



ZERO-WASTE DESIGN TECHNIQUE

CREATED BY REDRESS



Model backstage at 'Redress on the Runway'.

WHAT IS IT?

Zero-waste is a design technique that eliminates textile waste at the design stage.

WHY DO IT?

Approximately 15 percent of textiles intended for clothing ends up on the cutting room floor.¹

When textiles are wasted so too are the resources, both natural and human labour resources, which were invested and imbedded into the textiles. It is vital to address the source of the problem by maximising the use of textile materials and by minimising the wastage. Adopting a zero-waste design approach reduces textile waste and the demand on natural resources.

HOW DO I DO IT?

1 FIRST DECIDE

There are various approaches to making a zero-waste garment. The one rule is that there should be no wastage. So, first things first, decide what type of garment you wish to make and which zero-waste technique to use, for example draping, knitting or using a zero-waste pattern, as these will inform your design and sourcing options.

ANOTHER ME ANOTHER ME

Ferrando Chan
The EcoChic Design Award Hong Kong 2011
The EcoChic People's Award Winner

200cm	TOP (Face A) front	TOP (Face A) back	TOP (Face B) front	TOP (Face B) back
164cm	110cm	110cm	110cm	110cm
	20cm	20cm	20cm	20cm
	DRESS HEM (front)			
	DRESS HEM (back)			
	DRESS HEM (neck)			
	DRESS HEM (sleeve)			

TWISTED BANDS (DE) FABRIC EDGES as decoration

NECKLACE with old badges inserted

Zero-wasted dress
on stage 20 May 2011

My zero-waste dress
Zero-waste technique is applied in my party dress - no fabrics are wasted. Even half of the edges are applied as value-added decorations. Additional materials include a few meters of straps and some old badges inserted inside the decorative clothed band. My dress shows not only one 'ANOTHER ME', but multiple ways to be worn and fit into different styles, result in a longer duration of life.

Ferrando Chan, Redress Design Award People's Award 2011 winner, created this cape by making a zero-waste pattern.



Image credit: Daniel Silverstein

US designer, Daniel Silverstein uses high quality cutting room fabric scraps to create this one of a kind Cher inspired t-shirt for his ZWD (Zero Waste Design) range.



Image credit: Hellen Van Rees

Hellen Van Rees sources leftover yarns from factories and through a combination of knotting, fusing and now knitting constructs garments with no seams, cut-offs or leftovers.

Angus Tsui Yat Sing, Redress Design Award People's Award Hong Kong 2012 winner, created this zero-waste garment by pleating rectangular textile waste scraps.



Image credit: Angus Tsui Yat Sing

EXPERT'S TIP

— Timo Rissanen, Assistant Professor of Fashion Design and Sustainability at Parsons The New School for Design —

When I first started with zero-waste design I worked in a way that I had always worked, which was to sketch things and then move onto the pattern-cutting phase. But I changed my approach to zero-waste design when I realised that by keeping an open mind regarding the final outcome, with the same goal of making beautiful garments, allowed me to explore and invent new outcomes.

2 THEN DESIGN & SOURCE

The zero-waste design technique is an integrated design process, where designing and sourcing go hand in hand. This means that you need to know your textile dimensions to be able to design your garment; and like-wise you need to know your design dimensions to source your textile. Knowing both this information is vital, as you do not want to limit your design by having to work with set textile dimensions, as this can often lead to creating unnecessary embellishments and compromise your design.

Creating a zero-waste garment is about minimising wastage, so when you source, find the textile that will work for your design. Using textile waste will improve your garment's sustainability credentials, but is not a necessity.

If you construct a zero-waste pattern you will need to plan the usage of the entire piece of textile by arranging your pieces like a jigsaw puzzle. You can also work out the pattern by draping. Alternatively, you can design directly by draping your entire piece of textile on the body directly.



Aman Cheung, Redress Design Award Hong Kong 2011 finalist, created this zero-waste sheer skirt with leftover stock fabric.

