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PLF Agritech Europe LTD

# Word of caution for technology providers: Practical problems associated with large scale deployment of PLF technologies on commercial farms

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# Acknowledgements

- ▶ Professional support of many friends, colleagues, collaborators and the financial support of the:

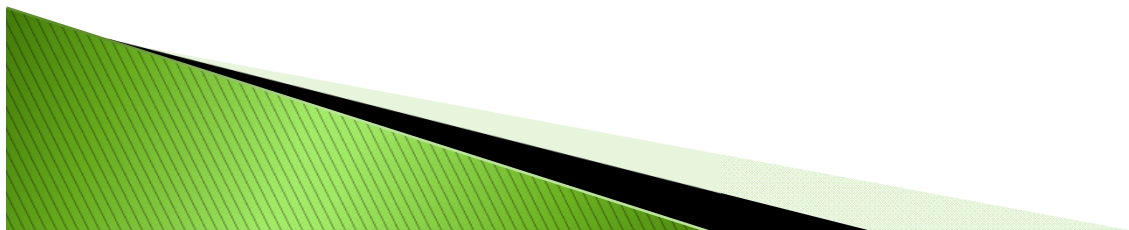


# Introduction

- ▶ **Livestock producers are facing pressures, due to increasing:**
  - production costs
  - awareness of animal welfare and environmental issues
  - costs of compliance with legislations
  - demand for protein from an increasing population
- ▶ **There is a general lack of feedback and thus limited ability to optimize livestock production (Berckmans, 2008).**

# Introduction 2

- ▶ **There is a need for livestock producers to decrease costs and improve production efficiency**
- ▶ **The EU-PLF project is offering a solution to the industry that can be achieved by:**
  - **optimising growth and the amount of feed per kilogram of meat produced**
  - **assisting in the detection and prevention of disease, injuries or sickness**
  - **monitoring and controlling environmental factors**
- ▶ **This would allow animals to grow to their full market potential with minimal problems**



# Aims

- ▶ **Before this could happen, a large scale evaluation of the five proposed PLF technologies had to be undertaken:**
  - **SoundTalk's Cough-monitor,**
  - **Fancom's eYeNamic,**
  - **PLF Agritech's Weight-Detect™,**
  - **PLF Agritech's Feed-Detect™**
  - **PLF Agritech's Enviro-Detect™**
- ▶ **..... and DOCUMENTATION of problems associated with the deployment, use and maintenance of these PLF tools**
- ▶ **The methodological review of issues encountered and thus the knowledge gained will be useful for other technology developers**

# Methodology

- ▶ **Large scale field trials of PLF technologies under commercial farm conditions have never been attempted before.**
- ▶ **The European Union funded EU-PLF and All-Smart-Pigs projects started with the deployment of large number of technologies**
- ▶ **The four suppliers of PLF technologies within these two projects (SoundTalks, Fancom, PLF Agritech EU and Nema) have been approached to obtain information collected methodologically about problems encountered while installing, maintaining and using the technologies on farms**

# Installation issues

|  |  |   |
|--|--|---|
| Different power-points are used in different countries | Use travel plug converter for temporary use during installation and use of correct plugs for permanent installation.         | Find out the correct plug configuration in advance.   |
| Heating elements and electricity cables in ceiling     | Ask farmer to put on heating, to find out where hot tubes are located. Be aware of electrical cables as they pose OH&S risk. | Place all equipment at least a few meters away from hot water tubes. Make sure no equipment is placed close to the hot tubes as it would overheat           |
| Very high ceilings                                     | Use cherry pickers or very long ladders when possible. Be aware of the OH&S implications of these arrangements.              | Make sure that cherry pickers or ladders are definitely long enough and make sure all equipment used is secured.  |
| Asbestos in houses                                     | Do not drill holes in asbestos   | Be careful with asbestos! Make sure no holes are drilled in asbestos and the material is not disturbed any ways. Be aware of the serious OH&S implications. |

# Installation issues

- ▶ **The occupational health and safety aspects of installations had to be considered very carefully as installing technology on farms is an inherently dangerous activity**
- ▶ **Encounters with asbestos, heights and interference by animals all provided significant danger to installers, especially when risk factors combined**
- ▶ **For example, working on high ladders while pigs bumping into the ladder made some of the installation sites quite dangerous**
- ▶ **Thus installation of the equipment had to be planned and executed very carefully**

