovative companies
- Only companies paying UK corporation tax can benefit
- There are two regimes, the SME regime and the RDEC regime.

### SME Regime

- Applies to companies/groups with less than 500 employees (including any global associates as below) and either turnover of less than €100m or a gross assets total of less than €86m (including any global associates as below).
- Operates as an additional deduction of 130% of qualifying costs from taxable profits
- Results in an effective tax saving of around 25% of qualifying costs
- Loss making companies may be able to surrender losses for a cash repayment at 14.5% of the losses surrendered

### RDEC Regime

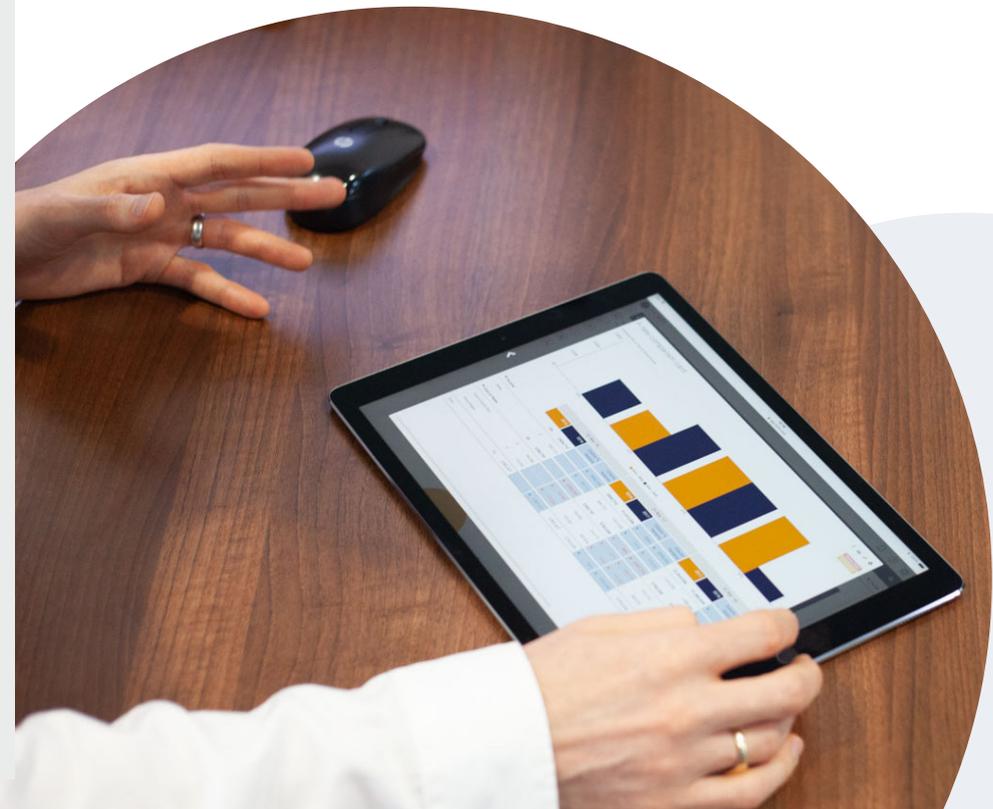
- For companies/groups who do not meet the SME test above
- These limits include global linked and partner companies
- In certain circumstances smaller companies have to claim under the RDEC regime
- RDEC operates as an above the line notional grant of 13% of qualifying costs
- The notional grant is taxable, and can then be offset against any tax liability due
- If a company does not have a tax liability it may be able to receive a cash credit from HMRC
- The effective rate of the benefit of an RDEC claim is 10.53% of qualifying costs

## Qualifying Costs

- The costs which qualify for relief are broadly similar under both regimes
- Qualifying costs must fall within specific categories
- Typically staff costs and consumables make up the bulk of the claim, but other items such as software and sub-contracted costs (e.g. testing) are included

## Qualifying Projects

- A qualifying R&D project is one which seeks an advance in the overall field of science or technology. The advance might be seen in a new or improved product or process, for example
- Achieving the advance must include the resolution of scientific or technological uncertainties, which cannot be easily resolved by a competent professional in the field



# B

## Software

The following case studies cover companies which operate in the software sector.

The statistics published by HMRC in Autumn 2020 indicate that the Information and Communication sector submits the second highest number of claims and receives the third highest amount of relief (the difference in the value of the claim compared to the number of claims made possibly reflects the fact that there are fewer qualifying costs – consumables etc – in the software field).

### Developing internal management systems

These claims are for companies who do not operate in the software field but who have advanced science and technology in the software field creating internal management systems to improve their business operation.

**WHO -**  
A logistics company

**DEVELOPMENT -**  
Innovative technology solutions to meet warehousing, fulfilment and contact centre requirements

**SAVING - £50k+**

The solutions developed enable businesses to fully integrate with client systems for visibility from order receipt through to delivery. Uncertainties faced included rationalising data, incorporating complex reporting channels, and eliminating downtime. In addition, there were integration concerns with legacy frameworks and difficulties ensuring the system would be open enough to allow for future framework integration. Resolving these required the application of multiple technologies, various code re-writes and testing.



**WHO -**  
A retailer

**DEVELOPMENT -**  
A new warehouse management system

**SAVING - £70k+**

The system needed to work across all departments so that information can flow seamlessly between them, and this was not achievable with an off-the-shelf solution. The company therefore had to develop a new system to replace existing disparate systems. Uncertainties included interactions with third party software, scalability, speed, integration with other platforms, all whilst achieving process improvements and cost efficiencies within the business.

