

TOUCHLINE FLAGS



SUBMISSION TITLE	Referee Electronic Paging System
CATEGORY	6.0 - Industrial Design
SUB CATEGORY	6.2 - Product Business to Business
CLIENT COMPANY	Touchline Flags Ltd
DESIGN CONSULTANCY	LA Design
SUBMISSION DATE	26th June 2014

FOR PUBLICATION

EXECUTIVE SUMMARY

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The UK entered a major recession when the project started and money was tight. The new flag system has changed our business philosophy and provided a platform for an exciting future.

– Jeff Pettitt M.D. Touchline Flags ”



Historically, A+H International was a distribution company selling professional and semi-professional equipment for football referees in the UK. The owner is an ex-professional referee with in-depth knowledge of this particular market. The company had no experience of designing or manufacturing their own products but based on their sales experience, identified an opportunity for developing a superior system that enables linesmen to communicate with referees electronically (in addition to the conventional flag raising). The project represented a high risk change in business strategy and a major change in business culture, requiring a great deal of trust in LA Design for the physical design and user experience aspects and Briton EMS for the wireless electronic design.

The resulting products have been highly successful, to the point where a separate business – Touchline Flags Ltd, formed by the A+H owner in January 2014, now markets and exports the systems internationally. The flags are used in the English Premier League, the FA Cup Final and the Championship Play-Off final – demonstrating real added value by design, supported by professional experience can create successful and effective solutions.

The impact on the business arising from the decision to design and manufacture its own products has now resulted in a change in business philosophy. There is a 'pull' effect coming from many football organisations internationally, asking the company to deliver similar 'superior' products to meet new technological changes, including goal line technology. Touchline Flags is currently in the process of confidently meeting these challenges by utilising the same design teams to develop two new product systems with high export potential.



PROJECT OVERVIEW

The brief was to design a system that overcame inherent problems exhibited by products already in the market, without increasing the cost to customers.

- A linesman flag with the ability to signal 'an event' wirelessly to the referee via switches on the handle (whilst using the flag as a visual signal).
- A referee unit, worn on the arm, to receive the signal translated into sound and vibration.
- Switching components on the existing flags failed due to extreme pressure when linesmen were in stressful situations. In addition, the linesman's action wasn't always translated into a signal to the referee.
- The design of the existing flag handles allowed them to rotate in use, creating problems of switch alignment with thumb or forefingers.
- The flag stick broke due to stresses at the handle connection point (high leverage forces).
- Difficulties in removing or replacing the flags (which need washing!).
- Water ingress into both linesman and referee products, causing electronic failure.
- Inadequate status feedback for linesmen and referees.
- Difficulties in changing batteries.

A key business objective was to change the profile of the company and its **brand perception** from a supplier of other people's commodity products to an **expert in market requirements** and a **solution provider**.

Existing products were prone to failure, mainly due to a lack of insight into how the products were actually used.

PROJECT OVERVIEW

Description

A+H International (Touchline Flags) was not an international player despite its name. It was however an expert in its field and had dealt with product failures of existing products supplied to customers over a number of years. In addition, it had strong links with the users of its products and had been collecting important customer insights over time before embarking on a design and development project which would change its positioning from a distributor to a systems manufacturer. This was also in the context of technology changes in sport where, for example, 'Hawkeye' has been accepted in most tennis tournaments and video playback in rugby is seen by many to enhance the game.

Overview of market

The route to market and purchasing responsibilities are complex and unusual compared with most commercial scenarios. FIFA govern six international regional bodies and 208 countries for international matches and supply the referee and linesmen kit. The 208 countries also have principal leagues where officials have their kit purchased by the leagues and also lower leagues and semi-professional leagues where referees are responsible for buying and supplying their own kit. Referee turnover is relatively high based on retirement age and referees can also move through the various league systems to international level. There is a potentially conservative attitude with much inertia for the adoption of new products which have to be proven to add real tangible value and reliability before gaining acceptance.

There are no figures for the total potential world market but prior to the new product development, the company were only selling to the English leagues.

