SCHIEDEL

## Redesign of Schiedel Chimney Systems to reduce Packaging Waste

### AT A GLANCE

Schiedel manufactures chimney systems for the construction industry.

This project was to redesign the chimney system to produce a factory assembled 'Storey High' product rather than supplying the chimney system in component kit form.

The new system eliminates packaging since it is transported to site in re-useable metal cradles, replacing the pallets and plastic wrapping of the existing system.

The new system is also assembled in the Schiedel factory rather than on the building site. This increases the quality and accuracy of construction and reduces the amount of materials needed per unit.

The new system also results in a reduction in chimney installation times for builders.

Once the system is 100% implemented at the site the following annual savings will be realised by the company (based on production levels in 200):

- €258,000 gross cost savings.
- 16,000 wooden pallets eliminated.
- 28 tonnes plastic hoods eliminated.
- 18,000 metres insulation material saved.
- 18,000 tubes sealer saved.
- reduction in shrink wrap gas usage.

As at the end of 2006, 12% of sales were of the new system. It is expected to take approximately 4 years to convert fully to the new system.

### SCHIEDEL CHIMNEY SYSTEMS

The Schiedel company started in Austria in 1947 and is now the market leader in Europe for chimney systems. The Co. Monaghan site, previously Irish Stoneware & Fireclays, was purchased by Schiedel in 2001 to combine with the 1999 purchase of Ulster Fireclays in Co. Tyrone and a 2001 acquisition in Dorset, England. At the beginning of 2002 these three companies were combined to form Schiedel Chimney Systems.

Schiedel's core business is the production of Chimney Systems. The Schiedel Swift chimney system is a versatile product that was developed to suit the open fire and central heating requirements of the UK and Irish markets. Prefabricated chimney systems have been an important feature in the European construction industry for many years. Traditionally this has not been the case in Ireland and the UK where chimneys have been constructed on site with components supplied by different manufacturers.

*Photo 1 Existing Swift Chimney System components kit*

With Schiedel's current Swift system, all the materials required to construct the chimney, the blocks for the chimney base, lintel, the chimney blocks, insulation, flue liners, corbel, coping expansion plate and chimney, are supplied as part of the kit.

### AIM OF THIS PROJECT

The aim of the project was to develop a new 'Storey High' modular chimney system to replace the current Swift Chimney System components kit. Basically supplying the chimney in assembled modular sections rather than in kit form.


*Photo 2 Existing System Packaged for dispatch*

The new system eliminates packaging since it is transported to site in re-useable metal cradles, whereas the existing system uses two pallets with heavy duty shrink wrapped hoods and insulation and sealant supplied separately.

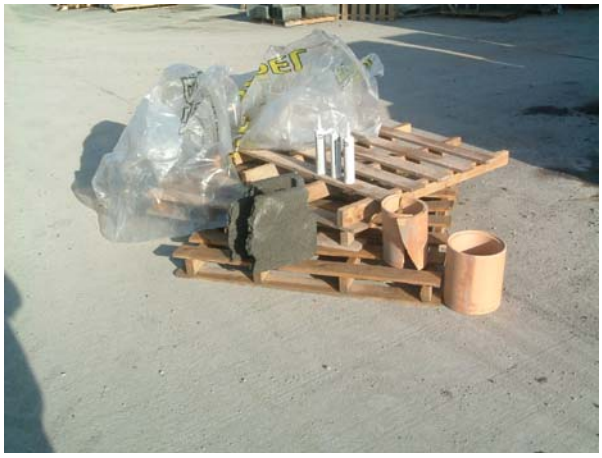

*Photo 3 Existing system - Typical waste from one Schiedel Swift System*

## PROJECT DESCRIPTION

For the new 3 piece 'Storey High' chimney system each of the three sections was designed, prototyped, cast, tested by external organisations (Schiedel's German Laboratory and at Queens University Belfast) as well as site tested, and introduced to production.

The project required a great deal of research and production trials to perfect the moulds and strength of the large components.

Various transportation cradles were produced by a supplier and tested. The weight of the cradles were reduced by 15% over the course of being developed. The handling, loading and unloading methodology had to be developed. This involved safety issues that had to be accommodated in the overall design of components, cradles and lifting points.

The practical implications and suitability of the transportation and installation process were checked by meetings with transport and site installation people. A key measurement is that the new chimney system can be installed in 1.5 hours compared to 8 hours for the current Schiedel Swift Kit system.

The product was installed and tested in a variety of sites around the country. There were open days held for building contractors at both the factory and on building site demonstrations.

## ACHIEVEMENTS

The new system is factory assembled which increases the quality and accuracy of construction and reduces the amount of materials needed per unit. The new system also results in a reduction in chimney installation times for builders.

The successful implementation of the project has resulted in a significant reduction in waste as itemised in Table 1 once the new system has fully replaced the current system.

| **Environmental Savings Per Year** | |
|---|---|
| Wooden pallets eliminated | 16,000 units |
| plastic hoods eliminated | 16,000 units or 28 tonnes |
| reduced use of insulation material | 18,000 metres |
| reduced use of sealer material | 18,000 tubes or 750 kg |

*Table 1 Environmental savings*[1]

[1] The above savings are for when the existing system is 100% replaced by the new system. This is anticipated to take approximately 4 years. 12% of production in November 2006 was of the new system.