**WHO -**  
A waste management company

**DEVELOPMENT -**  
Waste transport and disposal

**SAVING - £55k+**

As the company has grown over the years there was the need for a bespoke large scale integrated internal system and external customer portal to manage all their customers' facility waste management and recycling activities. Due to the unique requirements of the company, their disparate systems, processes and data sources it was not possible to buy and off the shelf system or to develop this via trialled and tested software techniques or methodologies.

Technical issues were faced with regards to improving the accuracy and performance of the system's calculation engine, integrating real time data and developing various algorithms and complex coding that underpins most of the system.

# 3

# 2



# 'Pure' software companies

The following case studies cover companies which operate in the software sector.

**WHO -**  
A skills development technology company

**DEVELOPMENT -**  
A unique learning platform

**SAVING - £150k+**

This company designed a unique learning platform to help organisations train their workforce and keep track of training and skills development. This required the development of bespoke software infrastructure and testing, with uncertainties surrounding scalability, security, and accessibility across several devices.

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**WHO -**  
A skills development technology company

**DEVELOPMENT -**  
An innovative learning platform

**SAVING - £50k+**

Ongoing development to the platform requires significant R&D, with many of the technical issues involved being non-trivial. Uncertainties the company have had to overcome include resolving reliability issues such as achieving optimal video resolution.

5

**WHO -**  
A rail technology company

**DEVELOPMENT -**  
Integrating innovative software solutions for the rail industry

**SAVING - £135k+**

The company developed a suite of award-winning, scalable, powerful business applications to support the operations of today's railway. With a focus on achieving automated, intelligent solutions, the major R&D involved overcoming integration issues and developing efficient algorithms and processes. Meeting user requirements through development and testing of user interfacing, as well as ensuring the solutions work across a number of devices, has been a key element of the company's R&D projects.

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**WHO -**  
A Software as a Service company

**DEVELOPMENT -**  
Premium hosted telematics software

**SAVING - £100k+**

R&D centred on developing premium hosted telematics software to vendors across a range of industries. Development ensured that their asset tracking software solution maintains its competitive edge and responds to constant customer feedback. The projects claimed for included adding an analytics engine to the platform and developing a desirable user interface – all which have required the development of unique and complex algorithms. Uncertainties have included scalability, stability, utilising cloud technology and achieving real-time monitoring. The company have also had to ensure that their solutions and infrastructures are reliable and cost-effective.

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**WHO -**

A company developing secure platforms allowing for data collection and analysis

**DEVELOPMENT -**

Developing a platform to track the academic and social progress

**SAVING - £100k+**

This development involved ensuring stability, security and determining that the system can run effectively with mass sensitive data stores. Ongoing development has consisted of creating bespoke algorithms and integrating disparate systems, processes and data sources, followed by iterative testing to ensure system compatibility across a range of platforms and operating systems.



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**WHO -**

A business management consultancy

**DEVELOPMENT -**

Innovative financial and reporting tools

**SAVING - £20k+**

With a focus on streamlining the performance of financial and reporting tools in the property market, the company has had to create bespoke solutions through enhancing and integrating existing off-the-shelf systems which could otherwise not meet such complex requirements. Specific issues have surrounded scalability, overcoming size restrictions and integration.

**WHO -**

A Software as a Service company

**DEVELOPMENT -**

A platform monitoring school improvement processes

**SAVING - £10k+**

Major uncertainties included how to program the interactions between features at an algorithmic level on a large scale, which had never previously been achieved. In addition, how to achieve complicated matrices of paths, criteria and processes with such a large-scale algorithm. Development also included incorporating multi-academy collaboration functionality, as well as hierarchical action planning.

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**WHO -**

A public safety software company

**DEVELOPMENT -**

Solutions for event and venue management

**SAVING - £30k+**

The company claimed relief on their development of an advanced events management system, providing a real-time solution to improve the situational awareness and threat resolution systems already existing in the market. A number of uncertainties were faced, including scalability, reliability, preventing system overload, and integrating APIs to link hardware and software elements. Overcoming these required iterative testing, extensive back-end development and complex API development.

**WHO -**  
A data processing company

**DEVELOPMENT -**  
Developing advanced and bespoke systems for database management and marketing purposes

**SAVING - £15k+**

The company's major R&D project involved the development of a data system for gathering and analysing information to optimise its use for marketing purposes. The main uncertainties included how to intelligently determine targets of interest through establishing a range of parameters and develop algorithms to intelligently analyse the data, all whilst remaining compliant with regulatory data usage rules. Ongoing development involves API development and integration, and thorough testing and feedback into the solution to further advance the system.

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**WHO -**  
Contract bidding advisory company

**DEVELOPMENT -**  
Development of booking platform

**SAVING - £15k+**

The platform allows users to create recurring schedules and manage business. The main uncertainties surrounded stability within third-party software, web service limitations, achieving complexity and ensuring the platform would be low-cost and accessible to small businesses. This involved the progression of a prototype/beta-phase system into a live working platform, consisting of a database, APIs, Android and iOS applications as well as web applications.