At the time of the project commencement, the major player in the professional arena was ErvoCom, a Swiss company providing a wide range of communication products and services globally. In addition, there were a number of other lower cost solutions targeting the semi-professional market where reliability and performance were less of an issue and under less scrutiny from players, fans and the media.



Competitor, ErvoCom –
Previously sold by A & H International



PROJECT OVERVIEW

Size of design budget

The company had no product development experience and initially assumed a budget of £15-20K for physical design and prototyping. After confidence in LA Design was established they were persuaded to undertake a serious design exercise that included various simulations, user testing and the development of many added value features. The actual budget to completion, including overseeing toolmaking and production was £38K plus £8K for prototyping.

Total budget **£38K**
inc. overseeing toolmaking
and production



£8K

for prototyping

Launched July 2012



OUTLINE OF DESIGN SOLUTION

The design programme started with input from professional referees, specifying what was needed to produce the best system in the world. Initial concepts were discussed with a number of stakeholders and budget costings for different assembly options were obtained. Project funding was always an issue and mid-way through the development it was decided to produce a low cost non-electronic version of the flag with a similar external appearance to create income and to expand the potential market by introducing the concept of 'trading up' to the electronic units when available.

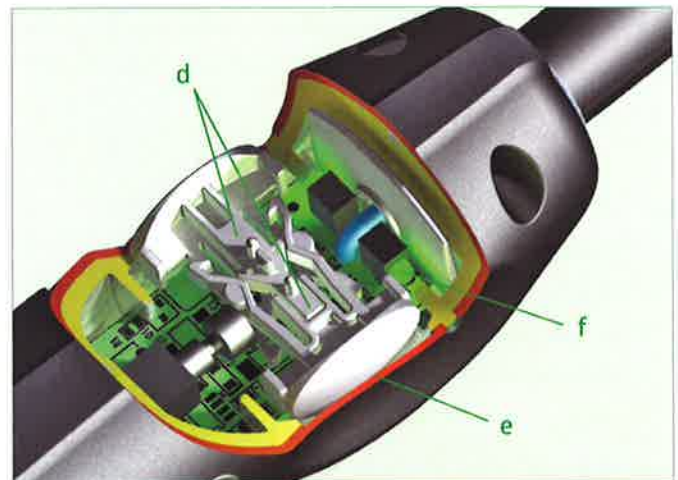
Simulations, prototyping and consumer role playing and testing was always an important part of the planned approach and initial solid models were produced followed by a number of fully working prototypes, tested in amateur league football matches. Following design revisions and improvements, production injection moulding tooling was commissioned.



