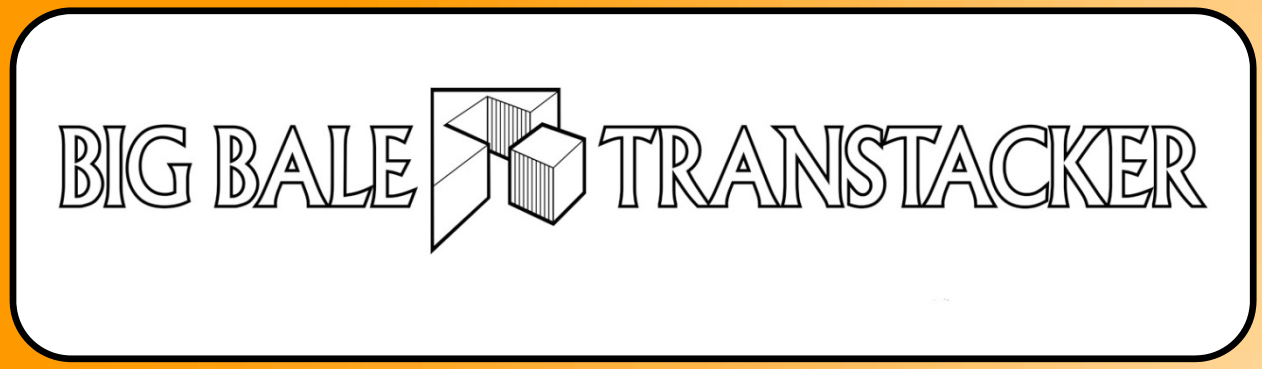


Alex Baylis BSc. (Hons)

Transtacker Manager

“The industrial research & development of a bale handling and logistical management tool that will work in line with a Controlled Traffic Farming system.”

BIG BALE Co LTD SOUTH

- A Brief History -

- Established in 1983.
- UK's largest supplier of Massey Ferguson square balers.
- Offer new, second hand and hire balers to customers across the UK and abroad.
- Expanded their machinery portfolio in 2009 through the acquisition of the IP rights to the Walton Eclipse.
- Rebranded it as the Big Bale Transtacker.

- 2012 -

- Outsourced manufacturers were forced to cease trading by the bank.
- Restructured the business bringing overall project management back 'in house'.
- Started 2013 with new manufacturers and suppliers.

- Realised that there is a BIG difference between a dealership and an SEM.

BIG BALE TRANSTACKER

- Small Equipment Manufacturer -

- Niche market manufacturer without a premium price tag.
  - Production numbers are low.
  - Reduced economies of scale.

- Higher build price – Lower retail price.
  - Profit is reduced.
- Re-investment of profits is reduced, curtailing R&D expenditure.

- SEM Lifecycle -

- Alternative Markets.
  - Alternative/Additional Products.
  - Alternative Manufacturers & Locations.

- CTF & the Big Bale Transtacker -

"Straw is considered to be one of the biggest boundaries to CTF adoption"
HGCA Review

THE FARMER

Through providing a machine that can fit into any CTF system it will enable farmers from around the world to benefit from adopting a CTF approach.

THE PROCESSOR

With Renewable Energy now being an agricultural commodity, i.e. Maize, Rye etc. It allows straw to be treated (and traded) as a commodity item, rather than being treated as a bi-product.

THE MACHINERY MANUFACTURER

Ultimately, it allows the Big Bale Transtacker to create its own market place and to have a monopoly on a global scale.

'Drill manufacturers mentality'

- Key Benefits -

- Controlled Traffic Farming -

- 70% - Potential reduction in establishment costs.
- 35% - Potential reduction in fuel consumption.
- 15% - Potential increase in yield.
- 400% - Better rainfall infiltration.
- 10% - Increase in topsoil porosity.
- 35% - Increase in Available Water Capacity.

- Innovate UK & the Big Bale Transtacker -

With more and more early adopters of ‘Controlled Traffic Farming’, Harper Adams University and the National Centre For Precision Farming approached Big Bale Co. (South) Ltd. with the prospective idea of collaborating on a CTF project and therefore applying for government funding.