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**WHO -**  
Specialist marketing provider

**DEVELOPMENT -**  
Development of systems to enhance clients' databases and enable them to intelligently market to potential customers

**SAVING - £15k+**

The company have developed an advanced marketing intelligence system which collects, verifies and appends large amounts of data from disparate external sources to present this in a suitable marketing format. Uncertainties included how to ensure a reliable interaction between disparate databases, how to account for elevated traffic levels without impacting stability, ensuring the platform works effectively across a range of browsers, GDPR compliance and ensuring security of the system. This has required the development of sophisticated algorithms, redesigns and testing.

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**WHO -**  
A creative design studio

**DEVELOPMENT -**  
Development of an internal platform and an augmented reality app.

**SAVING - £2k+**

One of the R&D projects included a system to streamline their internal processes which could not be achieved using off-the-shelf solutions. The system had to be integrated with the company's internal systems through API development and communication between the platform and key internal software, which has been technically challenging to ensure accuracy and security. The augmented reality app developed needed to be cheaper than existing products and be compatible across multiple operating systems and required a phase of software development and 3D modelling.



# 16

**WHO -**

A software development company

**DEVELOPMENT -**

Development of a payment solution

**SAVING - £35k+**

This solution enables merchants and organisations to take secure, authenticated payments across numerous channels when processing telephone orders. The various R&D elements of the project included ensuring the system has strong customer authentication compliance and adding dynamic functionality to allow a global solution for a variety of vendors. The solution also had to be supported across all possible payment gateways which required extensive development and testing.



**WHO -**

E-tendering company

**DEVELOPMENT -**

A bespoke platform which streamlines and enhances procurement processes

**SAVING - £65k+**

Uncertainties faced have included incorporating intelligence into the system, integrating seamlessly with web browser applications and other systems, and ensuring reliable and efficient use with large volumes of traffic. Adding a range of sophisticated features, such as analysis, import and organiser tools, has required extensive R&D phases and has had to meet both legislative and user requirements.

# 17

**WHO -**

Digital Agency

**DEVELOPMENT -**

Innovative technology solutions to solve everyday challenges

**SAVING - £40k+**

Projects include development of e-commerce, e-learning, production, and online trading systems which face a range of uncertainties. These include achieving real-time reporting, efficient data structuring, integrating with legacy systems, and ensuring that systems support large user volumes, all whilst considering unique business models and processes. Overcoming these involves working in an agile way and often delivering incremental improvements, carrying out ongoing analysis and manual testing. Solutions often require integrating off-the-shelf technologies in a non-standard way.

# 18

**WHO -**

Company providing surveys

**DEVELOPMENT -**

Management database for questionnaires, incorporating a combination of features which were not readily available in off-the-shelf solutions.

**SAVING - £25k+**

Uncertainties have been faced with building mobile applications to integrate with the existing online platform, adding security layers, and creating an integrated reporting front-end for the database. This has required ongoing code re-writes and testing to create these advances within the sector.

# 19



B



**WHO -**  
Cyber security specialist

**DEVELOPMENT -**  
Development of products to prevent attacks on APIs

**SAVING - £140k+**

Developing such solutions for APIs is difficult due to level and complexity of traffic created. Working at the forefront of their field, the company faced uncertainties surrounding processing a variety of possible data types and structuring data in a specialised way whilst processing it. The company had to benchmark against existing literature, identifying approaches which had not been taken into a cyber security environment, and trial different permutations in order to develop a solution. Other solutions developed by the company include machine learning systems to assess API traffic behaviour and user behaviour.

**WHO -**  
Wifi, bespoke network and wireless solutions

**DEVELOPMENT -**  
Development of unique communications technologies to improve business performance across a range of industries

**SAVING - £60k+**

The company's qualifying activities include designing, testing, and building bespoke infrastructure for communication systems in challenging areas, and developing sophisticated wireless charging platforms. Uncertainties include maintaining security, integration of hardware and software, cost-efficiency, complying with health and safety regulations, and achieving high data capacities. Many of the solutions also must take into consideration physical geographical constraints.

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**WHO -**  
Software company

**DEVELOPMENT -**  
Developing software solutions to streamline business processes

**SAVING - £50k+**

R&D carried out by the company involved the development of new platforms and features, including functionality to centralise import processes and remove and replace manual processes, reconciling batches of data, as well as a platform to process payments. The company have also conducted R&D in developing intelligent solutions for data capture from forms. Uncertainties have included merging processes, integration of software, maximising efficiencies, multitenancy and incorporating intelligent logic into the systems for their unique applications. The challenges were largely overcome by development of coding methods and practices along with testing.

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**WHO -**  
A creative digital agency

**DEVELOPMENT -**  
Development across a range of projects including bespoke web development, digital marketing and multi-media

**SAVING - £30k+**

Carrying out bespoke projects across a range of industries, the company faced numerous challenges including system stability, speed, security, automation, and data structuring, with each project having unique requirements. Due to the specific nature of the project requirements, the company are unable to use open source techniques or methodologies. This requires bespoke code writing combined with testing to fit into unique workflows and ultimately resolve each technical uncertainty.



## 24

**WHO -**

Event entertainment products

**DEVELOPMENT -**

Development of event entertainment products

**SAVING - £30k+**

The purpose of the R&D is to meet the demand from brands and agencies to develop new technology which encourages consumers to share on social media. Uncertainties have included scalability, interfacing with software and hardware, synchronisation, camera control and file formats. Combining both software development and hardware research, the company frequently has to use prototyping and testing to integrate and combine off-the-shelf solutions in a unique way to create this advance in technology.