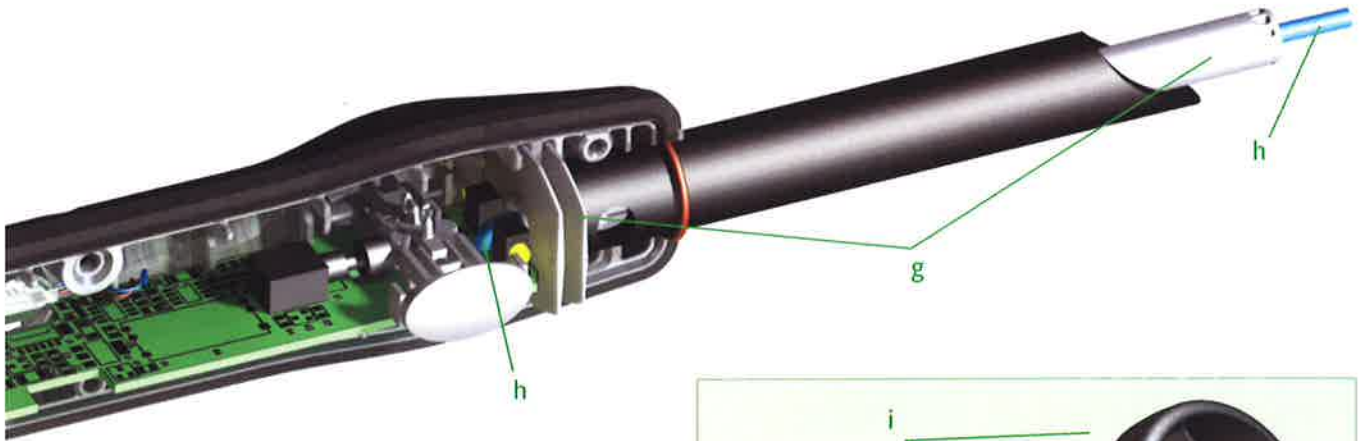
OUTLINE OF DESIGN SOLUTION

Key Features & Benefits

- The flag unit is moulded in clear polycarbonate with an overmoulded 'soft feel' elastomer (a). Each half is identical (b), reducing tooling cost and the external material is designed to form a seal down both sides of the handle (c), providing a highly cost effective solution.
- The handle is ergonomically designed to avoid slippage, providing long term comfort and intuitive switch activation.
- The internal switch mechanism is custom designed from two identical mouldings to allow input from either external switch area to activate a single PCB switch (d). This avoids multiple inputs and also avoids damage to the switch by acting as a 'shock absorber'.
- The soft overmoulding has thinned sections which act as membranes for activating the internal switch assembly (e). This ensures complete sealing and a large tactile switch area on both sides of the handle.
- The clear polycarbonate moulding incorporates LED light pipes (f) providing good sealing and reduced assembly costs. These, plus a vibrating device provide both tactile and visual feedback that the wireless system is operating.

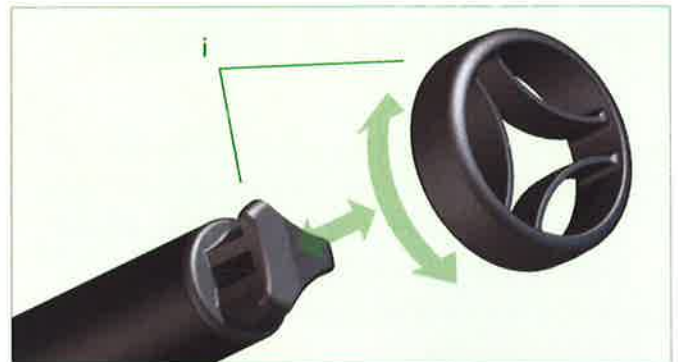


OUTLINE OF DESIGN SOLUTION



➤ The wireless antenna is centred in a moulded internal assembly (g), fitting inside the flag stick to improve the structural strength and product reliability (h).

➤ Flags are easily removed and replaced for washing with a novel 'push and twist' end piece – marketed as 'Touchlok' (i).



➤ Batteries are easily changed via a screw cap (j) and fit inside a chamber sealed with an 'O' ring at the end of the handle (k).



➤ The compact referee's receiving unit (pager) is worn on the upper arm and held in place by a flexible armband. The curved rear surface is more comfortable in use (l). The front curves to facilitate wearing under clothing.



➤ The referee is alerted by 'sound' and 'vibration' – the vibration component is positioned in direct contact to the arm in a raised pod (m).

➤ The front cover is clipped in place (n) and has an 'O' ring seal (o) – easily removed for battery changing and device programming. Switch activation is via integrally moulded keys providing a value engineered solution.