Big Bale Co. (South) Ltd. and Harper Adams University were awarded a collaborative grant for approximately £550,000.00 through the Innovate UK scheme, titled;
“Engineering Solutions To Enhance Agrifood Production.”

- GRANT TITLE -

“*The industrial research and development of a bale handling and logistical management tool that will work in line with a Controlled Traffic Farming system.”*

- Grant Application Overview -

"The competition is looking to assist SME's in the development of modern engineering to advance the sustainable intensification of primary agriculture. The proposed project is able to meet these requirements in a number of ways through the collaboration of industry professionals and utilising leading agricultural technologies".

- Base the application around known facts and figures to justify the validity of the grant.
- Draft a clear & concise project plan that explains what you will achieve and how you will achieve it.
- Break the overall project plan down into clear 'Work Packages'.
- Set realistic Deliverables and Milestones for each 'Work Package'.
- Allocate costs to each Milestone and so the financial application can be justified.

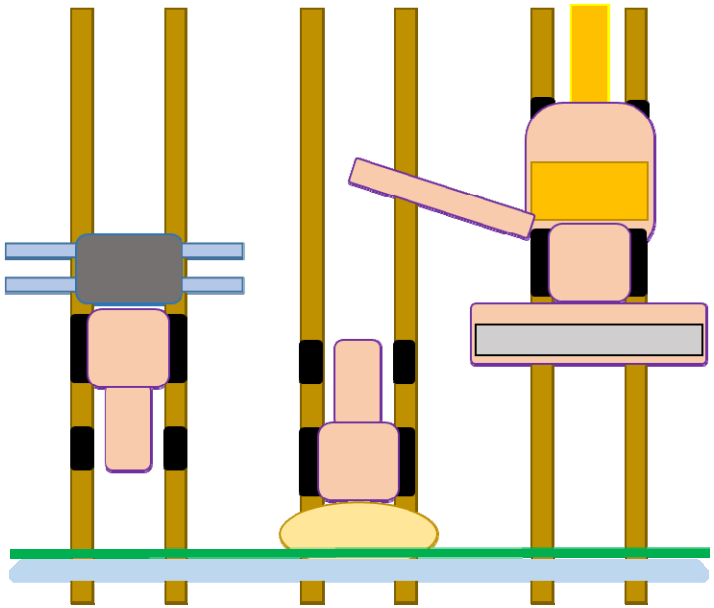
- Milestone Register -

Milestone Reference	Title	Work Package	Responsibility	Due Date	Cost to milestone (£)	Notes
M1	Design brief hand out	WP1	BBS	28/07/2014	£0.00	Commencement of the project.
M2	Project Launch	WP1	BBS	28/07/2014	£0.00	Quarterly Meeting 1 between all consortium parties & MO.
M3	Concept Design Chosen	WP2	HAU/BBS	31/07/2014	£0.00	Between both consortium parties.
M4	Designs to be finished and compiled for production	WP2	HAU	27/10/2014	£0.00	This timescale allows a week's distribution to the relevant manufacturers before production starts. This then allows the manufacturers to familiarise themselves with them and any initial design queries to be answered.
M5	Production starts	WP3	BBS	03/11/2014	£0.00	
M6	Production sign off	WP3	BBS/HAU	03/02/2015	£0.00	Between both consortium parties.
M7	Initial testing of the prototype system	WP4	HAU	13/07/2015	£0.00	
M8	Finalisation of the prototype control system	WP5	HAU	30/10/2015	£0.00	HAU & Sensor Technik.
M9	Completion of a full UK harvest testing	WP4	BBS	06/10/2015	£0.00	Large scale UK arable farm under CTF management.
M10	Finalisation of the bench tested control system	WP5	HAU	29/01/2016	£0.00	HAU
M11	Pre testing sign off	WP6	BBS/HAU	19/02/2016	£0.00	Between HAU & BBS.
M12	Completion of a full UK harvest testing.	WP6	BBS	30/09/2016	£0.00	Large scale UK arable farm under CTF management.