**WHO -**

A blockchain specialist

**DEVELOPMENT -**

Development of more flexible APIs for use in a range of business applications.

**SAVING - £25k+**

The company's R&D involved developing blockchain solutions for B2B transactions, which required the development of bespoke code and API to enable control over networks and blocks. Uncertainties surrounded security, integration of the new technology with old legacy systems and whether the new technology would work with the many variables of existing systems used in the real world. Experimenting using different frameworks and new technologies, the company were able to develop a solution using no known methodology or readily deducible techniques.

## 25

## 26

**WHO -**

An IT consultancy

**DEVELOPMENT -**

Development of bespoke software and systems to enable digital innovation transformation, increasing productivity and efficiency in businesses.

**SAVING - £35k+**

Amongst a number of projects, development has included an integrated management system to pull together multiple disparate systems into one integrated platform and enable real-time decision making, which was not achievable using off-the-shelf solutions. R&D involved integrating AI and machine learning according to the bespoke requirements of the system and overcoming integration and legacy issues. This required a test and learn phase and design refinements to achieve solutions that fit within cost constraints.

# Transport

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**WHO -**

A trailer manufacturing company

**DEVELOPMENT -**

Researching, designing, and installing innovative, increased efficiency lifts for the loading and unloading of freight

**SAVING - £85k+**

The company's major R&D projects involve significant development and redesigns to simplify fabrication and maintenance, as well as meet new client requirements. Much of the development involves creating unique and bespoke designs and carrying out in-house testing to ensure that all uncertainties are resolved.



**WHO -**

A supplier of products and services to the rail industry

**DEVELOPMENT -**

Development of track solutions and components for railway lines

**SAVING - £15k+**

The company's R&D projects surround producing solutions which are cost effective, accurate, easy to install and use, and able to withstand a variety of weather conditions. Given the industry the company operates within, safety is also a critical aspect of development. The company had to investigate which materials are most suitable for a given application, and determine through trials the robustness and effectiveness of a given prototype.

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**WHO -**

A motor engineering manufacturer

**DEVELOPMENT -**

Development of a rally car

**SAVING - £90k+**

Development of a rally car operating in a heavily regulated sector. The development used innovative engineering designs in combination with the 25+ years' experience of the company's technical staff. Areas of development included minimising weight of the vehicle, maximising safety, increasing efficiency and reliability, and reducing costs – with the main uncertainties in achieving such constraints whilst adhering to strict automotive regulations. Overcoming uncertainties involved using specialist CAD software, prototype development and testing.



30

**WHO -**

A seating manufacturer

**DEVELOPMENT -**

Developing seating solutions to meet requirements of demanding industry

**SAVING - £120k+**

The company's main R&D projects involve product and process development. R&D involving product development has included CAD design, mechanical mapping, prototyping and testing to meet the highest specifications and safety standards – which are ever-changing within the automotive industry. With this, the company have faced a range of technical uncertainties and requirements, including space constraints, product functionality, ease of use, and safety.



# Manufacturing

# 31

**WHO -**  
Electronics manufacturer

**DEVELOPMENT -**  
Development of specialised electronics test equipment

**SAVING - £35k+**

The R&D carried out by the company mostly includes continuous performance improvements to their existing product ranges, as well as the development of new products. Major uncertainties include solving overheating problems with several components, and how to develop and integrate various additional features to meet customer requirements.

**WHO -**  
Manufacturer of advanced security products

**DEVELOPMENT -**  
Development of products for use in explosive environments

**SAVING - £50k+**

The R&D was around developing a product that could be used safely in potentially explosive areas by minimising potential ignition sources (e.g. sparks). One aspect of the development involved exploring alternative options for non-spark producing solutions. This involved managing the build-up of heat and identifying and testing the most suitable metals to provide the most strength with the least ignition source.

# 32

# 33

**WHO -**  
A materials engineering company

**DEVELOPMENT -**  
Solutions to add value to athlete performance

**SAVING - £15k+**

The company developed sports equipment which met Olympic standards whilst offering maximum speed and safety. Major areas of uncertainty included overcoming the interlinked and inter-reliant mechanics, achieving maximum performance efficiency, and minimising aerodynamic inefficiencies. This involved material testing and interrogation and the development of effective machining processes to create complicated, precise and intricate parts.



# 34

**WHO -**  
A castings manufacturer

**DEVELOPMENT -**  
A range of specialist casting solutions

**SAVING - £35k+**

The company's R&D projects involved developing cast solutions for a range of applications. This surrounded how to minimise casting lead times, increase yield and produce the correct casting microstructures.



## 35

**WHO -**

A packaging manufacturing company

**DEVELOPMENT -**

Innovative high-performance packaging solutions

**SAVING - £60k+**

As part of their R&D projects, the company are continuously developing new products and utilising new manufacturing techniques. Their projects include increasing capability in the sector by successfully using recycled waste materials within their products and creating affordable and environmentally -friendly solutions with enhanced material properties for a range of applications. Uncertainties included ensuring that products have the appropriate quality and consistency, remaining in line with weight constraints for postage, and determining how the manufacturing processes should be tweaked to give the optimum output. Solutions are reached through prototype, production and iterative testing.



