

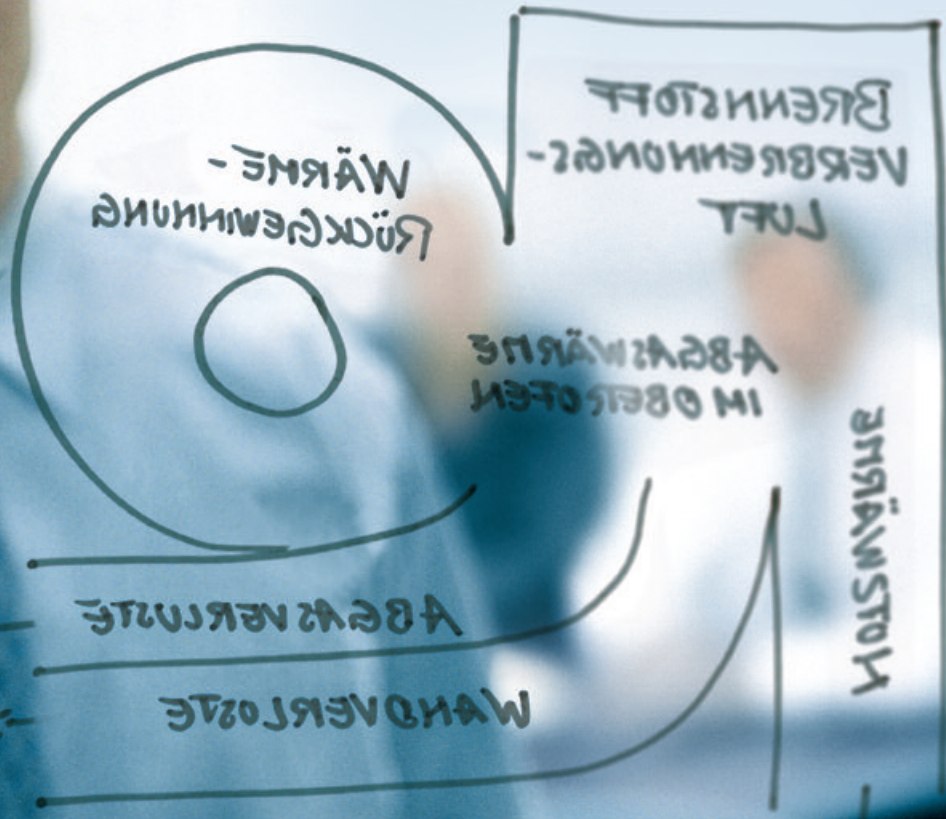
THE LINDE GROUP

Linde

glass global
THE GLASS COMMUNITY

Glass Engineering on demand.
Productivity lead for glass
producers.

Optimise your production
processes online:
[www.glassglobal.com/
engineering](http://www.glassglobal.com/engineering)



Analyse, calculate and plan with speed and precision – online.

There are few substances more versatile than glass. Which is one of the reasons it is so complex to produce. Complex production processes are compounded by rising energy costs, stricter environmental regulations and growing competitive pressures. In this challenging environment, transparency is critical to increase efficiency and economic viability. Which is why Linde teamed up with OGIS GmbH. Together, they have created the world's first online analysis tool for the glass industry. It allows glass manufacturers to increase productivity by analysing, planning and monitoring all process parameters online. Drop into www.glassglobal.com/engineering and tap into the combined know-how and experience of two key glass players.

As technology leader in the glass industry, Linde is a defining force for glass melting, polishing and surface treatment innovations. OGIS GmbH, operator of the biggest glass portal worldwide with over 1.2 million page impressions a month, has exceptional reach and experience in the glass industry. Together, they are a winning combination that can work to your benefit.

24-hour access to the synergised know-how of two glass experts!

www.glassglobal.com/engineering









Visit the largest database in the industry – any time, any place.

Intelligent software is essential to optimise all parameters involved in the various glass production steps. Investing in a proprietary solution can be time-consuming and expensive. Now, thanks to Linde and OGIS GmbH, there is another way. Glass manufacturers have on-demand access to a web-based analysis tool that allows them to quickly and easily analyse complex process parameters. “Glass engineering on demand” offers rich functionality to make sure you get your glass, ingredients and batch data just right.