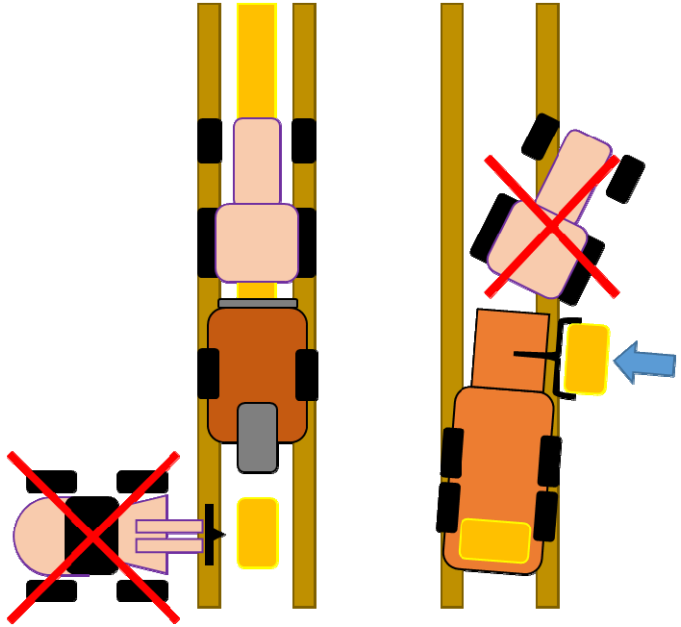
Harper Adams – Machine Development

Understanding the problem

CTF management system



The problem of bale logistics



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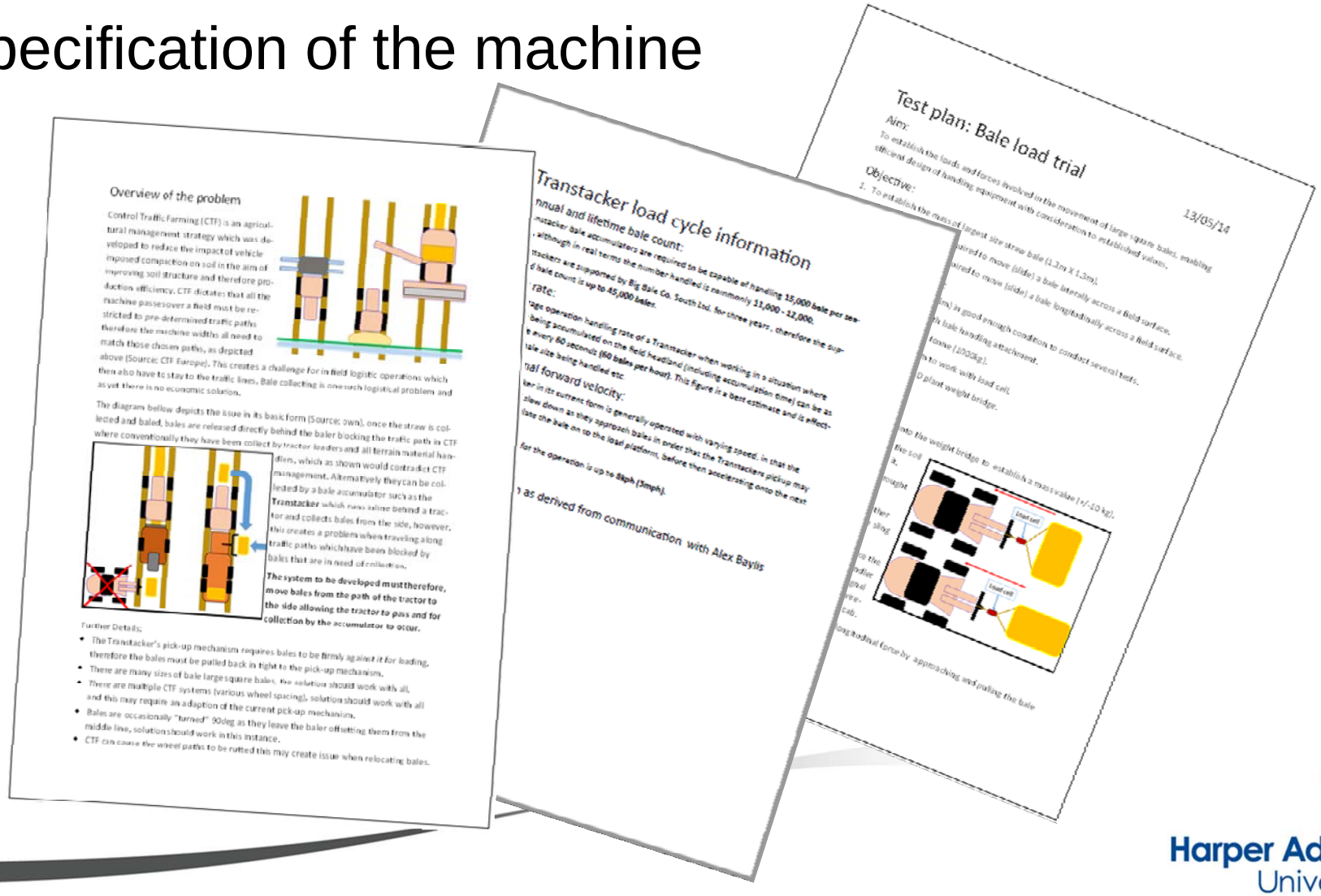
Specification of the machine