## 37

**WHO -**

Specialist manufacturer of thermal systems

**DEVELOPMENT -**

Insulation, heat tracing and protective enclosure solutions

**SAVING - £25k+**

The company's R&D is demonstrated across a range of projects including process improvement, product development, and software development; from developing automated fabric cutting processes and creating equipment suitable for hazardous environments, to developing insulation solutions for plastic recycling and creating a bespoke internal software. Frequent uncertainties faced include scalability, identifying optimum materials, reliability, ensuring robustness and meeting safety and regulatory requirements – with these being resolved often through phases of design, FEA modelling, prototyping and field- testing.

**WHO -**

A radio frequency manufacturer

**DEVELOPMENT -**

Developing new drying/ heating and cold pasteurisation products

**SAVING - £110k+**

The company's major R&D projects require significant development and testing to meet new client requirements, including life expectancy and other strict specifications. The technology behind each product must be designed and proven successful before implementation, with any uncertainties or inefficiencies resolved in this process.

## 36

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**WHO -****A footwear manufacturer****DEVELOPMENT -****Development of a specific type of shoe****SAVING - £15k+**

Limited public knowledge existed on the manufacturing techniques and materials required for production, meaning the company had to undertake a period of R&D to overcome these uncertainties. These were resolved through prototyping and testing a variety of materials to assess their properties, as well as iteratively modifying their existing machinery until a successful manufacturing process was identified. Significant R&D was also involved in ensuring the machinery could be switched back to normal production easily to minimise costs.

**WHO -****Manufacturer of innovative industrial refrigeration solutions****DEVELOPMENT -****Producing more energy efficient units****SAVING - £25k+**

The company sought to produce more energy efficient refrigeration units that would reduce energy costs for its customer. It was very challenging to achieve the desired reduction in energy levels whilst not compromising on the unit's performance and this is what led an extensive period of R&D. Significant designs were undertaken to streamline areas so that air flow capacity and velocity would remain at optimal levels, therefore reducing the level of power required to run the system. This is just one element of the innovative work the company carried out during the claim period.

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**WHO -****Engineering company****DEVELOPMENT -****Development of a lightweight, portable device for use with safety systems****SAVING - £10k+**

Development of a new device to accommodate obstacles faced from various buildings, whilst offering flexible functionality. The R&D activity involved changes to key mechanics of the system, taking into consideration the high tension it would be placed under. Testing was undertaken to ensure the new system could handle large weights, feeding back into further development and modifications. This is just one of several innovative products the company have developed.

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**WHO -****Supplier of weighbridges****DEVELOPMENT -****Design and build of industrial weighing equipment****SAVING - £75k+**

Various technical uncertainties were present throughout the projects including replicating various legacy command and communication protocols without interfering with the wider infrastructure, as well as creating multiple methods of exporting data to cater for the types of communication allowed.

## 42

**WHO -**

Manufacturer of sports equipment

**DEVELOPMENT -**

Developing new products

**SAVING - £40k+**

The company faced a number of technical challenges whilst developing new products to add to the current patented range. One example is of technical issues which arose whilst developing unique folding equipment, specifically around the folding and locking mechanisms, the use of new untried materials and mass market manufacturing techniques. During a period of structured R&D, this led to the development of numerous designs, changes to the structure of the materials, development of various prototypes and an extensive period of stress testing.

## 43

**WHO -**

Manufacturer of metallic components

**DEVELOPMENT -**

Increasing efficiency and reducing waste in production

**SAVING - £25k+**

One area of R&D surrounded the development of an intelligent temperature controller that can undertake heating processes accurately and reliably in order to reduce waste and increase efficiency. Several uncertainties were faced surrounding achieving optimal melting points, tolerances, incorporating machine learning capability, predicting temperature fluctuations and instantly adjusting temperatures to prevent defective products. Other development included developing new consistent manufacturing techniques for small, precise products within time constraints. These were overcome by ongoing testing, including digital imaging, which fed back into the development. In addition, the company invested in developing in-house software solutions bespoke to their business.

## 44

**WHO -**

Manufacturer of marquees

**DEVELOPMENT -**

Extending product range

**SAVING - £40k+**

The R&D was around extending the company's patented range of tents and gazebos by developing a next generation gazebo with a larger leg diameter using an Aluminium frame, which is not typically possible from a manufacturing feasibility perspective. A key uncertainty was ensuring the larger gazebo was viable from a manufacturing point whilst maintaining the strength and robustness of the frame. The development achieved a much more affordable solution in comparison to other large gazebos on the market.



# Printing

## 45

**WHO -**  
Developer of  
printing machines

**DEVELOPMENT -**  
Further development of their  
product range

**SAVING - £40k+**

One area of their R&D involved the development of a printer to undertake multiple printing functions in one streamlined process. Uncertainties included achieving optimal speed times and correct application and pressures for the relevant aspect of the machines whilst ensuring it was all undertaken simultaneously. A number of ideas were implemented to overcome the issues which involved changes to the formulation of materials, speed iterations and an extensive period of testing.

## 46

**WHO -**  
Supplier of specialised printing  
machines for the print industry

**DEVELOPMENT -**  
Development of new and  
enhancement of existing print  
machines

**SAVING - £85k+**

Technical problems arose with regards to the strength and accuracy of the final product produced by the machinery developed by the business. Challenges included significantly increasing speed whilst maintaining a high level of quality. In order to overcome these challenges, various acceleration and deceleration speeds and techniques were trialled, inclusion of bespoke developed air actuators and an extensive period of iterative development.