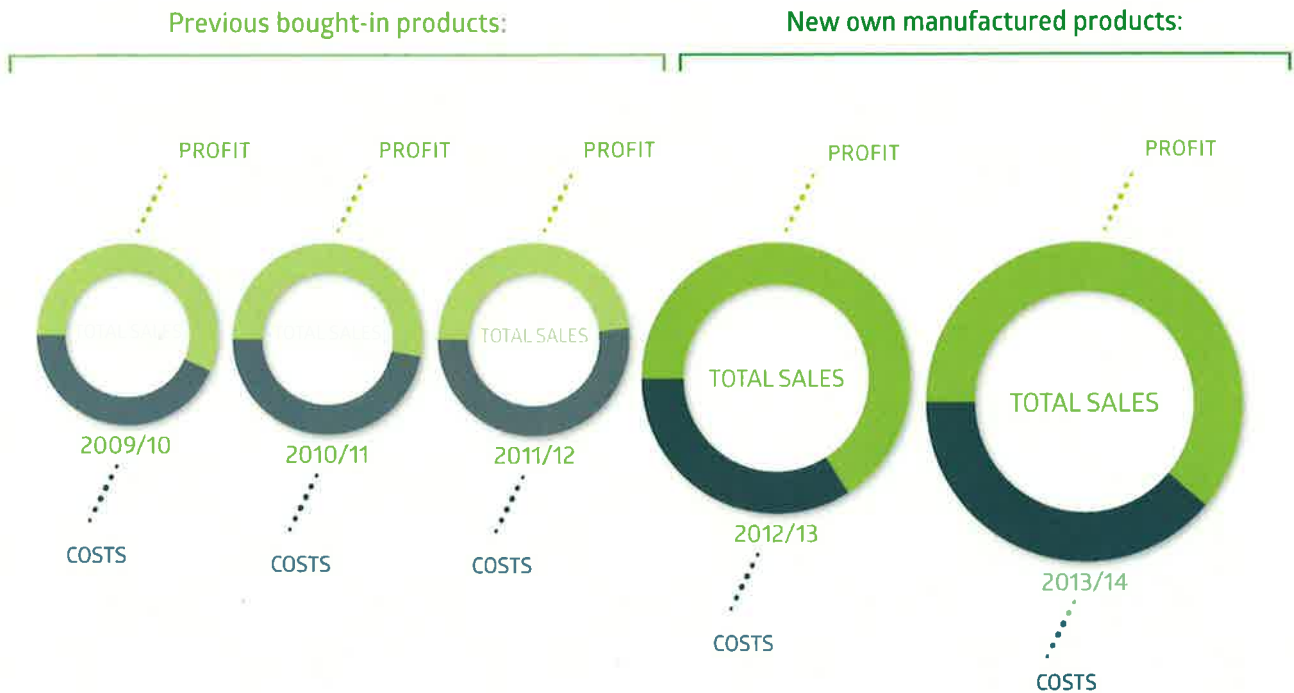
OUTLINE OF DESIGN SOLUTION



The net result is an **elegant, highly featured, cost effective solution** meeting real world requirements.

SUMMARY OF RESULTS

Increase in sales value of electronic flags and referee units (A+H and Touchline)



N.B.

There are a number of factors influencing the sales value and the total annual unit sales figures.