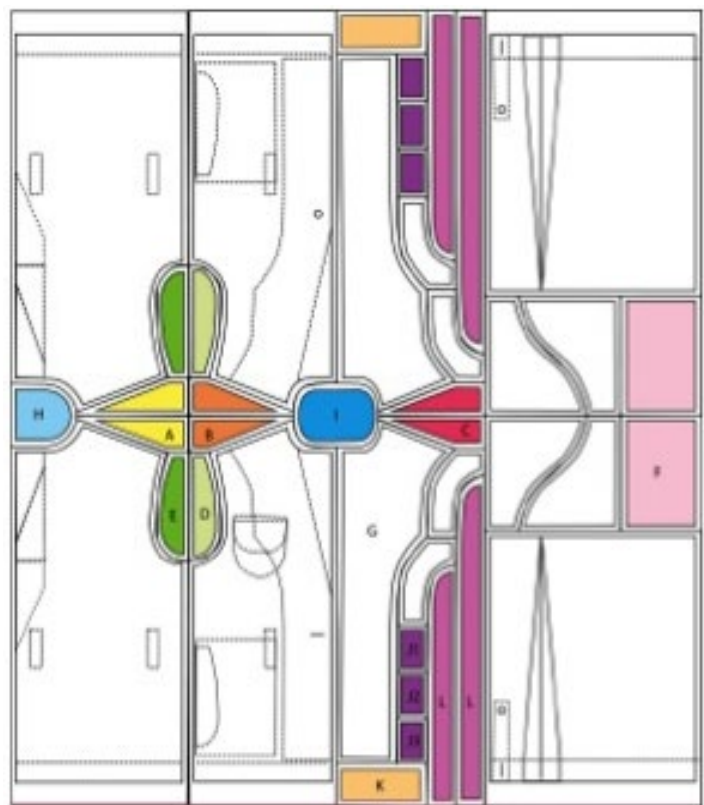


Image credit: Winsome Lok

Winsome Lok worked with this jigsaw puzzle-like pattern to create her zero-waste outfit.

EXPERT'S TIP

— Timo Rissanen, Assistant Professor of Fashion Design and Sustainability at Parsons The New School for Design —

The textile width is always a crucial consideration in zero-waste design. You can't design zero-waste without knowing exactly how wide the textile is. The textile width is the space within which you create zero-waste fashion design.

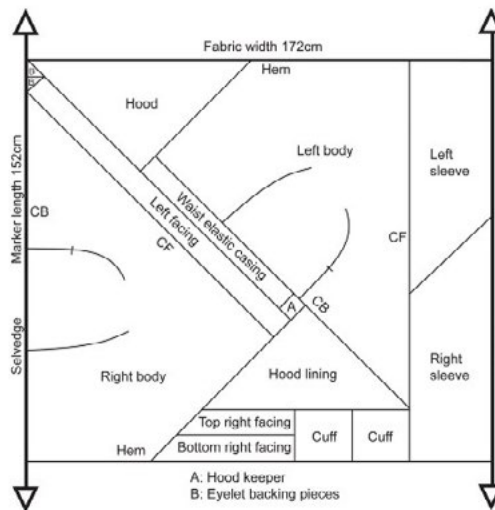


Image credit: Timo Rissanen



Image credit: Iniy Sanchez

Timo Rissanen worked with the dimensions of the textile to create a zero-waste pattern.

Dutch designer, Iniy Sanchez designed this 'Earth Sweater' using one single piece of thread so that it can easily be deconstructed and re-designed.



