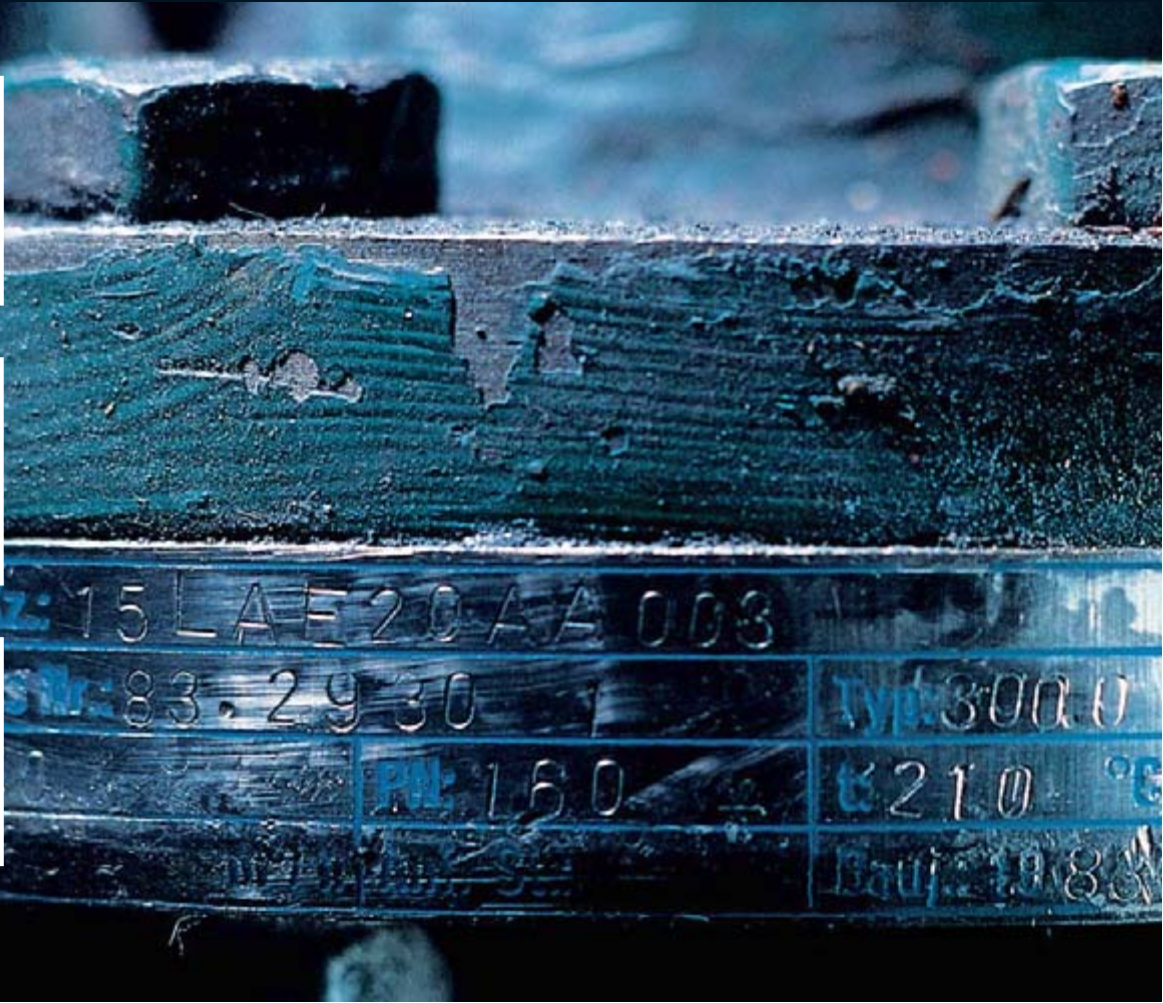


“Forget Your Problems!”



HORA Power Technology Service



Excellence is our standard



Service Engineers commissioning a desuperheater and steam conditioning valve.