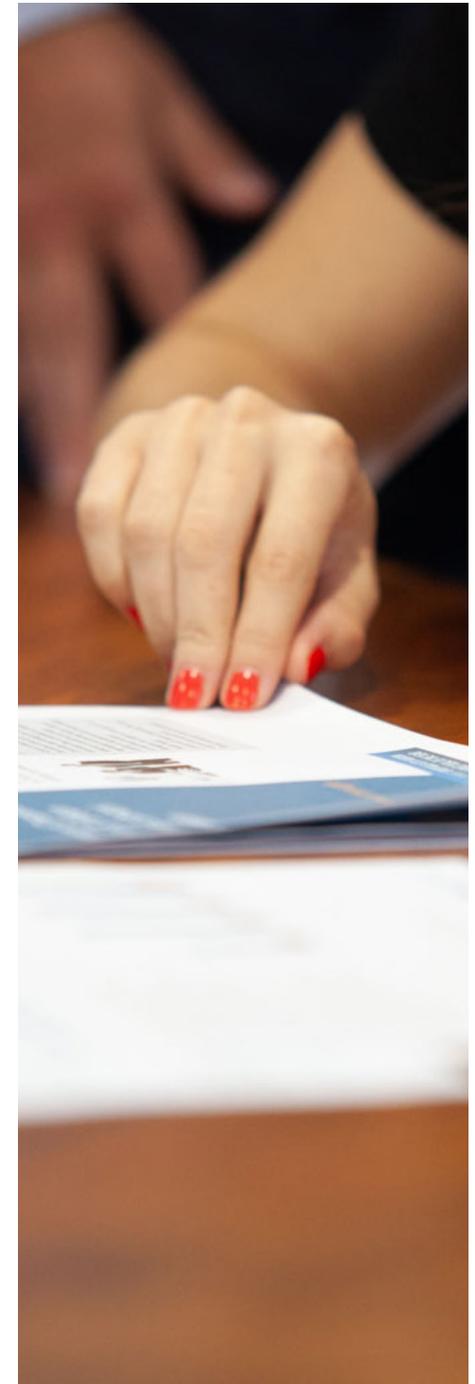
## 47

**WHO -**  
Manufacturer of printing inks  
for the textile market

**DEVELOPMENT -**  
Developing new and enhanced  
products

**SAVING - £50k+**

The company are constantly seeking to remain at the forefront of their sector so conduct ongoing R&D to introduce new products to the market which are cheaper, higher quality and time-efficient for customers. This has included work surrounding the properties of raw materials and their application. The company refines and investigates the use of different ink bases, thickeners, wetting agents, binders and melt powders. Products must be tested to ensure they meet the desired tack, wash fastness, appearance as well as many other properties.



# Construction

48

**WHO -**  
An engineering company

**DEVELOPMENT -**  
Innovative engineering solutions

**SAVING - £40k+**

The company's R&D claim included major projects for accommodation, residential, commercial, retail, industrial and leisure developments. Some examples of the uncertainties faced and innovative development carried out included: designing high rise apartments whilst preserving areas of archaeological importance, safe demolition of specific parts of a building without undermining its structure and undertaking specific developments.

**WHO -**  
A window manufacturer

**DEVELOPMENT -**  
Developing an integrated window design, configuration and production system that would enable the accurate and efficient, non-wasteful production of its specialised bespoke products.

**SAVING - £60k+**

Several logistical and manufacturing challenges were overcome throughout the claim period all of which led to a significant material waste, time and cost saving for the company. This has given the company a clear advantage in the industry due to its ability to offer a quick, quality service at competitive prices.

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**WHO -**  
An engineering company

**DEVELOPMENT -**  
Design, procurement and construction management

**SAVING - £600k+**

The company's R&D surrounded developing design solutions for new products and systems, as well as appreciably improving existing plant, machinery, and associated systems to enhance both their functional and structural performance. Uncertainties faced by the company included ensuring structures are functionally safe, equipped to deal with complex external behaviours, and able to fit within constrained spaces. Qualifying R&D activity included detailed analysis, computer-aided design and iterative testing throughout the whole development phase.



G —

## Professional, scientific & technological



**WHO -**  
Company providing chemical services

**DEVELOPMENT -**  
Developing processes to separate novel compounds

**SAVING - £95k+**

# 51

Qualifying R&D activity by the company involves the development of processes to separate novel compounds to prescribed levels of purity. A significant number of uncertainties are encountered, principally involving whether a particular compound can be analysed and separated to required levels. This must be achieved without available public knowledge sharing. The company employs highly skilled scientists who spend the vast majority of their time overcoming the scientific uncertainties inherent in these processes.

# 52

**WHO -**  
Medical device manufacturer

**DEVELOPMENT -**  
Product development

**SAVING - £145k+**

As part of the company's ongoing R&D work, its dedicated manufacturing and design teams utilise advanced CAM processing to progress simple briefs and designs, enabling specialised precision medical components to be taken from initial concept to functioning prototypes. Many of the uncertainties faced by the company surround meeting functionality requirements, achieving efficient mass production, ensuring durability and meeting regulatory requirements specific to the medical industry. Solutions have included minimising the number of parts used, refining materials, and altering manufacturing and cleaning techniques.

# 53

**WHO -**  
A scientific equipment manufacturer

**DEVELOPMENT -**  
Cryogenic cooling solutions

**SAVING - £30k+**

The company's main R&D projects surrounded the development of novel instrumentation, with uncertainties including performance, integrity, and repeatability of the systems. Each solution is prototyped and tested under different experimental conditions, to verify these meet the required specification and customer needs. Other aspects within the R&D projects include addressing manufacturing issues, conducting mathematical modelling, and optimising software and hardware components to maximise system performance.