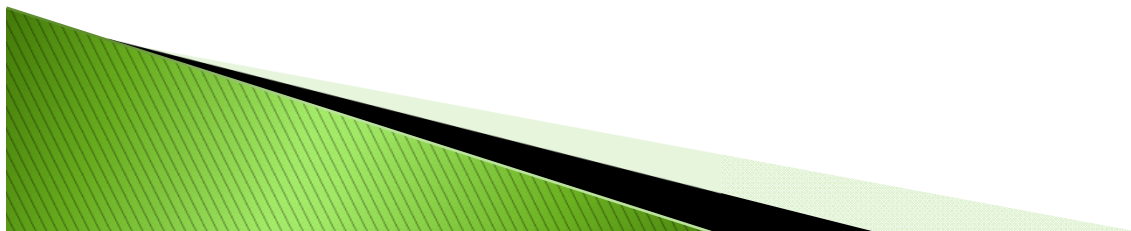


# Technical issues

|  |  |  |
|--|--|--|
| Problems when setting-up wireless network connection | Use IT-personnel on-site during installation   | Get advice from local IT specialist who knows the farm                 |
| Unreliable internet connection                       | If possible install 3G (or 4G) antennas. Test the internet connection that is available on the farm, check if the farm-area is covered by 3G or 4G.              | Only use 3G or 4G if cable connection is not available.                |
| Unstable power and abrupt power-off                  | Make sure all equipment can withstand sudden power-off, or install UPS with safe shutdown. Test if equipment can withstand multiple sudden power-off situations. | Also test if the power-off during start-up of the system is tolerable. |

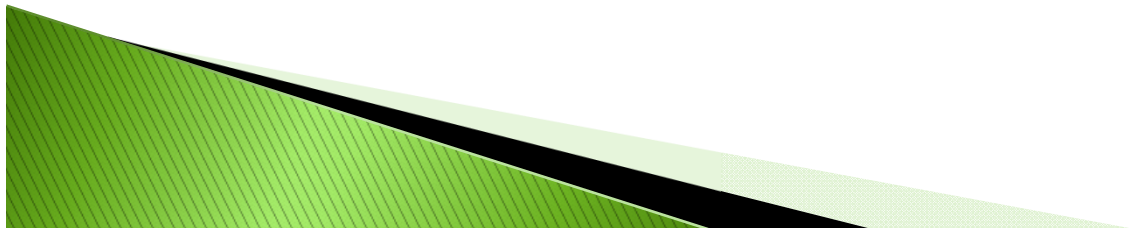
# Technical issues

- ▶ **Internet reliability was a major issue on many farms throughout the project**
- ▶ **Solutions must be found to improve the reliability of the internet on sites**
- ▶ **This highlighted again that the whole livestock sector has to be transferred into a high tech sector with innovative products and services associated with them**



# Maintenance issues

|  |  |
|--|--|
| Damage of cables by rats and mice                      | Protection of cables with hard plastic tubes and spraying cables with chilli concentrate   |
| Damage of cables by pigs during and after installation | Move pigs away if possible or install with sufficient people when not possible. Spray cables with paprika/chilli concentrate. Make sure the pigs cannot reach cables.      |
| Flies cover lenses with dirt                           | Apply fly-repellent, institute regular maintenance scheme to clean lenses, potentially use transparent film in front of the lenses, air-flow over lenses                   |
| Damage to equipment during cleaning between batches    | Order replacement units and install ASAP   |
| Water damage of the equipment                          | Ensure that the equipment used is water resistant and/or installed in a water tight box.   |
| Damage to equipment by dust and ammonia                | Ensure that the equipment used is enclosed in an air-tight box.  |
| Overheating of equipment                               | Install cooling fans in the equipment box. Please note the contradiction between the need to enclose the equipment in an air and water tight box and the need for cooling. |