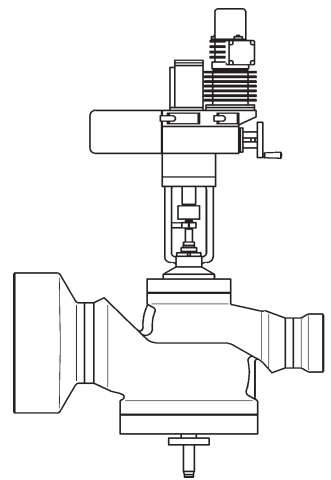
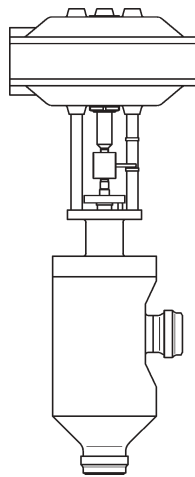
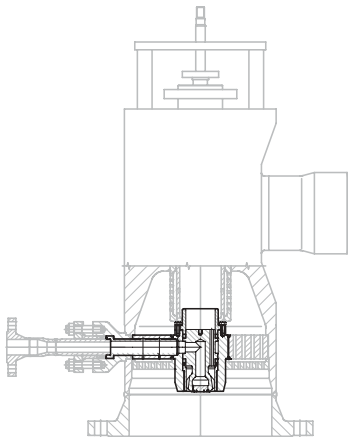
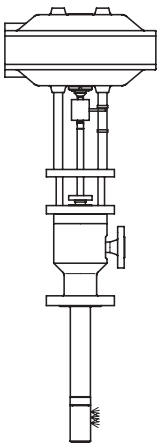
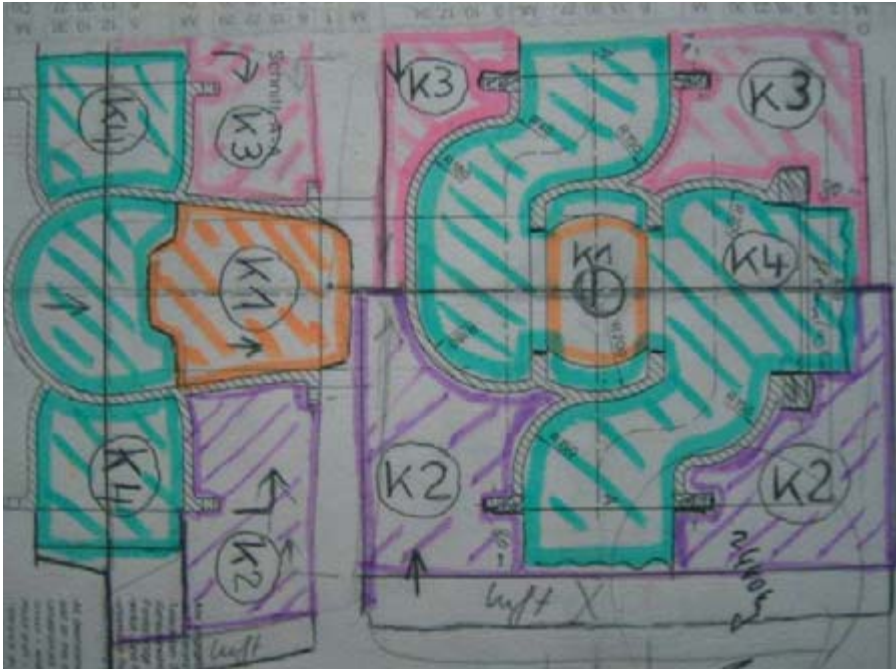


Problems are the spice of life.



Where would humanity be without problems? They increase our knowledge, our understanding and our creativity. Problems contribute to our development. In some respects they are part of our professional *raison d'être*.

However, from a certain level, problems become hazardous: too complex, too involved, too sudden, too many serious consequences, too expensive. We know that. Therefore, we have been developing and building innovative valves for the international power station market for decades. Our customers seem to like our know-how. For we were asked more and more frequently whether we couldn't possibly solve a specific problem. We could. Even if the valves did not bear our trademark. And so it came about that we have taken on more and more service work over the years. Work for which HORA now has its own separate division: HORA Power Technology Service. We make sure that you can forget your problems.



Your problem areas are as unique as your power station.