H —

## Process Development

# 54

**WHO -**

Company providing chemical analysis services

**DEVELOPMENT -**

Development of analysis processes

**SAVING - £100k+**

The company conducts ongoing R&D into the creation of separation processes for chemical compounds. A new process is required for each compound, depending on its proposed use. In all cases, it is uncertain whether the requirements can be achieved due to the infinite number of variables associated with the processes.



# 55

**WHO -**

A castings manufacturer

**DEVELOPMENT -**

Specialist casting processes

**SAVING - £35k+**

The R&D projects involved developing cast solutions for a range of applications through the development of improved underlying production processes. Specifically, the company developed a process for unproven pattern materials which involved ensuring no residue would be left inside the cast during removal, as this would lead to casting defects. This required testing of the process, and subsequent detailed inspection of the moulded parts.

# 56

**WHO -**  
Manufacturer of plastic components

**DEVELOPMENT -**  
Development across a range of products and processes

**SAVING - £75k+**

Process improvement carried out by the company included overcoming cloudiness, blistering and warping in plastic moulded products as a result of heating and cooling. Development has required exploring different heating and cooling techniques, and developing different tooling, all whilst minimising costs. The company also have had to improve on cutting processes to produce perfectly cut products, as well as develop techniques to package sterile products. The company have also developed a bespoke protective cover for audio technology, which required meeting specific sizes and tolerances.

# 57

**WHO -**  
A metal supplier

**DEVELOPMENT -**  
Unique product development and process improvement

**SAVING - £15k+**

Their major R&D projects surrounded producing alloys with high intrinsic value from waste metals, as well as development of a processing line to clean and dry waste turnings. The main uncertainties faced by the company included how to isolate certain elements, minimise impact on price, and meet tight tolerances per client requirements. In addition, how to mitigate air pockets and ensure thorough drying. This has required extensive phases of content analysis, melting trials and improvements to processing routes.

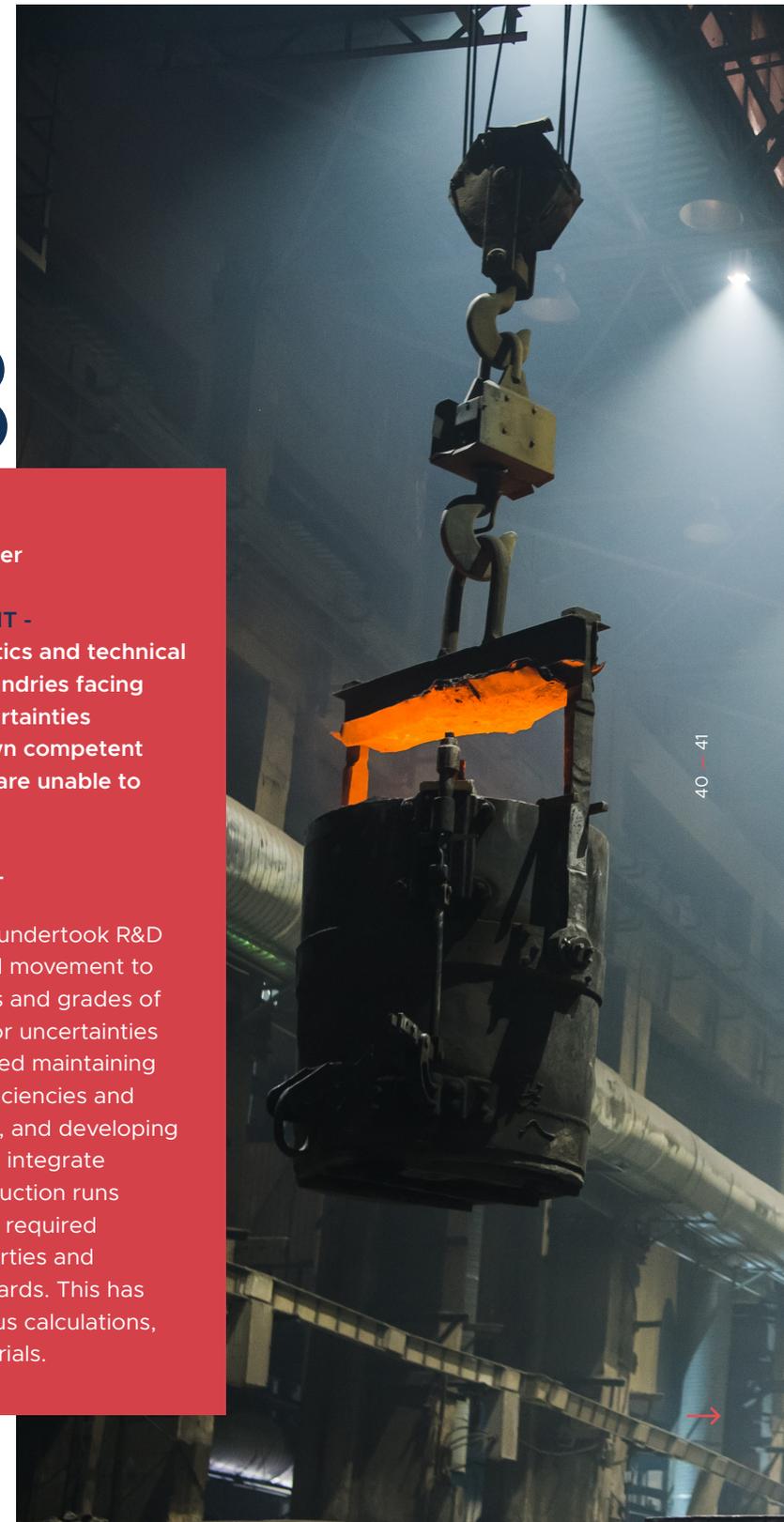
# 58

**WHO -**  
A metal supplier

**DEVELOPMENT -**  
Product, logistics and technical support to foundries facing technical uncertainties which their own competent professionals are unable to resolve.