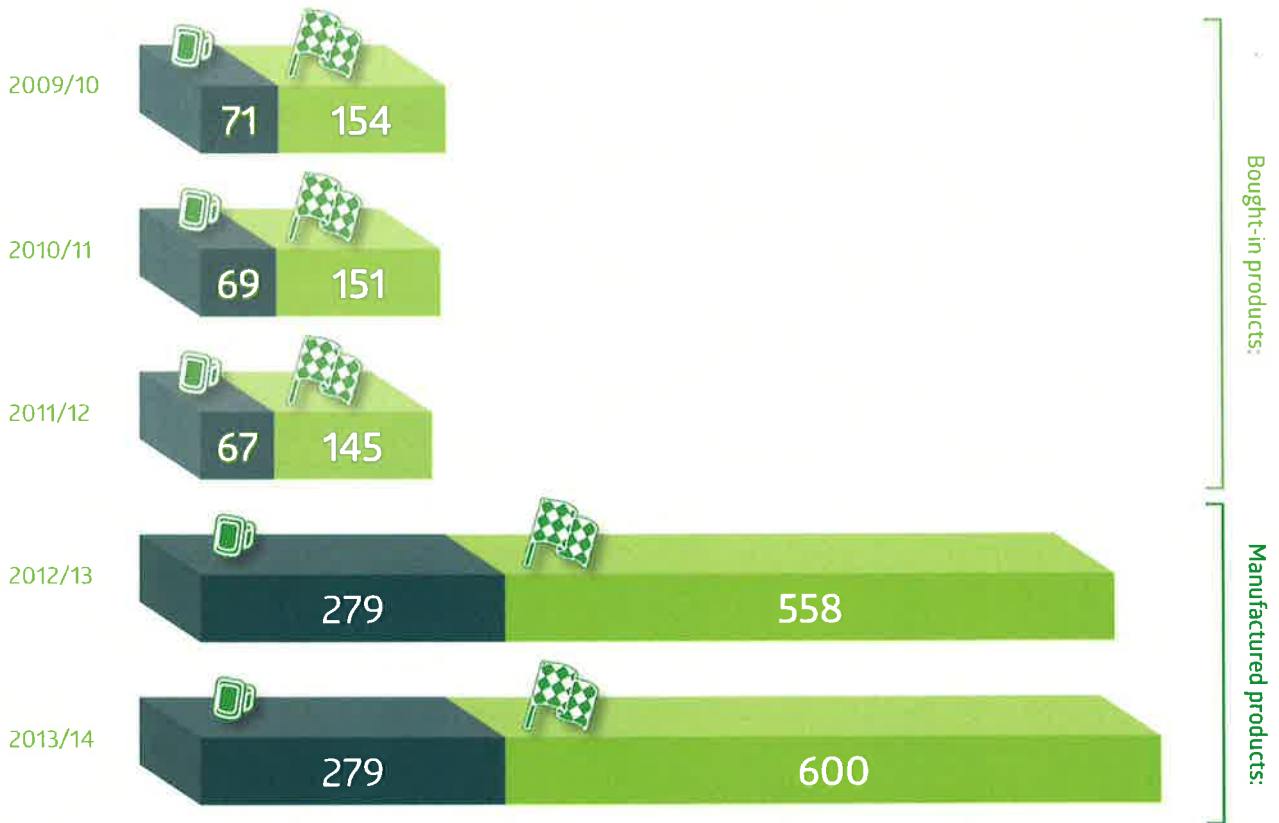
- Systems are sold in kit form – One referee pager unit with either 2 or 3 electronic flags
- There is a flag variant sold in Germany but only as a 2 flag kit version
- Pre 2012/13, A & H International were acting as distributors for OEM products
- Post 2012/13 (new design and manufactured) products are a mixture of direct sales and sales through distributors
- Due to the lower profit margin through some distributor sales, the gross profit is sometimes reduced

We have used increases in gross profits related to all pager units and electronic flags and total unit sales to demonstrate the overall impact of the new design.



SUMMARY OF RESULTS

Increase in total annual unit sales of referee pagers and electronic flags (A+H and Touchline)



INCREASE
IN ANNUAL
PAGER SALES
293%

INCREASE
IN ANNUAL
FLAG SALES
290%

SUMMARY OF RESULTS

Reductions in production costs

The new design production cost is 49% of the OEM product buy-in cost.

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Increases in market distribution

Original sales (pre 2012/13) were in England only.

Post 2012/13 sales (in addition to UK) are:

USA, Germany, Australia, Sweden and Switzerland (through distributors).

Eire, Hong Kong and Malaysia (direct sales).