The patent recipe to prevent all problems is not financially viable. The intelligent, individual mix of preventative measures and help in emergencies is what is required. Some examples of our range of services:

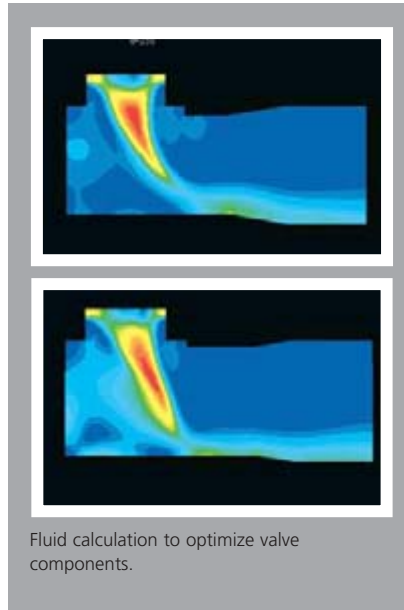
The optimising repair: Of course, we can change the faulty component in a valve. A lot of people can do that. However, we can also optimise the internal components so that they last considerably longer. For example, by avoiding cavitation or flushing.

The life-prolonging modernisation plan: We can develop a modernisation plan for you, which includes the valves and the pipework ducts. Because we build power station valves ourselves, we know the interplay of the components in detail. We know how to avoid costly new purchases by modernising existing valves. The spin-off: the power station can be quickly started up again.

The targeted spare parts stock: We fill a special spare parts box for a specific part of your valves in each case as a preventative measure. It will be stored on your premises. If a fault occurs, the HORA Service Team can repair the valve immediately. Then we refill the spare parts box. →3

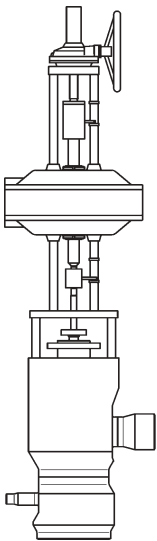
The Service Check: Our Service Team checks all valves at regular intervals and assesses the repair requirements and optimisation potential.

The individual problem solution – An example: A plastics company asked a valve manufacturer to repair its valve which was about 30 years old. It was a 3-way valve of a quite specific design.



The manufacturer had to decline and was also unable to supply a replacement valve with the same, non-standard connection dimensions. A new solution was ruled out: changing the pipework would have cost a fortune. Then HORA was approached. HORA produced the 3DCAD data and found a special foundry which specialised in styropor models. Styropor models can only be used once, but that was enough. Therefore, this foundry produced the first valve model in its history. The

valve was cast and then finished and fitted by HORA. And so HORA gained a new customer. →1, 2



X-ray image of a cast-iron body with welded ends. Shrink holes and inclusions can only be detected with certainty in this way.



1



2



3

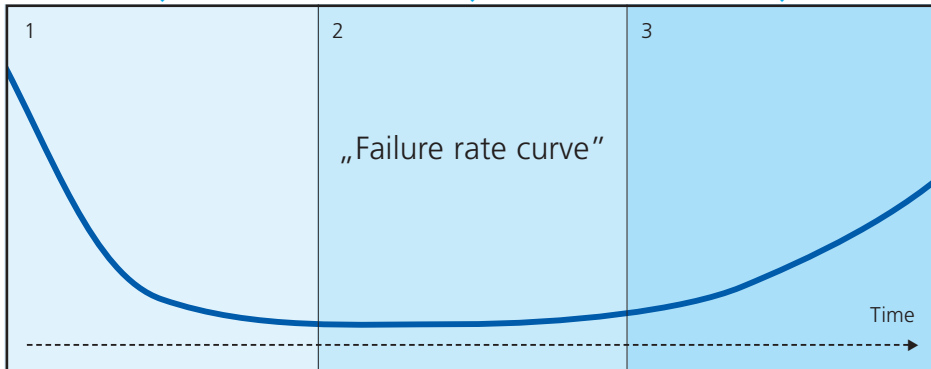


4

HORA Power Technology Service accompanies a power station at every stage of its life.