Image credit: Victor Fraile @ Studio East

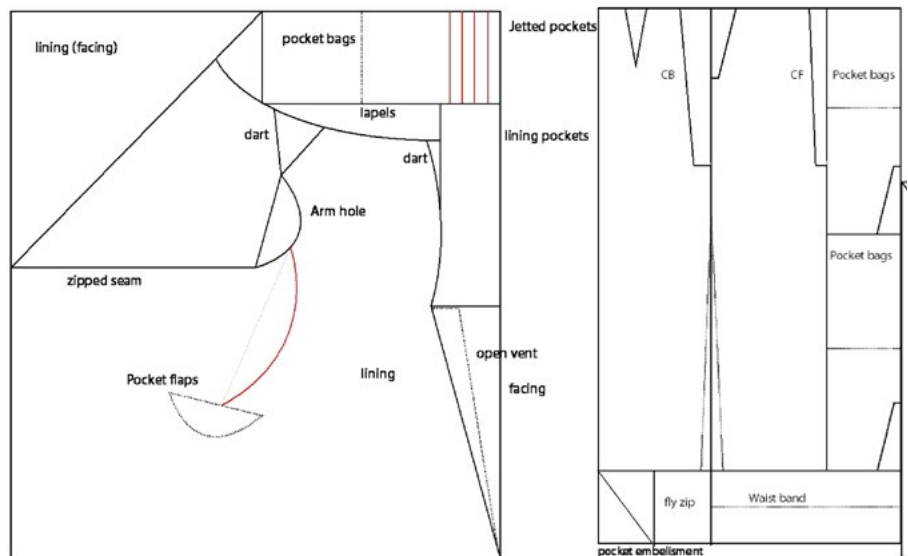


Image credit: Catherine Hudson

UK designer and Redress Design Award 2013 finalist, Catherine Hudson designed this three-piece zero-waste outfit by using the jigsaw puzzle pattern technique.

3 FINALLY... MAKE!

This is where your sketching and pattern will be tested. Whether you drape, knit or use a zero-waste pattern, the important thing is that the whole textile is used and that there is no wastage.

EXPERT'S TIP

— Johanna Ho, Fashion designer —

Be experimental and don't give up too easily. Try different shapes, styles and ways of doing zero-waste and eventually you will get there.



Image credit: Johanna Ho



Image credit: Yeohlee Teng



Image credit: Victor Fraile @ Studio East

Johanna Ho is world renowned for her zero waste design principles. She has garnered celebrity followers with the likes of Gwyneth Paltrow.

Malaysian and now New York based designer, Yeohlee Teng created this zero-waste, one-size raincoat. Yeohlee is a zero-waste design pioneer who has a strong philosophy in using textile efficiently and minimising waste.

French designer and Redress Design Award 2013 2nd Prize winner, Louise de Testa designed this zero-waste couture piece using zero-waste patterns and she hand-smocked a rectangular piece of fabric to create the belt.

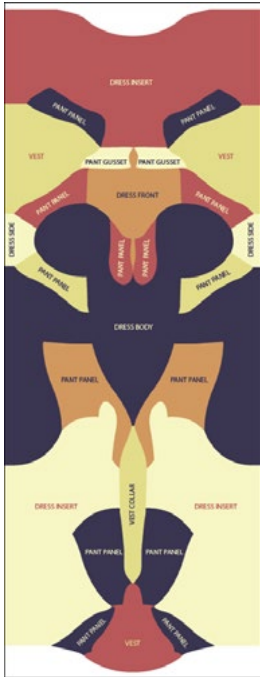


Image credit: Holly McQuillan

New Zealand based zero-waste designer and researcher, Holly McQuillan created this 'Twinset: Embedded Zero-waste' collection to experiment with applying multiple garments into one pattern.



Image credit: David Telfer

UK designer, David Telfer created this down jacket, in collaboration with North Face and Textiles and Environment Design, using a zero-waste pattern, which increased the fabric usage efficiency of 23 percent.



Image credit: Julian Roberts

British designer, Julian Roberts developed a technique called 'Subtraction Cutting', which utilises the negative spaces in traditional dressmaking.

ADA ZANDITON

ON ZERO-WASTE DESIGN

Fashion Designer
www.adazanditon.com

“Zero-waste design changes the way we use textiles and produces effective environmental results.”