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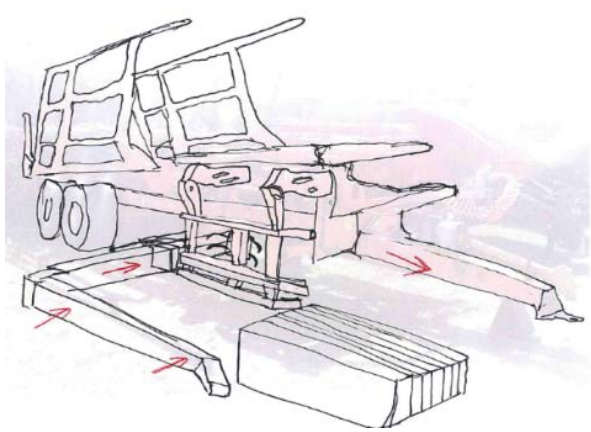
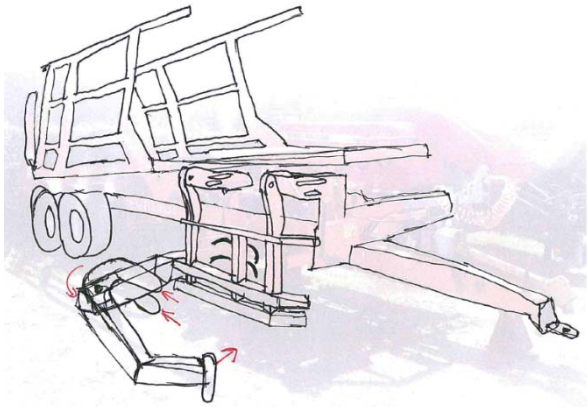
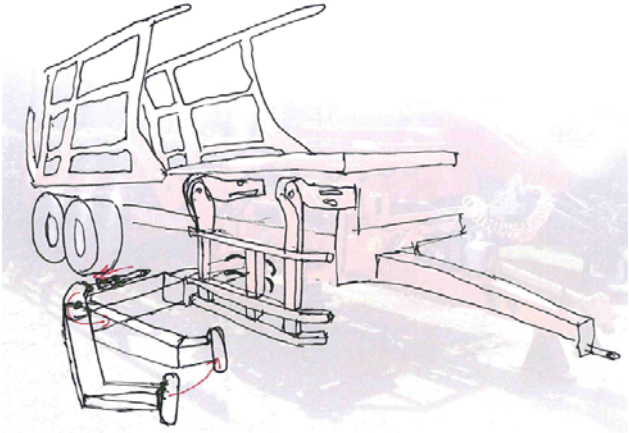
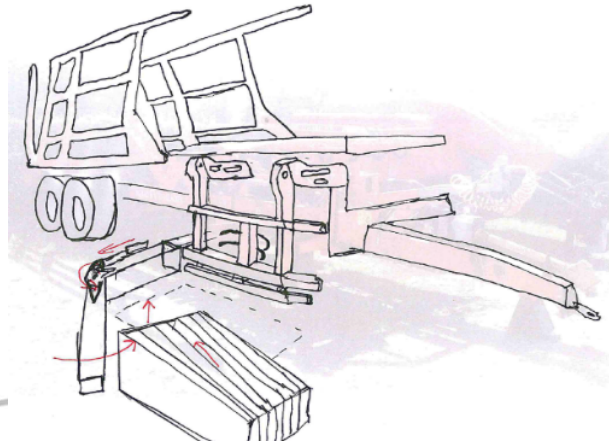
Concept development