Periods	1	2	3
Phase	<ul style="list-style-type: none"> – Plant commissioning and start-up 	<ul style="list-style-type: none"> – Plant economic phase – Few and mostly planned shutdowns – Maximum availability 	<ul style="list-style-type: none"> – The end of the service life of various components in the plant is reached
Reasons for failure	<ul style="list-style-type: none"> – Material faults – Manufacturing faults – Design faults 	<ul style="list-style-type: none"> – Random failures 	<ul style="list-style-type: none"> – Failures due to fatigue and ageing
HORA Power Technology Service	<ul style="list-style-type: none"> – Commissioning by specialist personnel – Training of on-site personnel – Troubleshooting 	<ul style="list-style-type: none"> – Rapid troubleshooting on site – Preventative maintenance – Service life observation and service life increase – Short planned shutdowns – Spare parts stock on site 	<ul style="list-style-type: none"> – Modernisation – Retrofit: changing components and component parts – Upgrade: optimisation to the latest state-of-the-art technology – Status-orientated maintenance

Failure frequency in a plant



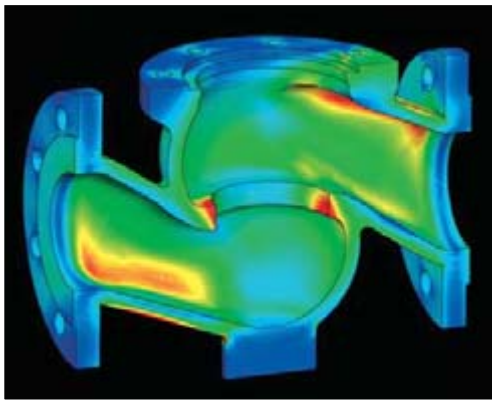
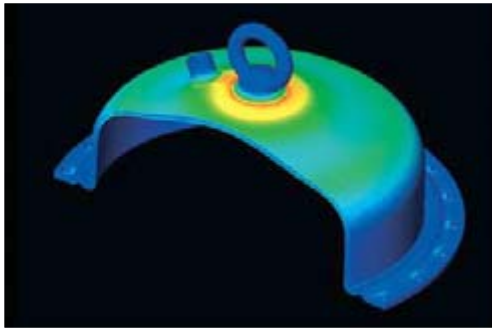
Repair procedure:

- 1 Delivery of a valve needing repair.
- 2 Armour-plating of the seat area.
- 3 Reworked and new parts
- 4 Final fitting of valve.

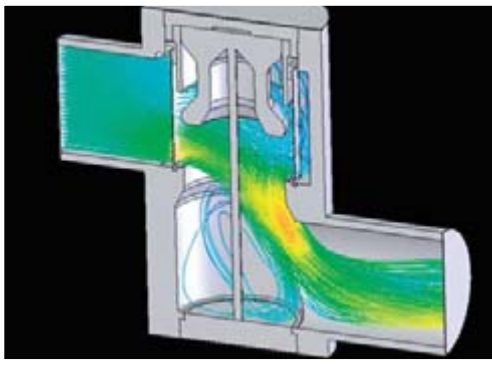




Simply tell us your aims – we will get you there.



Finite Element Method



Fluid calculation to optimize the valve parts

Increase in availability?

We can do that for you:

- Strategic spare parts stockholding
- Utilisation of improved materials and technologies
- Preventative maintenance

Increase in output?

We can do that for you:

- Modernisation of components and systems

Service life extension?

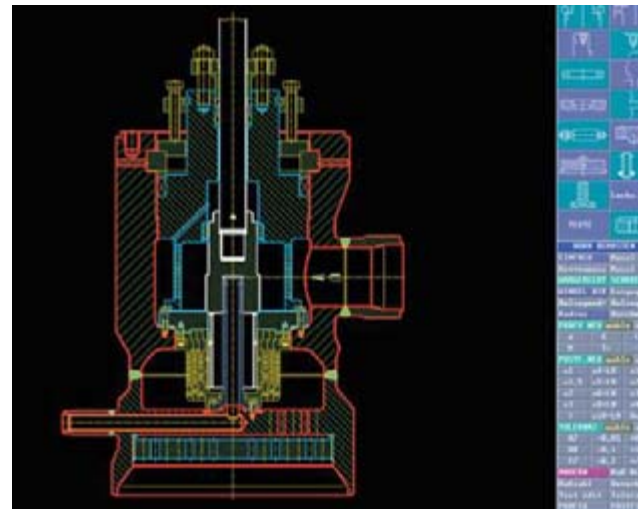
We can do that for you:

- Status-orientated maintenance
- Service life analysis
- Changing specific components

Increase in efficiency?