I take a common sense approach to sustainability. The zero-waste design technique is good for the environment, as it eliminates textile waste going to landfill, and it is economically smart by giving you the most mileage from your dollars. Waste produced during garment production can be avoided by applying the zero-waste design technique, where designers carefully plan the design so that they utilise the entire textile.

The concept of utilising the entire width of the textile is not a new phenomenon. It has long been used in the making of Japanese kimonos and Indian saris because it makes sense not to waste valuable textiles. However, it became less popular after the industrialisation of fashion and the emergence of mass-produced fast fashion.

Today, there are many different approaches to zero-waste design, including draping, knitting and smart pattern making. I use a variety of waste reducing techniques to create sculptural, elegant and desirable sustainable fashion garments. For example, I used zero-waste geometric cutting for the origami-inspired Hera dress (see image). For this, I took two squares and cut a line through them, and then joined the lines together and finally used buttons to fix the points of the dress into folds. This design also incorporates the amount of textile needed for seam allowance and hemming. I also have a zero-waste policy in my studio where all textile residues are kept and reused or donated to local recycling programs.

Elsewhere in this field, I think the most influential designer is Mark Liu who fits the pieces of his designs together like a jigsaw puzzle onto the textile. Looking beyond individual designers and into the mass market, the commercialization of zero-waste would be a huge step towards sustainability for the entire fashion industry.”

MY TOP TIPS TO ZERO-WASTE DESIGN

1. Think before you cut and be inventive and experimental
2. Construct a zero-waste pattern or drape the textile
3. Sew or heat-seal the textile together
4. Knit and you will only ever use the necessary amount of material
5. Be inspired by origami



Image credit: Ada Zanditon

Hera Dress, SS'12 Poseisus

CASE STUDY

DANIEL SILVERSTEIN

Daniel Silverstein co-launched his zero-waste collection, called 100% NY, in 2010, soon after graduating from NYC's Fashion Institute of Technology (FIT). During his time at FIT, during which he interned with several renowned designers and brands, he was introduced to the concept of zero-waste design. Daniel saw that by incorporating zero-waste design into his collections that he could create fashion-forward clothes without wasting fabric. Underlying this is his vision of challenging an industry paradigm shift from reckless waste to one of considerate design.



Image credit: Daniel Silverstein

Why is sustainable design important to you? How did you get into it?

Someone once asked me why I decided to start a sustainable collection rather than taking a more traditional design path. The question puzzled me, as I thought it should be why wouldn't I start a sustainable collection!

The fashion industry's negative environmental impact is well documented and the industry's longstanding practices need to change. As a new designer, I feel compelled to make responsible decisions.

I became interested in zero-waste design whilst studying at FIT. One of our assignments, which was given by The Clinton Global Initiative, was to design a pair of eco-friendly jeans. Instead of starting the project by focusing on the jean's material, I decided to consider the jean's pattern first. Previously, I had seen piles of fabric waste on factory floors and I was excited by the possibility that with a fresh approach to patternmaking I could change this. Once I saw that this was possible through zero-waste design, I was hooked.

What does zero-waste mean to you?

My goal in zero-waste is to keep fabric waste as close to zero as possible. When our patterns do create scraps, they typically don't exceed two percent of the total fabric used in the design. (Compare this to the industry average of 15-20 percent.) Often, I use these small scraps as design elements to give designs a unique and show-stopping look.

How do you apply the zero-waste design technique in your collections?

Zero-waste is the end goal for each design. So for each different collection and each garment I think of different ways to use all of the fabric. I use applique details, geometric shapes and continuous materials, like braids, to create a design.

Which zero-waste design are you most proud of?

I'm most proud of our spring 14 condor top. It is made of seven rectangular pieces of fabric and it is 100 percent zero-waste. Of course, I don't mind at all that it looks great on everyone who wears it!

What do you find most challenging about zero-waste design?