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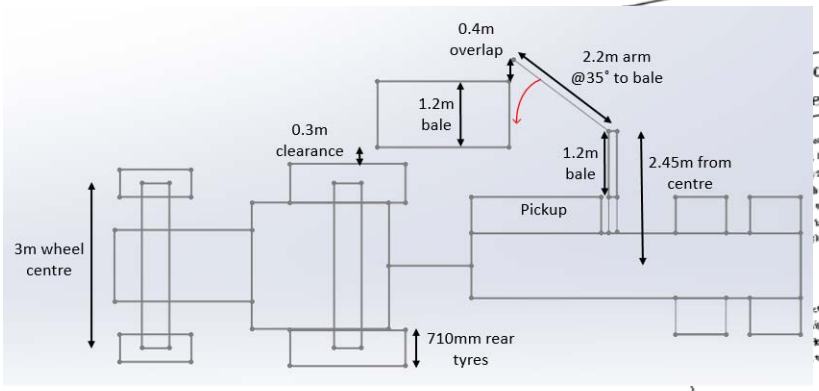
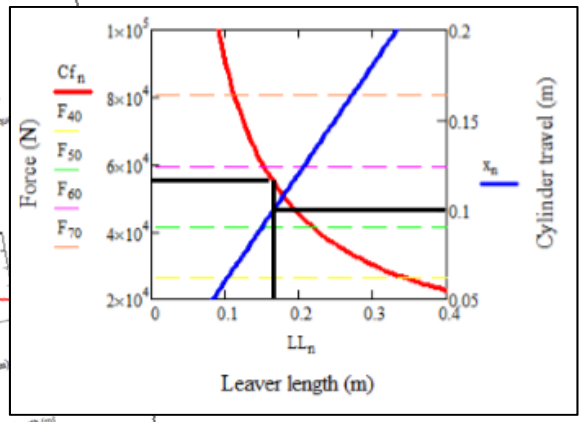
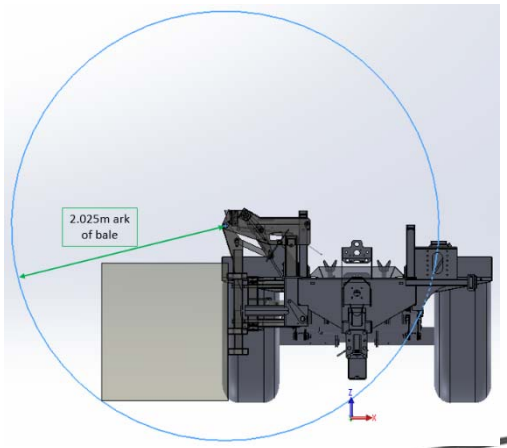
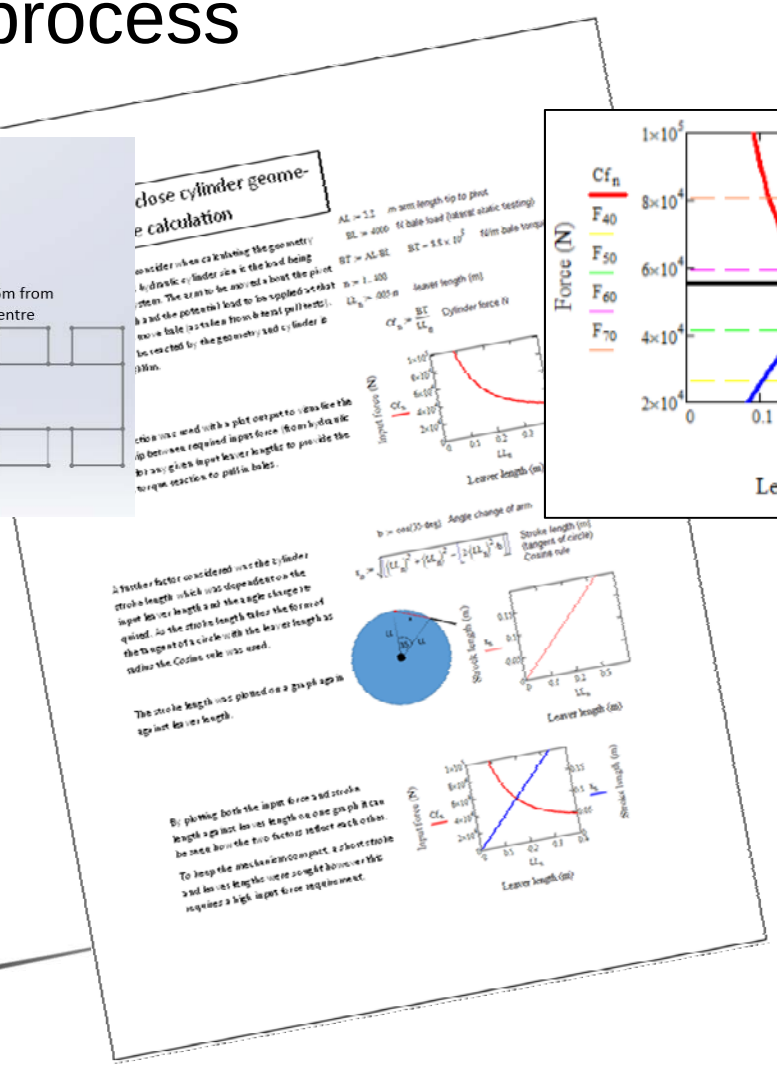
Mechanical design process