We can do that for you:

- Process data analysis
- Examination of valve design
- Modification of existing valve



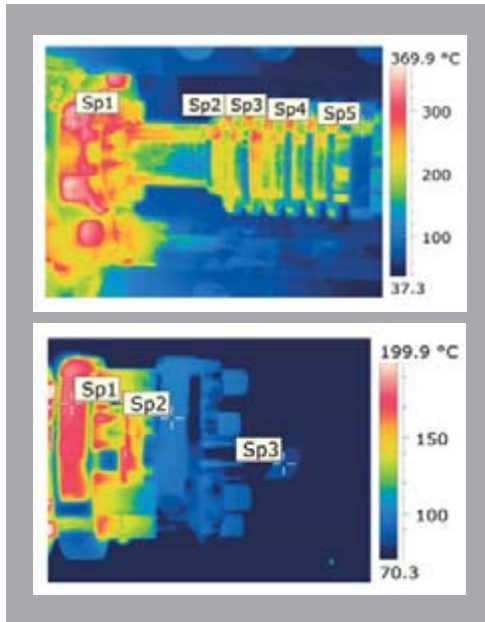


Because we build valves, we understand valves.



HORA is a second-generation owner-managed family enterprise. It was founded in 1967 and has grown continuously. Today we are active on every continent. Our research and development division is one of the most modern in this branch of industry. HORA is competent in all test and qualification procedures which are required for the manufacture of control and special valves. A dozen test procedures can be used in the production process.

HORA is the only control valve manufacturer in the world, who works for a 700 degree power station: On the EU Research Project COMTES 700 in Gelsenkirchen-Scholven, Germany. The next power station generation is being tested with the aim of maximum increase in efficiency.



Valve test with thermal camera.
The temperature progression on cover and drive.

The EU Research Project COMTES 700

A new generation of power stations is being developed and tested under this project name. The aim: an increase in efficiency through steam temperatures up to 700 °C.

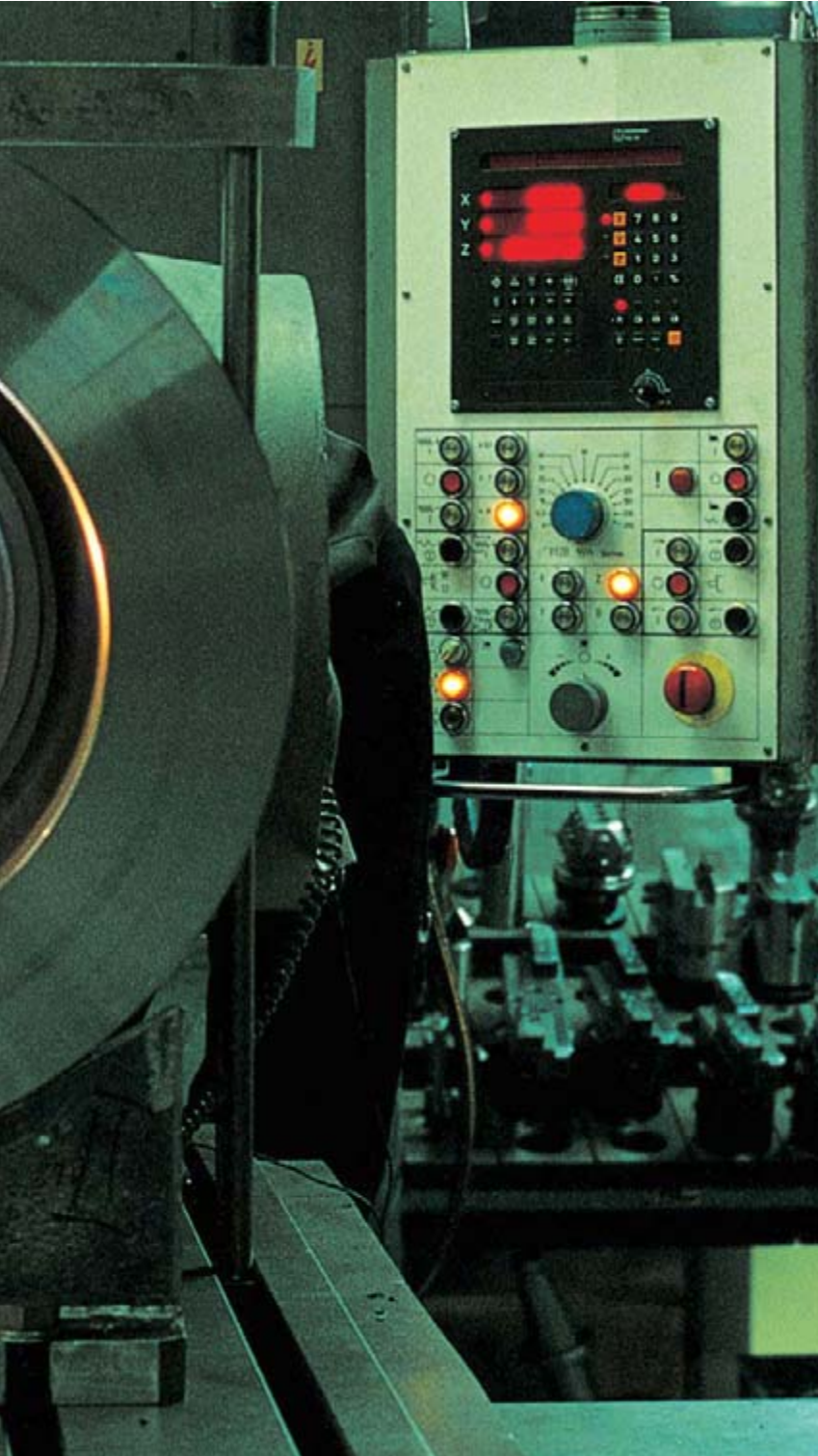
1998	1. Project phase AD 700
2002/2003	2. Project phase COMTES 700
2003	Valve development and design
2004	Valve production
2005	Plant commissioning
2005–2009	Start of practical trial run period with continuous inspection of valves / collection and evaluation of partial results
2008/2009	Project end
2010	Building of the first commercial 700 °C units