It can be a challenge to bring a zero-waste concept to life because traditional methods of design usually aren't applicable.



Image credit: Daniel Silverstein

What do you find most rewarding about zero-waste design?

Having seen first hand the piles of wasted fabric on factory floors, it is gratifying to see only minimal scraps in our studio at the end of a production run. Plus, knowing that I've delivered fashion-forward designs to women without burdening landfills is definitely rewarding.

What is your best resource?

My best resource is my team. Without the support of people who believe in both the zero-waste mission and me, this journey would be so much more difficult.

What is your top tip to the zero-waste design technique?

Work backwards... the end result needs to be a rectangle!

CASE STUDY

ALEX LAW

Alex Law was initiated - and then hooked - into the world of zero-waste design techniques for the first time during his participation in Redress Design Award (formerly the EcoChic Design Award) 2013. In this, he swooped to third place, in part because of his talented application of this sustainable design technique, so we think he's one-to-watch in this area.

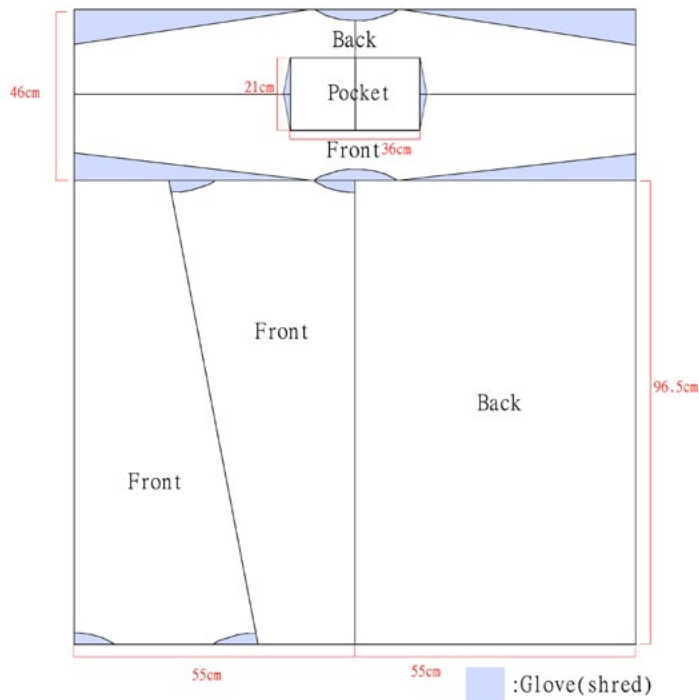


Image credit: Alex Law

Why is sustainable design important to you? How did you get into it?

Sustainable design is very important to me because fashion contributes to large amounts of waste, particularly as a result of the fast fashion culture. Fast fashion has accelerated consumers' desires to follow the latest trends by increasing clothing consumption, which subsequently leads to an increase in clothing waste. Therefore, I chose to pursue sustainable fashion design to be able to save the environment.

What does zero-waste mean to you?

There are a few methods to do zero-waste, such as three-dimensional cutting, knitting and designing using zero-waste pattern techniques, and all of them aim to eliminate waste.

How do you apply the zero-waste design technique in your collections?

I'm still quite new to the zero-waste design technique and so I create my designs using quite a simple geometric pattern.



Image credit: Victor Fraile @ Studio East

Which zero-waste design are you most proud of?

I'm most proud of this zero-waste design because it was my first attempt using the technique and I formed this garment using seven geometric pieces.

What do you find most challenging about zero-waste design?

I think the zero-waste design technique is very challenging and it requires a lot of time and effort to learn. Experimenting is key!

What do you find most rewarding about zero-waste design?

I find zero-waste very rewarding as it creates no scraps and no waste and it therefore contributes to minimising pollution from the very beginning of design, so it's an environmentally-friendly fashion design approach.

What is your best resource?