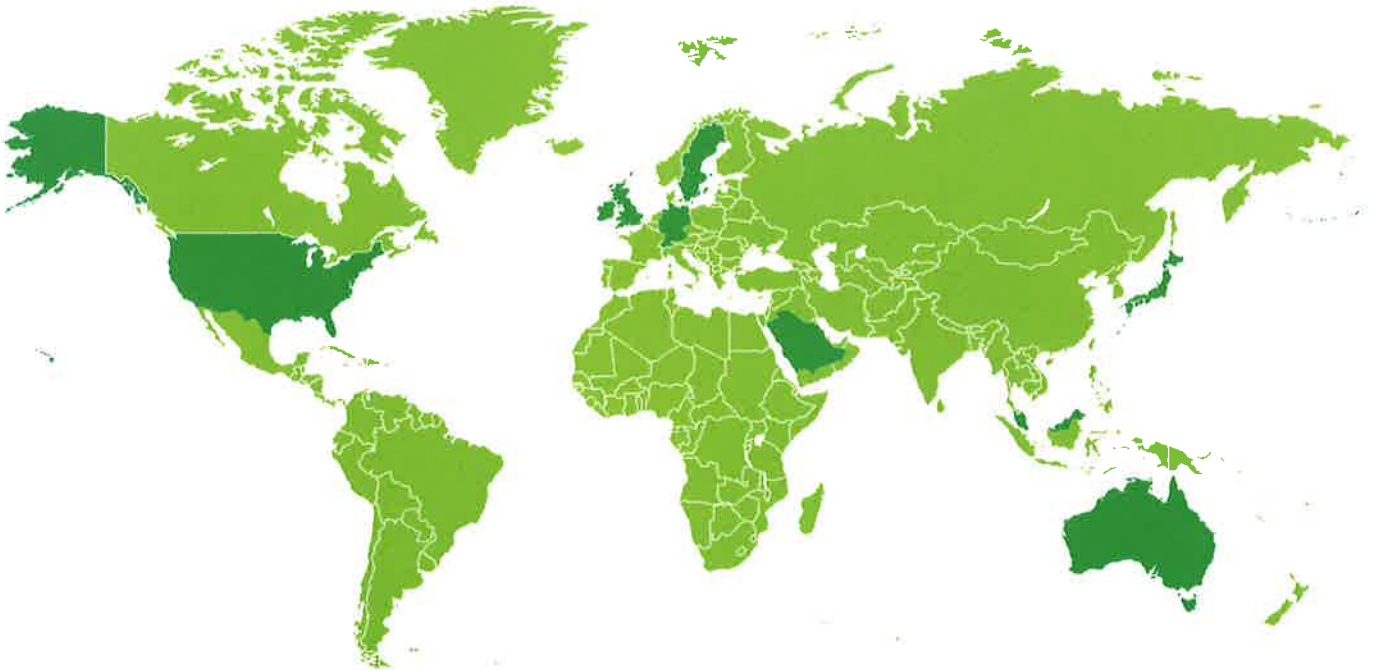
Japan and Saudi Arabia (pending).

Increase in customer base and further opportunities

The increased international customer base has led to the building of new relationships and the potential for new business through product design and development. Touchline have been approached by the Premier League to investigate new products related to goal line technology and associated devices to better manage sport and crowd enjoyment/expectations.

Sales in England

The principal competitor no longer sells their products in England. Touchline Flags have 100% of the target market.



Eight new countries with significant interest from others.

SUMMARY OF RESULTS

Staffing Levels

Staffing levels have not increased but due to the changing nature of the business, people involved in other roles have been moved into sales and marketing positions. New roles are planned to meet foreseen increasing demand, in particular for international markets.

Environmental impact

All plastic components are clearly marked to ISO11469:2000 for material identification and to aid end of life recycling.

The products have been designed to last and come with a 2 year warranty. The electronics are upgradeable for future proofing.



Touchline™

Improvements in staff morale

The principal salesman's job has changed from pro-active selling in the UK to responding to international requests for the product. Staff morale is immensely more confident with real pride in the product being offered.



Brand development

'Touchline Flags' was previously used as a marketing sub brand of A+H International. The success of the electronic flags has resulted in a new company and a brand with real values and credibility, especially important for the development of international export business.



SUMMARY OF RESULTS



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When you're working in the Premier League it is important that you have total trust in the equipment you're using. The new Touchline Flags give you that trust.

Howard Webb - World Cup Final Referee 2010 ”

OTHER INFLUENCING FACTORS

Touchline Flags was launched as a new company in January 2014 to exploit the new system. It has been working with UKTI who have assisted in opening up some overseas markets. The success of this venture is however reliant on the design of the products.

Very little money has been spent on any advertising or PR campaigns (< £1000.00).

The website contains video demonstrations but most enquiries come from peer to peer validation.

It's difficult to directly attribute all the additional profit generated by the new product to design as we are comparing the original OEM products to a new design and manufacturing initiative. However, increased sales and market regions can be directly attributed to added value features created by design.

Research resources

There are no real applicable market research sources, due to the 'niche' nature of the product.

Figures relating to the market overview are in the public domain.

Sales, gross profit and manufacturing cost figures are from A+H International and Touchline Flags accounts and sales analysis.