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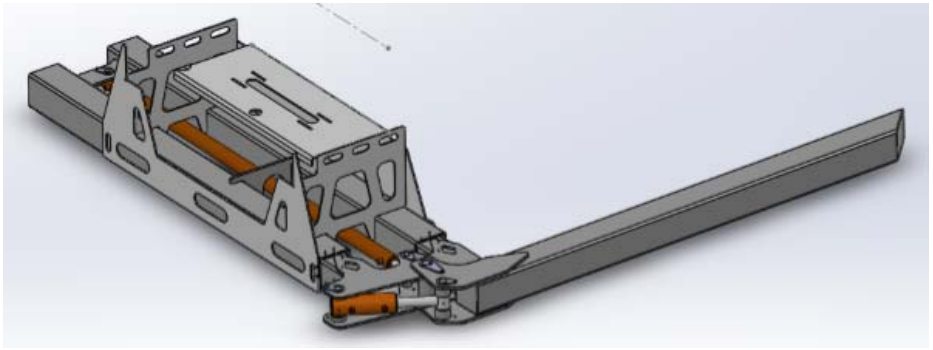
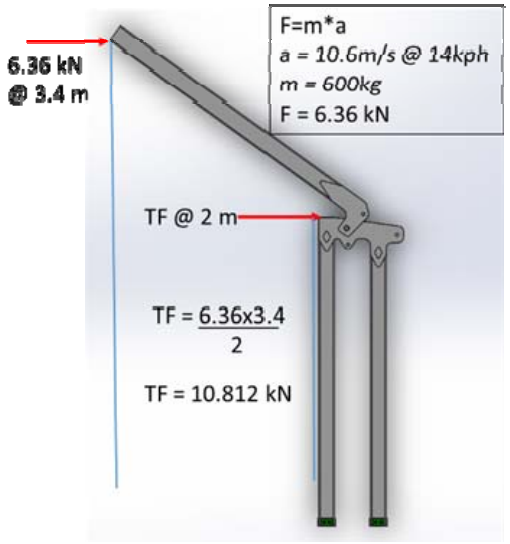
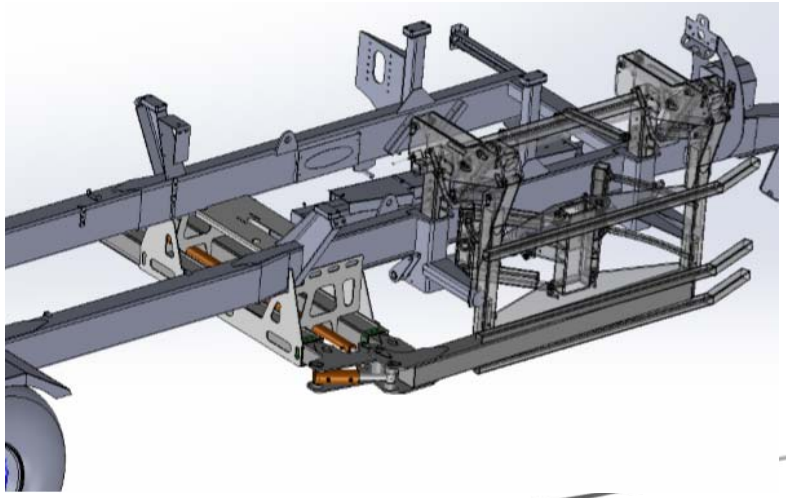
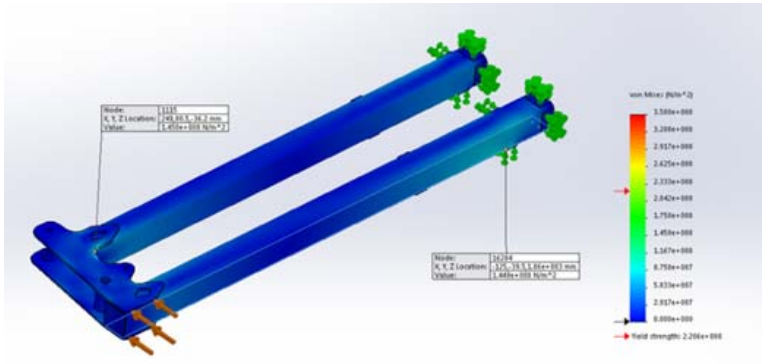
3D modelling and analysis