The Internet has been my best resource to learn about sustainable fashion and the design techniques, especially Redress Design Award sustainable fashion articles and short videos. I found a lot of inspirations there.

What is your top tip to the zero-waste design technique?

I recommend trying geometric zero-waste pattern cutting as well as draping.

LEARN MORE

WATCH THIS...

Redress Design Award Zero-waste Design Tutorial

YouTube youtu.be/rikkAuaoUGs

Youku v.youku.com/v_show/id_XNTQ3MzkwNDI0.html

Redress Design Award Zero-waste Design Tutorial with Timo Rissanen

Youtube youtu.be/vJK_y56ot3I

Youku v.youku.com/v_show/id_XMzg3ODMxOTAw.html

READ THIS...

A Practical Guide to Sustainable Fashion by Alison Gwilt

Cradle To Cradle: Remaking The Way We Make Things by Michael Braungart

Design Is The Problem: The Future Of Design Must Be Sustainable by Nathan Shedroff

Eco-Chic: The Fashion Paradox by Sandy Black

Eco Fashion by Sass Brown and Geoffrey B. Small

Fashion & Sustainability: Design for Change by Kate Fletcher and Lynda Grose

Free Cutting by Julian Roberts | www.subtractioncutting.tumblr.com

Shaping Sustainable Fashion: Changing The Way We Make And Use Clothes by Alison Gwilt and Timo Rissanen

Sustainable Fashion And Textiles: Design Journeys by Kate Fletcher

Sustainable Fashion: Past, Present and Future by Gordon K. Farley, Jennifer Farley, Colleen Hill

The Sustainable Fashion Handbook by Sandy Black

The Zero-Waste Lifestyle: Live Well by Throwing Away Less by Amy Korst

Zero Waste Fashion Design by Timo Rissanen and Holly McQuillan

Zero Waste by Robin Murray

BE INSPIRED BY...

Ada Zanditon | www.adazanditon.com

Daniel Siverstein | zerowastedaniel.com

Hellen Van Rees | www.hellenvanrees.com

Holly McQuillan | www.hollymcquillan.com

Issey Miyake | www.isseymiyake.com

Julian Roberts | www.julianand.com

Louise de Testa | www.redressdesignaward.com/alumni/2013/louise-de-testa

Mark Liu | www.drmarkliu.com

Timo Rissanen | www.timorissanen.com

Yeohlee Teng | www.yeohlee.com

LEARN THE LANGUAGE...

Closed loop design is to keep products, components, and materials flowing continuously within the system, where these values are captured and continue to circulate.

Cradle to cradle is a closed loop design process that is free of waste. When a product is no longer useful, it becomes material for another product.

Life cycle is the journey a product makes from the extraction of its raw materials, through production and usage, all the way through to its disposal or recycling.

Post-consumer waste is waste collected after the consumer has disposed of it.

Pre-consumer waste is made up of manufacturing waste that has not reached the consumer.

Recycled is when a waste material or product has been reused and turned into a new usable material or product.

Reduce, reuse, recycle are the so-called 3Rs that classify waste management, according to their order of importance. Reduce consumption and usage, reuse items again where possible and recycle materials at the end of their lives.

Supply chain refers to the steps and resources involved in the production of a product from raw materials extraction, all the way through to transporting it to the consumer.

Sustainability is a lasting system and process that meets the current population's needs while preserving for the future.

Sustainable fashion is clothing that is produced with consideration to the environment and social impacts throughout its lifespan.

Sustainable textiles are textiles produced with minimal environmental impact.

Textile waste is the textile by-product of the manufacturing of garments, fabrics, yarns or fibres that are deemed unusable for its original purpose by the owner.

Zero-waste is a design technique that eliminates textile waste at the design stage.

FOOTNOTES

¹Timo Rissanen (2005), From 15% to 0: Investigating the creation of fashion without the creation of fabric waste
www.academia.edu/3762020/From_15_to_0_Investigating_the_creation_of_fashion_without_the_creation_of_fabric_waste