*Photo 4 New system – factory assembly*

The reduction in product cost based on the current system will be significant as shown in table 2 but this will be offset to a significant degree by the costs of the new system and the supply of metal cradles etc.:

| **Cost Savings Per Year** | |
|---|---|
| Reduction in Pallet Costs | €135,000 |
| Reduction of Plastic Hoods | €65,000 |
| Reduction of Insulation Material | €41,000 |
| Reduction of Sealer Material | €12,000 |
| Reduction in Gas Usage | €5,000 |
| Reduction in Pallet Costs | €135,000 |
| Reduction of Plastic Hoods | €65,000 |
| **Total** | **€258,000** |

*Table 2 Cost savings*[1]

In addition to the above, factory assembly has reduced the time to install a chimney system from 8 hours to 1.5 hours which is very significant in terms of the overall cost of the chimney system to the builder.

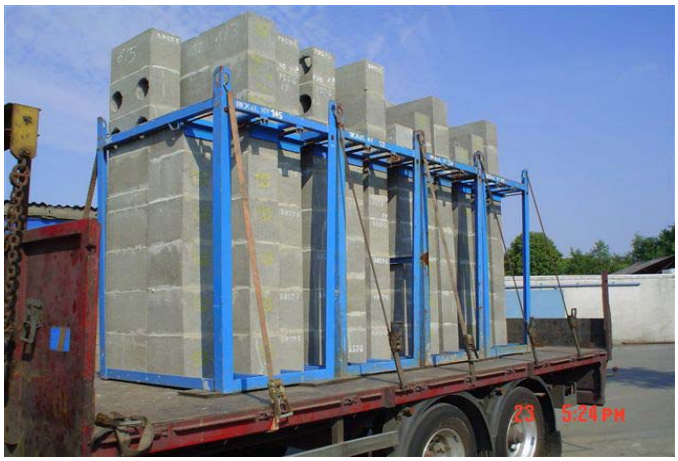

*Photo 5 New system being dispatched in custom metal cradles which are reused*

In June 2006 Schiedel Carrickmacross came joint top out of 25 plants within the Schiedel group in the area of safety and environmental awareness. This was achieved in spite of the Carrickmacross plant being much older than most of the other plants which are located across Europe.

## OBSERVATIONS

Schiedel has found the whole process of concentrating on waste reduction as a "complete eye opener" for a company that had always focused solely on quality and customer service. This focus often led to decisions that would increase waste by increasing packaging to improve the delivered quality of the products. Consequently the idea that packaging should be reduced was initially 'counter culture' until Schiedel realised they could have a win-win solution by reducing the waste from packaging and improve the delivered quality of the product by redesigning the chimney system.

## LESSONS

The ability to not only detail the material that ends up as waste but to be able to put a cost on it has clarified the perception of the problem environmentally and economically. It was something of a revelation that the company was investing over €250,000 each year to produce waste which could not even be recycled.

Getting Irish Agrément Board approval takes longer than expected, providing a barrier to achieving the full waste reduction savings more quickly. Schiedel is working with the board for final approval and are confident this approval will be granted. With hindsight, the company feels application for approval should have been made earlier in the project.

### MORE INFORMATION

For more information on this project contact

Sean Byrne

Schiedel Chimney Systems Ltd

Kingscourt Rd

Carrickmacross

Co Monaghan

Tel: 042 9661256

Fax: 042 9662494
sean.byrne@schiedel.co.uk

## CLEANER GREENER PRODUCTION IS…

the application of integrated preventive environmental strategies to processes, products, and services to increase overall efficiency and reduce risks to humans and the environment.

- Production processes: conserving raw materials and energy, eliminating toxic raw materials, and reducing the quantity and toxicity of all emissions and wastes
- Products: reducing negative impacts along the life cycle of a product, from raw materials extraction to its ultimate disposal.
- Services: incorporating environmental concerns into designing and delivering services.

## CLEANER GREENER PRODUCTION REQUIRES…

new attitudes, better environmental management, and evaluating available technology options. We need to take good environmental practice to the stage where it is an inherent part of any business operation.

## HOW IS CLEANER GREENER PRODUCTION DIFFERENT?

Much of the current thinking on environmental protection focuses on what to do with wastes and emissions after they have been created. The goal of cleaner, greener production is to avoid generating pollution in the first place. This means:

- Better efficiency
- Better business
- Better environmental protection
- Lower costs
- Less waste
- Less emissions
- Less resource consumption

## WHY IS THE CLEANER GREENER PRODUCTION PROGRAMME BEING RUN?

The Irish Government, through the National Development Plan 2000 - 2006, has allocated funds to a programme for Environmental Research, Technological Development and Innovation (ERTDI).

The long-term goal is to ensure that cleaner, greener production becomes the established norm in Ireland. The programme seeks to promote environmentally friendly business through increased resource productivity, waste reduction, recovery of materials, improved efficiency in a product value chain, energy management, and a change of culture within organisations.

The programme aims are focussed on avoiding and preventing adverse environmental impact rather than treating or cleaning up afterwards. This approach brings better economic and environmental efficiency.

## WHERE CAN I GET FURTHER INFORMATION?

This case study report is one of the reports available from the companies that participated in the second phase of the Cleaner Greener Production Programme. A summary of all the projects and CD containing all the reports are also available.

More information on the Programme is available from the Environmental Protection Agency

Dr Brian Donlon,

Environmental Protection Agency,

Richview,

Clonskeagh,

Dublin 14,

Ireland

Or their website www.epa.ie, by selecting the link to cleaner production.

## PROGRAMME MANAGERS:

The Clean Technology Centre (CTC) at Cork Institute of Technology has been appointed to manage the programme.

The CTC was established in 1991 and is now nationally and internationally regarded as a centre of excellence in cleaner production, environmental management and eco-innovation across a range of industrial sectors.