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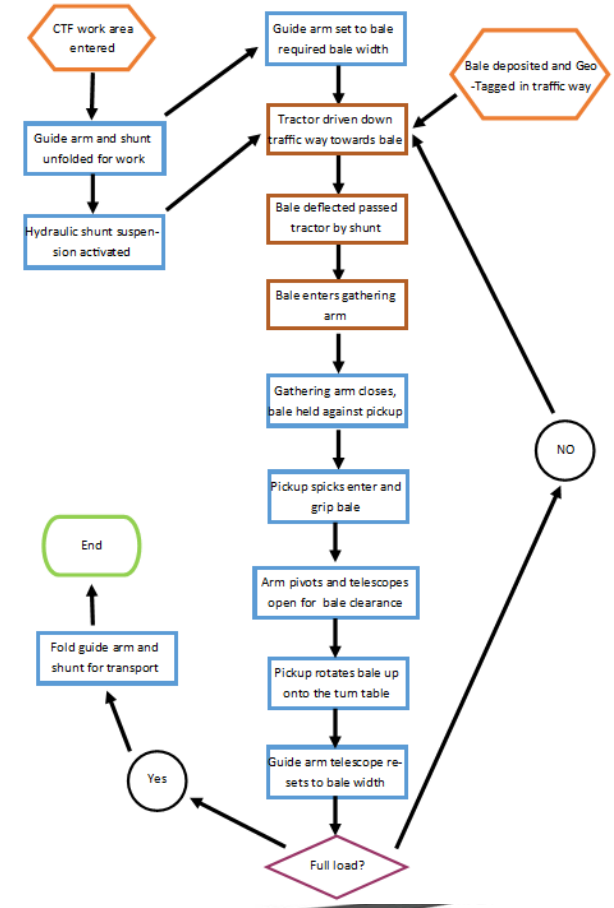
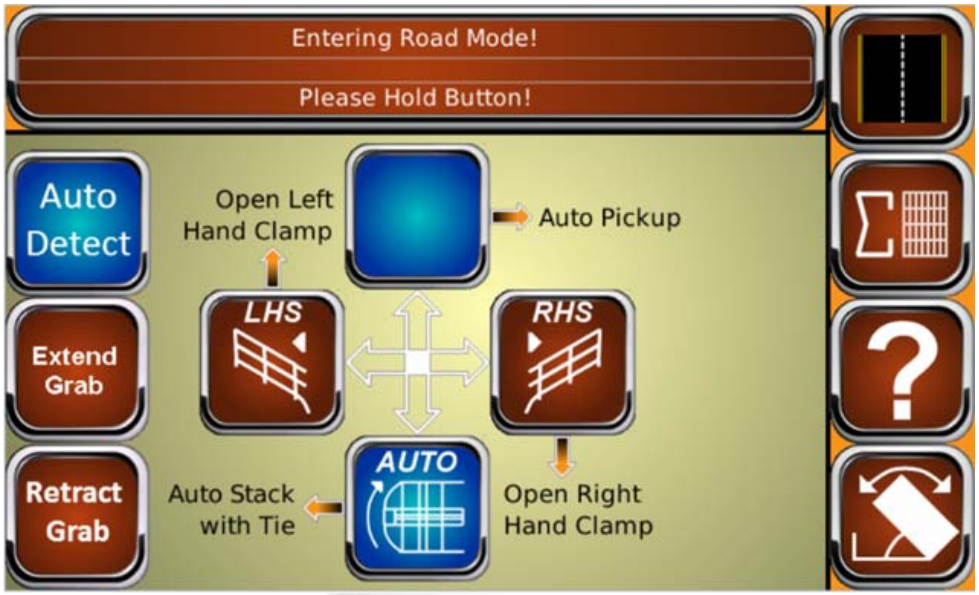
Trigger based automation