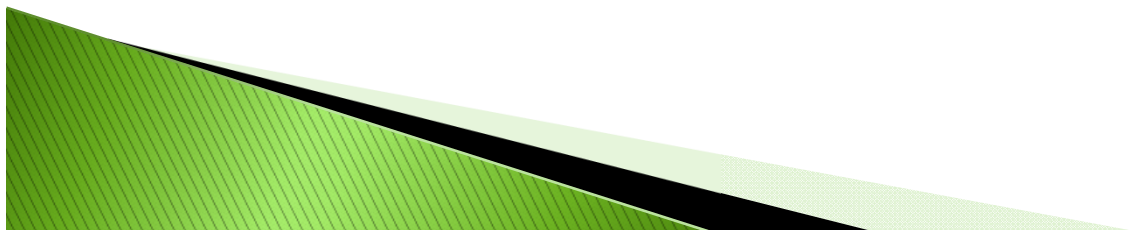
# Maintenance issues

- ▶ **Protecting cables from rodents is not a simple task and needs constant attention**
- ▶ **Damage done to cables and instruments by livestock is also a real problem – especially in piggeries**
- ▶ **Flies caused unexpected problems for the camera based systems, but regular cleaning regimes overcome this problem quite effectively**
- ▶ **The need to make the instruments both water and air-tight often contradicted with the need to ventilate the instruments (remove heat generated by instruments)**

# Example of maintenance issues



Figure 1: Example of dirt on camera lenses resulting in poor image quality (later on regular cleaning procedures were implemented to counter the problem)

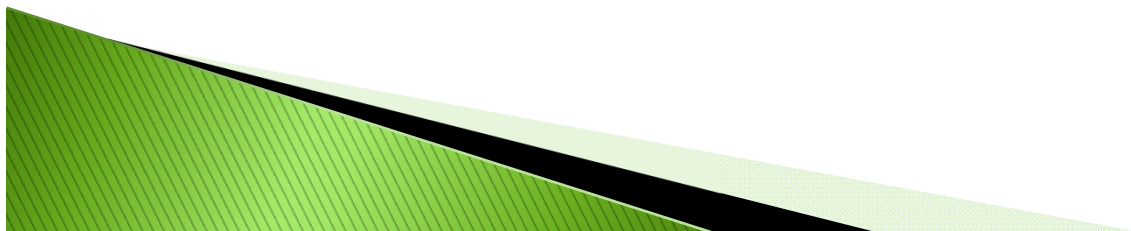


# Social issues

|  |   |  |
|--|---|--|
| Different expectations in relation to result           | Results have to be presented positively and technology suppliers have to acknowledge potential errors | If negative results are presented end users might reject the technologies used                             |
| Farmer reluctant to give access to (part of) the house | Make sure that appropriate (written) agreements have been made before starting the installation.      | Make clear agreements in advance (> 1 month) and confirm the agreement just before (< 1 week) installation |
| Language problems in Europe                            | Use interpreter   | Use interpreter appropriately  |

# **Social issues**

- ▶ **Social issues have to be taken into consideration when dealing with the installation of PLF technologies on farms**
- ▶ **Negative results (less growth and more health problems than expected) had to be communicated to farmers sensitively**



# Business issues

|                             |  |   |
|-----------------------------|--|---|
| Loss of key staff           | Makes sure that replacement staff is available               | Ensure that damage inflicted on the company can be minimised                      |
| Limited resources available | Collaboration between SMEs helped better resource allocation | Maintenance of research sites required considerable human and financial resources |



# Business issues

- ▶ **Underperformance or loss of staff during the initial phase of the project provided challenges for technology providers**
- ▶ **Available replacement staff need to be planned in advance**
- ▶ **Careful documentation of existing knowledge within the company must be a standard procedure**
- ▶ **Financial pressures were constant feature of the project but collaboration between technology providers improved the financial efficiency of the project**

# Conclusion

- ▶ **The installation and the ongoing maintenance of the PLF tools on farm provide extra challenges for SMEs involved in the development and delivery of these tools for livestock producers**
- ▶ **PLF tools will increase the labour efficiency of staff on farms**
- ▶ **Work efficiency is a very important issue, as increasing demand will require farms to do more with less labour.**
- ▶ **As farm sizes grow, the traditional husbandry methods become a highly impractical method to care for animals**
- ▶ **The PLF tools installed on farms will assist livestock producers to be more efficient**

**Thank you!**