Discover **HORA Power Performance**:
24 hours a day, seven days a week,
we are there 100 % for you! In our
factory – on your site.



Complete Service with PowerPerformance.



The HORA Complete Service covers all relevant areas of power station operation: in line with requirements, future-orientated, problem-related and customer-orientated. We do that in a way which merits the name Power Performance. You will quickly recognise the difference: collaboration with HORA ensures more clarity, more speed, more accountability, more economy and more safety. In a nutshell: more professionalism.

Analysis

- Status definition
- Service life determination

Operation

- Maintenance contracts

Maintenance

- Maintenance and servicing management

Commissioning

- Commissioning of new products

Modernisation

- Retrofit
- Modifications
- Increase in efficiency

EDP


- Valve-tracing and valve-tracking

Training

- Product commissioning and maintenance



**Use our free Valve Optimisation Service (VOS).
It will be worth it.**



When should valve components be renewed or optimised? When is the best time to implement economic optimisation steps? We will help you to answer these questions. Simply give us your valve characteristic data and we will include you in our VOS database. The HORA Service Team will then inform you free-of-charge and without obligation, when the time is ripe from our point of view.

For all queries regarding valves, service, training and maintenance, we have reserved a telephone number for you: **+49 (0) 52 07/89 03-100**

In any case, you should save this email address:
VOS@hora-service.com

You never know! And problems are there to be solved. By your HORA Service Team.

“Forget Your Problems!”
HORA Power Technology Service



↑ Only when everything is right, does HORA get started.

← Our own KV testrig for characteristic curve testing.

Service References

- AES Kelanitissa / Sri Lanka
- BASF Antwerpen / Belgium
- Bayer Dormagen / Germany
- BP Köln / Germany
- Campo de Gibraltar / Spain
- Corus / Holland
- Do Pego / Portugal
- DSM Elsloo / Holland
- FES Frankfurt / Germany
- Florina / Greece
- Hanfeng / China
- Hoechst Frankfurt / Germany
- Inesco / Belgium
- Iskenderun / Turkey
- Jämtkraft / Schweden
- Jänschwalde / Germany
- KW Baima / China
- KW Herne / Germany
- Leeuwarden / Holland
- MVV Mannheim / Germany
- Niklasdorf / Austria
- Rotem / Israel
- Tahaddart / Morocco
- Tuoketuo / China
- Zolling / Germany



0605/503/GB

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