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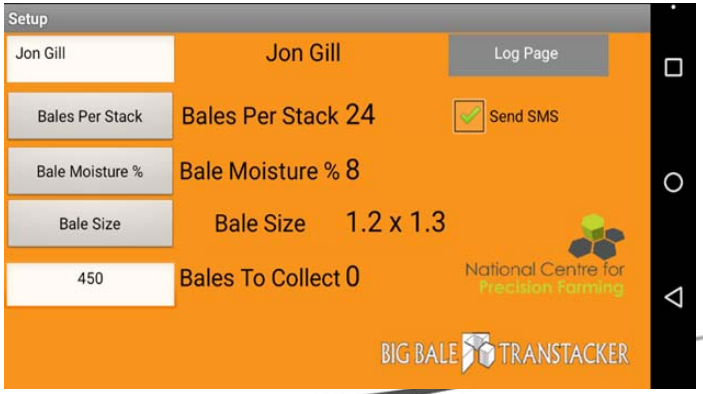
Big Bale App



- logs stacks
- Bales per stack
- Moisture in the bale
- Logs the size of bales in the stack
- Logs the GPS position

Saves & Sends all this information to the service company by cellular or WiFi

Harper Adams University

- How did the Grant help the Big Bale Transtacker -

- It enabled us (as a very niche manufacturer) to invest in the R&D of the product and to develop new technologies that not only helped the business, but also helped the end user.

- Innovate UK will have funded 60% of our project costs over the 36-month period. Without this financial contribution, Big Bale Transtacker would not have been able to justify the considerable financial investment required.

- The collaboration allowed access to some of the leading professionals within the agricultural engineering industry, as well as a level of engineering ability unavailable at the time to Big Bale Co. (South) Ltd.

- Where Next -

By September 2017, we expect to have:

- Completed our last harvest with a fully functioning prototype that will then be able to clear straw from 100% CTF fields.
- A patented concept and design that will protect our IP rights.
- A GPS App. that is able to successfully map and record stack data – with the anticipation of promoting this kind of system into alternative markets, i.e. hauliers and insurers.
- A structured business expansion plan that will encompass sales of the CTF Transtacker in the UK, Europe and America.

Our aim is to launch the CTF Transtacker at the LAMMA Show in January 2018.