**SAVING - £5k+**

The company undertook R&D which included movement to new processes and grades of materials. Major uncertainties have surrounded maintaining production efficiencies and recovery rates, and developing systems which integrate into main production runs whilst meeting required material properties and industry standards. This has required various calculations, analyses and trials.



# Worked examples

EXAMPLE Limited incurs the following costs on an eligible R&D project in the year ended 31.12.2020

	Total qualifying costs*
Staff costs	50,000
Heat, Light and Power	5,000
Materials costs used up in the R&D process	20,000
<b>Total qualifying costs</b>	<b>75,000</b>
Eligible costs uplifted at 130% - additional tax deduction	97,500

Tax computation prior to R&D claim	Total qualifying costs*
Trading profits	50,000
Taxed at 19%	9,500
Tax computation post R&D claim	
Trading profits	50,000
Less: additional R&D deduction	97,500
Taxable loss	47,500
<b>The company can either choose to carry this loss forward against taxable profits in future years, or surrender to HMRC for a cash credit</b>	
C/f loss against future years - value 19%	9,025
Or cash in loss for cash credit - value 14.5%	6,888
+ Tax saved	9,500
<b>Total benefit arising as a result of the R&amp;D claim</b>	<b>18,525/16,388</b>
Tax saved as a percentage of qualifying costs	24.70%/21.85%

\* This will vary depending on the proportion of the relief surrendered for a credit

EXAMPLE Limited is an SME and is eligible to claim under the SME scheme.

Tax computation prior to R&D claim	
Trading profits	250,000
Taxed at 19%	47,500
Tax computation post R&D claim	
Trading profits	250,000
Less: additional R&D deduction	97,500
Taxable profits	152,500
Taxed at 19%	28,975
Tax saved	18,525
Tax saved as a percentage of qualifying costs	24.70%

Assume the above but EXAMPLE Limited must claim under the RDEC scheme as it is part of a worldwide group with more than 500 employees

Tax computation prior to R&D claim	Total qualifying costs*
Trading profits	250,000
Taxed at 19%	47,500
Tax computation post R&D claim	
Trading profits	250,000
Add: RDEC at 13%* of qualifying costs	9,750
Taxable profits	259,750
Taxed at 19%	49,353
Less: RDEC	9,750
Total tax liability	39,603
Tax saved	7,898
Tax saved as a percentage of qualifying costs	10.53%

\* NB the rate of the credit increased from 12% to 13% on 1 April 2020; 13% has been used in this example for ease



J —

# How to choose an R&D Adviser

## What to look for in an R&D tax adviser;

- Check that the firm has the expertise to provide this service - are they general practitioners or do they advertise themselves as specialists?
- What qualifications and experience do they have?
- You may want to check that they have experience of advising about R&D claims for clients in the same trade sector as your business?
- Firms with high standards will explain where a claim can or cannot be made, reducing potential problems with HMRC once the claim has been submitted.
- If they are a specialist firm acting alongside your usual accountant or in-house team, will they communicate with your accountant/in-house team and provide them with the information needed to complete your corporation tax returns promptly?
- Are they a member of a professional body which adheres to the Professional Conduct in Relation to Taxation guidelines (PCRT) or qualified by experience but still adhering to the same principles?
- Have they agreed to:
  - Provide a copy of the R&D claim report to you for approval prior to submission?
  - Explain the R&D claim where you ask them to?
  - Make you aware of any areas of judgement or potential risks?
  - Provide supporting documentation in relation to the claim being submitted to HMRC?
  - Which documentation you will be provided in relation to the claim being submitted to HMRC?
  - Explain the after care service provided should HMRC enquire into the claim?

Although there are a few things to consider when making an R&D claim, don't let that put you off claiming as the UK Government is actively encouraging funding Innovation to help grow the economy. R&D tax relief is seen as a vital incentive to reward companies for innovating and is without doubt one of the most generous tax incentives available. It is also a great way to put cash back into the business with HMRC issuing refunds within 28 days in most cases.



*Please contact one of the Radius team to see if this relief can benefit your company.*



K —

## *How to make a claim*

- Claims to R&D tax relief are made as part of the CT600 corporation tax return.
- Claims can be made by your corporation tax adviser/accountant or a specialist R&D adviser.
- A company has two years from the end of its accounting period to make a claim, i.e. companies with a year end of 31 March 2020 must submit a claim to HMRC by 31 March 2022.
- HMRC aim to process SME claims within 28 days of receipt.
- A company in a repayment position (perhaps because they are cashing in losses, or because they have paid tax for an earlier year without factoring in the R&D relief) can generally expect to receive a repayment within 4-6 weeks of the claim being submitted.



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