All new web-based glass knowledge.

This 24-hour web-enabled tool incorporates all facets of the glass-making process from thermal engineering to operating data analysis. And SSL encryption ensures that all data and queries you enter are totally secure. In a nutshell, our vast glass knowledge base takes the guesswork out of glasswork.

www.glassglobal.com/engineering

Identifier	Production	In/Out (t/hour)	Efficiencies (%)	edit/show
1REG_EP - 60 t/d, container	Pull 60 t/d Energy consumption 1.300 kcal/kg Cullet 60 %	Gas consumption 10.000 Nm ³ /d Gas ratio 100 % Additional burner No	Combustion 77,83 % Preheating 66,88 % total 35,26 %	 
REC_SP - 15 t/d, water glass	Pull 15 t/d Energy consumption 2.807 kcal/kg Cullet 0 %	Gas consumption 4.896 Nm ³ /d Gas ratio 100 % Additional burner No	Combustion 43,89 % Preheating 28,12 % total 19,44 %	 
REG_EP - 372 t/d, container	Pull 372 t/d Energy consumption 981 kcal/kg Cullet 65 %	Gas consumption 42.422 Nm ³ /d Gas ratio 100 % Additional burner No	Combustion 61,75 % Preheating 57,04 % total 39,11 %	 
REG_EP - 72 t/d, tableware	Pull 72 t/d Energy consumption 1.325 kcal/kg Cullet 50 %	Gas consumption 11.097 Nm ³ /d Gas ratio 100 % Additional burner No	Combustion 62,69 % Preheating 56,76 % total 34,83 %	 

The energy equation reveals areas offering scope for greater efficiencies and provides solid pointers for future investments.

Batch Composition and Disposition		
Raw material	initial weight kg	Ratio %
Sand	4.473	45,10
Soda (heavy)	1.357	13,60
Limestone	714	7,20
Dolomite	955	9,63
Nephelin-Syenit	420	4,23
Own cullet white	2.000	20,16

The batch mixture is calculated to deliver the required glass properties.

Lakatos	Sasak	Lederer/m
1.507	1.567	1.580
1.246	1.279	1.293
1.076	1.102	1.107
760	774	767
580	565	575

Example: calculation of the viscosity values with different models.



There's always room for improvement. But you need to know where to look.

Whether you're looking to simplify your work flow, create a more homogenous melt environment, reduce energy consumption or increase adaptability to meet individual customer demands, the answer always lies in process enhancements. Which is easier said than done. To make an informed decision, you need qualified information. When can you expect a return on your investment? What parameters need to be fine-tuned? What is the medium-term impact of switching from oil to gas?

"Glass engineering on demand" gives glass manufacturers the transparency they need to systematically optimise their production processes. We're offering a free test-run for the next three weeks. Once you have seen what www.glassglobal.com/engineering can do for your business, you have the option of taking out an annual subscription at our special introductory rate. All you have to do is mail us at engineering@glassglobal.com and we will send your password and user guidelines.

Take a test run today and slide
into the productivity lane.

www.glassglobal.com/engineering

First Glass Engineering – on demand.

First global glass engineering tool – on demand. To find out more about the world's first online analysis tool for the glass industry or check the dates for upcoming glass exhibitions and shows, send an email to engineering@glassglobal.com

Linde – ideas become solutions

OGIS GmbH

Grafenberger Allee 277-287, 40237 Düsseldorf, Germany.
Phone +49.211.280733-0, Fax +49.211.280733-22,
engineering@glassglobal.com, www.glassglobal.com

Linde AG

Linde Gases Division, Seitnerstrasse 70, 82049 Pullach, Germany
Phone +49.89.74 46-0, Fax +49.89.74 46-12 30, www.linde-gas.com

Try our new online analysis tool out
for three weeks – for free!

Reply fax

Company

Address

Contact

Function

Telephone

Fax

E-mail

- ☐ I would like to apply for access authorisation.
- ☐ I am interested in more information – please contact me by phone.

+49.211.280733-22



THE LINDE GROUP

Linde